

THE  
UNIVERSITY  
OF RHODE ISLAND  
GRADUATE SCHOOL  
OF OCEANOGRAPHY



Cruise Planning Manual for the

# Research Vessel Endeavor

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# Introduction

This document has been prepared to acquaint researchers with the capabilities of the Research Vessel (R/V) Endeavor and policies for conducting oceanographic research from this vessel. Sections include information on planning cruises, specifics on the vessel, available equipment/instrumentation and basic technician services to support your program at sea, plus the procedures necessary for arranging and conducting cruises.

The University of Rhode Island (URI) is an operator institution in the University-National Oceanographic Laboratory System (UNOLS) and subscribes to the [UNOLS Research Vessel Safety Standards](#) (RVSS). Scientists and students are encouraged to familiarize themselves with relevant sections of this manual when planning cruises on research vessels in the academic fleet. Special attention must be given to the requirements for use of: oceanographic wire and cable in appendix A, over boarding equipment in appendix B, and portable laboratory vans in appendix C.

The R/V Endeavor was built by Peterson Builders, Inc., in Sturgeon Bay, Wisconsin. The Endeavor commenced her maiden voyage from Sturgeon Bay to Narragansett, Rhode Island, on October 28, 1976. In June of 1993 the Endeavor returned to Peterson Builders for a mid-life refit. The vessel is owned by the National Science Foundation (NSF) and is operated by the Graduate School of Oceanography (GSO) at URI under a cooperative agreement. Narragansett, Rhode Island is the homeport of the R/V Endeavor.

## *Abbreviations and Acronyms*

ADCP	Acoustic Doppler Current Profiler
CFR	Code of Federal Regulations
CTD	Conductivity Temperature Depth Recorder
GSO	University of Rhode Island - Graduate School of Oceanography
MAS	Medical Advisory Systems
MPIC	Medical Person in Charge
MSDS	Material Safety Data Sheet
MTRC	Medical Telecommunications Resource Center
NIMA	National Imagery and Mapping Agency
NGA	National-Geospatial Agency
NOAA	National Oceanographic Atmospheric Administration
NSF	National Science Foundation
ONR	Office of Naval Research
OPA	Office of Ocean and Polar Affairs
OSHA	Federal Occupational Health and Safety
PCA	UNOLS Post Cruise Assessment
PI	Principal Investigator
RATS	Research Application Tracking System
RI	Rhode Island
RSO	Radiation Safety Officer
RVSS	UNOLS Research Vessel Safety Standards
STRS	Ship Time Request System
TWIC	Transportation Worker Identification Credential
UDP	Universal Datagram Packet
UNOLS	University-National Oceanographic Laboratory System
USCG	United States Coast Guard
URI	University of Rhode Island

# *Record of Changes*

<b>Date</b>	<b>Initials</b>	<b>Change</b>
10 January 2014	WLF	New baseline document
11 June 2014	WLF	Update Hazmat section
26 October 2014	WLF	Update max. crane shore capacity from 14klbs to 20klbs
24 March 2015	WLF	New safety guidelines for deploying electrically energized gear
2 April 2015	EMG	Added details for masts and platforms
6 April 2015	EMG	Reorganization of the Life Aboard Endeavor chapter
17 September 2015	WLF	Add pregnancy policy
08 June 2016	WLF	Add references to RVSS and chapter 1 of RVOC safety manual to section Safety and Standard Procedures. Update references to RVSS in section Introduction. Breakout prohibited items into separate headings. Remove Trimble NT300.
20 June 2016	WLF	Update "Lithium and Lithium Ion Batteries" section
18 May 2017	WLF	Update Shipboard Services and Over the Side Handling Equipment
12 July 2018	WLF	Update Arrival and Departure of Science Personnel section. Add use of UAS/drone section.
31 May 2020	WLF	Update science berthing. Update Cruise Planning web address.
19 January 2021	WLF	Update science berthing to reflect reduced science party size due to Covid-19.
23 May 2022	EMG	Update science berthing to reflect reduced science party size due to Covid-19, crew shortages, and two marine technicians.

# Ship and Science Facilities

## Specifications

Registration number: RI-59A

IMO number: 7604300

Radio call letters: WCE 5063

### Classifications

ABS Level	A1
AMS	Research Vessel
ISM Certified	Yes
USCG	Uninspected

### General Specifications

Built	1976 by Peterson Builders, Inc., Sturgeon Bay, WI
Refit	Major mid-life refit in 1993
Designer	John Gilbert Associates, third of the Oceanus class
Construction	Steel hull with aluminum superstructure
Length overall	185'
Length at waterline	165' (design)
Beam	33' (molded)
Draft	18' 6" aft, 12' 6" forward
Displacement Tonnage	756 long tons (at design draft)
Gross Tonnage	298 register tons
Net Tonnage	203 tons
Cruising Speed	10 knots
Max Speed	14 knots
Fuel capacity	56,100 gallons
Ballast capacity	230.5 long tons
Potable Water Storage	8,200 gallons
Potable Water Evaporator	2,400 gallons/day
Potable Water Reverse Osmosis	1,200 gallons/day
Range	8,000 nautical miles at 12 knots
Endurance	30 days
Compliment	12 crew, 14 scientists, 2 Marine Technicians



## **Propulsion**

Main Engine	GM-EMD diesel engine: 16-645-E5, 3,050 shaft HP at 900 RPM (max.)
Reduction gear	Non-reversing, 3.75 to 1 ratio
Prop	Single screw with controllable pitch
Steering	Kort steering nozzle
Bow Thruster	J. Samuel White Waterjet, 320 HP, DC variable speed, variable direction

## **Electrical**

Main Generators	2 Caterpillar 300 kW, 460V, 3 phase, 60Hz
Secondary Generator	Caterpillar 175 kW, 460V, 3 phase, 60 Hz
Emergency Generator	John Deere 40 kW

# **Vessel Capabilities**

## **Maximum Cruise Loadout**

Weight Limits and Distribution

O1 Upper deck	10 long tons (22,400 lbs)
Main deck, labs and hold	30 long tons (67,200 lbs)
Maximum	40 long tons (89,600 lbs)

*A long ton is equivalent to 1016 kg or 2240 lbs.*

Details and distribution of equipment being brought on board should be discussed with the Director of Marine Operations in advance (e.g., the loading of vans, explosives, heavy or bulky gear, etc.).

It is mandatory that the exact weight of heavy pieces of science equipment be known, in order to avoid overloading the vessel. Experience has shown that estimated weights are usually low by as much as 50 percent. PIs must plan for and provide accurate weights for each truckload and/or major pieces of equipment to the Director of Marine Operations in advance, if the ship is to be heavily loaded. The limits specified above cannot be exceeded.

All open deck areas, except the forecastle, have flush, one-inch bolt down fittings on two-foot centers. Hold down bolts, threaded pad eyes, chain and chain binders are available, in reasonable quantities from the ship's Boatswain, to tie-down or mount equipment. Welding to the ship's decks is not permitted.

## **Portable Vans**

Vans for laboratory or storage purposes can be accommodated on the main or upper deck. Twenty-foot vans located on the upper deck require special legs to the main deck to support the aft end of the van. The Marine Office provides these. Electrical and water supply lines can be rigged as required. The Lead Marine Technician should be consulted in advance with regard to your needs. Facilities are not available for vans to be used as living/berthing quarters. General use vans, radioisotope vans, and clean vans are available through the UNOLS Van Pool. Cruise requirements need to be made known to the Lead Marine Technician early in the planning process to ensure availability for your cruise.

# **Science Spaces Description**

## **Laboratories**

### **Main Lab - Main Deck Port Side**

1. Approx. 36 ft. x 19 ft. (696 sq. ft.) (10.97 m x 5.79 m)
2. 3/8" deck bolt downs on 2-foot centers.
3. Strut channel (Unistrut) on bulkhead and overhead - 4' spacing; (2' spacing on forward bulkhead).
4. Direct access to fantail
5. Temperature controlled air-conditioned space.
6. 14 kVA 120 VAC Clean UPS service, isolated and surge protected, distributed throughout lab areas.
7. 220 VAC, 30A single phase power available (Transformer-isolated) Port side aft
8. 480 VAC, 30A three phase power available, various locations
9. 120 VAC, 30A single phase available (non-isolated)
10. Compressed air (120 psi, ships service air, not for breathing)
11. Permanent Instrumentation center on port side forward: includes 12 kHz bathymetric system, data systems displays, ADCP, CTD stations, Shipboard Scientific Computer system.
12. Intercom system (to pilothouse, winch operator, et al.).
13. Winch parameter digital display, speed log readout, and navigational and environmental parameter readouts.
14. Fresh and saltwater faucets.

### **Wet Lab - Main Deck Starboard Side**

1. Approx. 30' x 13' (390 sq. ft.) (9.1 m x 3.9 m).
2. 1" deck bolt downs on 2' centers after section, 3/8" in forward section.
3. Strut channel (Unistrut) on bulkheads, portable sink, cabinet and shelf units. Lab can be reconfigured to suit the mission.
4. Ship's service salt water, fresh water available at sink locations.

5. Ships service compressed air up to 120 psi is available.
6. Uncontaminated de-bubbled seawater, both pressure and gravity feed, is available for flow through instruments.
7. Double door to waist deck. Horizontal clearance is 84 inches and vertical clearance is 67 inches. Conditions at sea dictate whether this door can be opened.
8. 120 VAC UPS power available at several locations.
9. GFCI protected Fume hood forward inboard with integral sink is available for formaldehyde work.
10. Hydraulic boom to move heavy equipment
11. High volume drains in deck.

### **Special Purpose Lab - Main Deck Starboard Side Forward of the Wet Lab**

1. Approx. 16' x 13' (203 sq. ft.)
2. A 4-foot OSHA Laboratory fume hood is permanently installed.
3. Climate controlled for salinometers and temperature sensitive instruments.
4. 3/8" deck bolt downs on 2' centers
5. Strut channel (Unistrut) on overhead and bulkheads
6. 120 VAC UPS power available throughout lab.
7. This room can be darkened for experimental work.

### **01 Deck Lab - Starboard Side**

1. Approx. 15' x 25' (375 sq. ft.)
2. 3/8" deck bolt downs on 2' centers
3. Strut channel (Unistrut) on bulkheads
4. 120 VAC UPS power available at several locations throughout space.
5. 480 VAC, 30A 3 phase available
6. Connection is available for a portable fume hood exhaust.
7. Uncontaminated salt water, fresh water, and ship's service compressed air

## Transducer Well

Endeavor is equipped with a transducer well that can be pressurized that allows changing or working on hull-mounted transducers without taking the vessel into dry dock. This space is in the box keel approximately 2/3rds back from the bow. The space is sufficiently large to allow 2 persons to work inside. The Doppler speed log, the ADCPs and all SONAR transducers are located in this space. There are spare mounting rings, which can be used to install user-furnished transducers. Drawings to assist in the fabrication of any necessary adapter plates are available from the Lead Marine Technician. Advance notice of transducer requirements is appreciated and should be coordinated through the Lead Marine Technician. Transducers cannot be changed while the ship is at sea and will not be changed while the ship is away from its homeport.

## Masts

Endeavor's bow mast is 14m above the waterline and 9m above the main deck. The mast is constructed of 8-inch diameter tubing reinforced by cable stays. Scientific equipment can be mounted anywhere along the length of the mast or fastened to the platform on top with 2-inch on center 1/2-inch bolt pattern. A ladder and special safety "crawling" equipment is used to access the mast. Endeavor's bow is often fully submerged in foul weather and takes significant waves even in good weather. Scientific equipment must be built and mounted to withstand these extremes.

Endeavor's main mast is 70m above the waterline at the top. The mast has platforms at 10m, 14m, and 17m where lightweight scientific equipment can be mounted. There is no deck bolt pattern anywhere on the main mast which should be taken into consideration for mounting. Ship's 120VAC power and network jacks are available in limited locations along the mast.

Both the main mast and the bow mast are inaccessible with the ship's crane. Equipment must be hand loaded. Long cable lengths are needed for both the main mast and bow mast in order to reach the onboard laboratories, which is a common problem.

## Berthing

With the exception of the O1 deck science stateroom and the Captain's cabin, all other quarters are located below the Main deck. Rooms are numbered beginning from the forward end of the ship, even numbers to port and odd numbers to starboard. Due to Covid-19 restrictions, the maximum science party complement is reduced to 14 plus the Marine Technicians. This number is dependent on gender balance such that no individual is forced into a mixed gender accommodation.

## Stateroom Amenities

All quarters are air-conditioned. A room thermostat controls a duct heater that adjusts the room temperature to the personal preference of the inhabitants.

All quarters are equipped with a sink, drawers, a closet and towel rack for each occupant as well as Ethernet access.

Rooms 7, 11 and 12 have private showers and heads. Other rooms share head/showers in the passageway.

The O1 deck science stateroom has a private shower with a head located next to the room.

### **Berthing Assignments**

The Chief Scientist assigns science party berths. A berthing diagram is provided on the UNOLS / URI cruise planning website. When the berthing assignments have been completed, this diagram is posted on the bulletin board at the entrance to the ladder in the aft end of the main lab.

There are six rooms set aside for the science party as follows:

<b>Room #</b>	<b>Head/Shower</b>
7	Private
10	Shared
11	Private
12	Private
13	Shared
01 Deck	Shared /Private

### **Stateroom Policies**

Noise must be kept to a minimum in the berthing area as crew and scientific party members can be sleeping at any time of the day due to their watch schedules.

Science party members should use the aft ladder to access the science party berthing area.

Room occupants may not tape, nail or screw directly to the room bulkheads or furniture. Bulletin boards are provided in all rooms.

Rooms should not be locked at sea for safety reasons. The Chief Mate has keys for locking of rooms while in port.

Stateroom air ducts must not be blocked as this disturbs the balance of the entire HVAC system. If you cannot achieve a comfortable room temperature, contact one of the ship's engineers.

## **Shipboard Services**

### **Navigation Equipment**

Data from most of the shipboard navigation equipment are routinely logged at 1, 60, and 600 second intervals. Raw data in NMEA 0183 serial and UDP format are available in real time in all areas of the vessel.

#### **GPS:**

Northstar 952 DGPS/WAAS receiver: A color, charting, 12-channel GPS receiver with built in dual channel radiobeacon differential receiver and satellite (WAAS) differential receiver.

Furuno GP-90D DGPS/WAAS receiver: A color, charting, 12-channel GPS receiver with built in dual channel radiobeacon differential receiver and satellite (WAAS) differential receiver.

Garmin GPSMap 741 is a newer model 32-channel GPS/GLONASS and WAAS differential receiver. It has a 7" touchscreen display with pinch to zoom technology and a built in chart plotter.

**Ship's Heading:**

Two (2) Sperry Marine MK 37 gyro compasses: These units are equipped with repeaters on the bridge, bridge wings, and other critical locations on the vessel. They also provide heading information to the radars, electronic charting system, ADCP and the autopilot. Both synchro (1X L-L) and digital NMEA 0183 format outputs are available from both compasses.

Ashtech ABX-Two and Advanced Navigation Spatial Dual attitude determination GPS receivers: Provide precise real-time heading, pitch and roll of the vessel. Primarily used as a source of heading data for the ADCPs. Data are additionally available via RS-232 and UDP in NMEA 0183 format.

**Speed Log:**

Furuno: Dual axis Doppler speed log provides speed through the water. This equipment can also provide speed over the bottom and depth information to 600 feet of water depth.

**Radar:**

One Raytheon Synapsis x-band radar and one Raytheon Synapsis s-band radar. Both provide ARPA outputs for up to 70 simultaneous targets.

**Radio Direction Finder (RDF):**

Simrad Taiyo TD-L 1630: Operates in the marine HF and VHF bands (110 to 170 MHz in 5 kHz steps).

**NAVTEX:**

Furuno NX-500: Automated medium frequency (518 kHz) receiver for direct printing of navigational and meteorological warnings and forecasts, as well as urgent marine safety information to ships.

**Electronic Chart Display System (ECS):**

Nobeltec TimeZero Trident: Vector based 3-D chart plotting software.

**Communication**

The call sign for Endeavor is WCE-5063 (Whiskey-Charlie-Echo 5063)

**High Frequency Radios:**

Harris RF3200 - 2,000 Watt PEP, 1000 Watt AM-CW radio capable of worldwide communication using single sideband modulation within the 2MHz to 30MHz band. It is programmable for simplex or half-duplex communications and is equipped for SITOR (packet radio) RF modem capability.

ICOM IC-M700 - 150 Watt, 2MHz to 30Mhz single side band radio that operates from the ship's 12-volt battery power supply for emergency voice communications.

**VHF/FM Radios:**

ICOM IC-M126DSC - 25 Watt radio capable of communication on all US and international VHF marine channels. It is fitted with Digital Selective Calling (DSC) class C. VHF/FM radios are normally used for short range ship to ship and harbor communications.

ICOM IC-M100 - 25 Watt radio capable of communication on all US and international VHF marine channels.

Several hand-held - 5-Watt radios allowing convenient communication aboard ship and with small boats. Water resistant cases are available for these radios.

Simrad/Taiyo automatic VHF direction finder

### Electrical

AC electrical power is generated by one or two of three diesel driven generators and distributed through a main switchboard. Two of the generators have 300 kW capacities and the third is 175 kW. Special electrical requirements should be brought to the attention of the Lead Marine Technician as early as possible.

#### **Uninterruptable Clean Power:**

AC power for scientific purposes is provided by two 7 kVA uninterruptable supplies and is distributed at 120 VAC/60Hz throughout all laboratory spaces. There is an additional 5 kVA unit located on the bridge supplying power to communication and navigation equipment, computer systems as well as suitable temporary equipment placed in that area. Each of these systems is fed from a separate 480-volt transformer to provide superior isolation. Clean power duplex outlets and outlet strips are identified by a "Clean Power" prefix on the identification plate. Laboratory outlets are ground fault protected. Loads such as motors, refrigerator units, heaters, and the like should not be plugged into "Clean Power" outlets.

#### **Normal Ship's Power:**

Regular ship's power is 60Hz and distributed at 120 VAC, 240 VAC single phase and 480 VAC three phase and are available throughout the vessel. This service is not isolated or protected. The ship's engineers have special plugs required to use the 240 and 480 VAC services. They will be provided as required along with assistance in connecting and testing of the hookup.

Care must be taken to avoid any grounds. Remember that ship's power differs from city power in that there is NO GROUNDED NEUTRAL! Please check with an engineer or technician if there is any question! We may be able to supply suitable isolation transformers if we are notified in advance.

Foreign scientists bringing equipment designed for 50Hz should bring a sufficient number of adapters and plugs to use Endeavor's electrical service.

### Salt Water

#### **Salt Water Supply to Laboratories**

##### **Uncontaminated Supply:**

Twenty-five gallons per minute is available from an intake located in the starboard sea chest, 48 feet from the bow. Seawater passes through a steel shut-off valve to a non-metallic pump. 1" PVC pipe to 1" PVC valves located in the Wet lab, 01 lab and on the 01 deck supply a constant flow for devices such as incubators.

The water in the Wet lab flows through a debubbler to a low-pressure manifold suitable for supplying flow through instruments. Consult with the Lead Marine Technician for the best arrangement for your uncontaminated seawater needs.

**General Salt Water Supply:**

The Wet lab and working decks also provide access to saltwater from the ship's general service system.

**Compressed Air**

Ship's service compressed air is available throughout the labs and deck areas. The Marine Technician or ship's engineers can direct you to the closest outlet. If pressures lower than the system's 120 psi are needed, the science party must supply a pressure regulator.

**Small Boats**

Northwind: Extreme 18 aluminum RHIB, 18ft, 90 hp Yamaha 4 stroke, max capacity 6-8 persons, knotmeter, VHF, GPS, 12vdc aux.

**Scientific Instrumentation**

**CTD:**

Our CTDs are from Sea-Bird Electronics (SBE), use modular sensors and are equipped with SBE 5 pump(s). Data are normally collected and processed with Sea Bird's Seasoft software. We have two SBE 911+ CTDs in our inventory and a SBE 25 Sealogger.

SBE 911+ CTD: High quality ducted/pumped system with digiquartz pressure sensor and dual temperature and conductivity sensors. 6800-meter capability and data rate of 24 scans per second.

SBE 25 Sealogger Ducted/pumped system with internal data recording or sending data "up the wire". 6800-meter capability and selectable data rate up to 8 scans per second.

Endeavor does not deploy CTDs energized. [See our safety policy](#) for more information.

**CTD Sensor inventory:**

Temperature -- SBE model 3 (6800M maximum depth)

Conductivity -- SBE model 4 (6800M maximum depth)

Dissolved Oxygen -- SBE model 43 (6800M maximum depth)

PAR/SPAR -- Biospherical Instruments models QSP200L/QSR-240 (2000M maximum depth)

Fluorometer -- Wet Labs WETStar flow through (500M maximum depth)

Fluorometer -- Wet Labs flash lamp, ex. SeaTech (3000M maximum depth)

Transmissometer -- Wet Labs C-Star 25-cm (5000M maximum depth)

Sonar Altimeter -- Benthos model PSA-916 (6000M maximum depth)



### **CTD frames with water sampling carousels: SBE model 32**

Two 12 bottle frame (12-10 liter bottles or 6-30 liter bottles)

Two 24 bottle frames (24-10 liter bottles or 12-30 liter bottles)

### **Niskin bottles and water samplers**

All bottles are fitted with red silicone o-rings

10 liter external spring, bottle-closing, GO model 1010X and Ocean Test Equipment

10 liter internal spring, bottle-closing, GO model 1010

30 liter internal spring, bottle closing, Ocean Test Equipment

### **ADCP:**

The transducers are mounted at ~5 meters depth. Ship's position is provided by GPS, ship's heading is provided by the ship's steering gyrocompass as well as an attitude determining Ashtech ADU2 and Magellan ADU5 GPS systems.

RDI Ocean Surveyor (75kHz) Data acquisition with University of Hawaii's UHDAS running on a Ubuntu Linux machine.

RDI Workhorse Mariner (300 kHz) Data acquisition with University of Hawaii's UHDAS running on a Ubuntu Linux machine.

### **MOCNESS:**

BESS 1 m<sup>2</sup> Multiple Opening Closing Net Environmental Sampling System. Sensor inventory:

Temperature -- SBE model 3 (6800M maximum depth)

Conductivity -- SBE model 4 (6800M maximum depth)

Dissolved Oxygen – SBE model 43 (6800M and 7000M maximum depth)

Fluorometer -- Wet Labs flash lamp, ex. SeaTech (3000M maximum depth)

Transmissometer -- SeaTech 25-cm (5000M maximum depth)

Sonar altimeter

### **Underway, along track data**

Routine logging and display of navigation, meteorology and sea surface data. Real time distribution via serial RS-232 and TCP/IP. Logging is done with NOAA's SCS (Scientific Computer System) program at intervals of 1 second or less.

### **Air Temperature and Relative Humidity:**

R.M. Young model 41372VC with gill multi-plate radiation shield

Pilot house roof, 10.3 meters above waterline

Temperature: 1000 ohm platinum RTD, accuracy is  $\pm 0.3^\circ \text{C}$  at  $0^\circ \text{C}$

Humidity: Capacitive Polymer, accuracy is 3% from 0 to 100% humidity

**Barometric Pressure:**

R.M. Young model 61201

Main deck, aft of main lab, 3.5 meters above waterline

Accuracy is  $\pm 1.0$  mB; range is 800 to 1100 mB

**Wind Speed and Direction:**

Two R.M. Young model 5103

Upper mast platform, port and starboard, 18.4 meters above waterline

Speed accuracy is  $\pm 0.3$  m/s; range is 0 to 60 m/s

Direction accuracy is  $\pm 3^\circ$

**Precipitation - last hour, last 24 hours:**

R.M. Young model 50202, heated

02 Deck, aft of pilot house, 6.2 meters above waterline

Accuracy is  $\pm 1$  mm, threshold is 1 mm

**Solar Radiation - Short Wave:**

Eppley PSP (Precision Spectral Pyranometer)

Top of crane cab, 8.0 meters above waterline

Temperature dependence:  $\pm 1\%$ ,  $-20^\circ$  to  $40^\circ$  C

Linearity:  $\pm 0.5\%$ , 0 to 2800 watts/m<sup>2</sup>

Sensitivity  $\sim 9$  microvolts per watt/m<sup>2</sup>

**Solar Radiation - Long Wave:**

Eppley PIR (Precision Infrared Radiometer)

Top of crane cab, 8.0 meters above waterline

Temperature dependence:  $\pm 2\%$ ,  $-20^\circ$  to  $40^\circ$  C

Linearity:  $\pm 1\%$ , 0 to 700 watts/m<sup>2</sup>

Sensitivity  $\sim 4$  microvolts per watt/m<sup>2</sup>

**Sea Surface Temperature:** Two RTD probes, one below the keel at 5 meters, the other pressed to the hull inside the ship at one meter. SBE 3 digital thermometer

**Sea Surface Salinity:**

SBE 21 SEACAT Thermosalinograph (TSG)

SBE 45 MicroTSG

**Fluorometry:**

Turner Designs 10-AU-005 field fluorometer set up for discrete samples.

**Navigation - position, course and speed made good:**

Two GPS receivers; one differential GPS and two WAAS receivers.

**Vessel heading:**

Two gyrocompasses and an attitude determining Ashtech ADU2 and Magellan ADU5 GPS receiver systems.

**XBT:**

Sippican hand and deck-mounted launchers with MK21/USB Recording System. Compatible with Lockheed Martin Sippican XBT, XSV, and XCTD probes. Note: XBT probes are always supplied by the PI for their cruise.

**Bathymetry:**

Knudsen 320BR and 3260 dual frequency echosounders.

Simultaneous operation at 3.5 and 12 kHz

For 3.5 kHz - array of 12 transducers EdgeTech model KT216 wide band (~5m depth)

For 12 kHz - EDO UQN model 323C transducer (~5m depth)

Sub bottom profiling

Built-in digitizers

Correlation processing

Video and/or graphic recorder display

Data logging produces ASCII files and/or binary image files, and/or SEG Y files.

Real-time bottom depth via serial RS-232 in NMEA0183 format

**Miscellany**

**Pingers:**

Williams 12kHz, 3 available

### **Radio receivers and direction finders:**

Tayo VHF radio direction finder (RDF) (110-170 MHz)

### **Deionized water:**

Milli-Q Academic system

Milli-Q Reference system

### **Computers and Networking**

Endeavor is equipped with a PC based shipboard data acquisition system. This system performs all the functions of a conventional SAIL loop, but has many enhancements that permit averaging of analog parameters and more rapid processing of navigational data. Technical development, maintenance and operation of the SSCS system are the responsibility of the Marine Technician Group. We are constantly looking to improve our shipboard data collection capabilities, and welcome any suggestions for improvements to the system or questions regarding connection to particular instruments.

### **Data Collected:**

Basic Suite - navigational instruments (Differential GPS receivers, Speed Log, Gyrocompass), analog parameters (wind speed/ direction - Port and Starboard sensors, sea surface temperature - well (5M) and hull (1M), sea surface salinity, sea surface fluorometry, long and short wave pyroheliometers, relative humidity, barometric pressure.)

### **Displays and Outputs:**

Real-time video monitors in the dry lab and wet lab, update once per minute. Real-time CCTV of winch and deck operations is available throughout the vessel. Permanent monitors on bridge, electronics and main labs. System data is available to users via an Ethernet connection to LAN through FTP transfer.

### **Internet**

This section is incomplete.

### **Data Access**

This section is incomplete.

### **Cold Storage**

The ship's refrigerated and frozen food storage areas cannot be used for the storage of chemicals, samples, or specimens. Portable refrigerators, chest freezers and an ultra-low temperature freezer are available in the Endeavor's shared-use equipment pool and will be loaded on board in advance of the cruise. Requests for refrigerated and frozen storage of samples should be made known in the pre-cruise questionnaire.

### **Refrigerators and freezers:**

Revco Laboratory Refrigerator: 10 cu. ft.

Chest freezers: 10 cu. ft. and 3 cu. ft.

Revco -85 °C ultra-low temperature freezer: 10 cu. ft.

Thermo Scientific -86 °C chest freezer: 3 cu. Ft.

Various household appliance refrigerators with freezer units on top of refrigerated storage.

## Fume Hoods

This section is incomplete.

## Diving

PIs planning diving operations should consult with the Lead Marine Technician and the URI Diving Safety Officer, well in advance of their cruise to ensure there is enough time to obtain required authorization to conduct diving from Endeavor. A dedicated diving van is available. Small boats are available, as needed, to support diving operations.

# **Over the Side Handling Equipment**

## Winches, Wire and Cables

All overboard handling equipment is optimized for working over the starboard side and stern. Aft deck bulwarks are bolted in place and sections can be removed to facilitate launching/recovering and stowage of equipment. PIs planning to bring their overboarding equipment must be familiar with and follow the UNOLS Rope and Cable Safe Working Load Standards outlined in Appendix A of the UNOLS Research Vessel Safety Standards.

There are three permanently installed winches, each driven from a central hydraulic power system. This system allows any two of the three available winches to operate at the same time. Two 150 hp electrically driven variable displacement hydraulic pumps with electrical stroke valves make up the core of the central hydraulic system. The system is designed to provide fine control of the wire at any combination of speed and tension.

The winch controls are located in a climate controlled operating station on the starboard side, 01 deck, overlooking the work area below the J-frame. The station is equipped with CCTV monitors that show winches and over the side operations. Each winch is instrumented with a Measurement Technology NW line control system providing wire out, wire speed and wire tension data. This data is logged by computer and may be viewed in real time throughout the vessel on computers connected to the shipboard Ethernet and running a Windows operating system. There is also a dedicated remote readout in the main lab and on the bridge.

### **Winch 1:**

This is dual drum traction head winch. This winch is equipped with 4 channel mercury slip rings and is the normal choice for CTD operations. It operates over the starboard side J-frame only. Spooled with more than 8,000 meters of .322 UNOLS three-conductor EM cable (SWL=5000 pounds).

### **Winch 2:**

This Markey DUSH-5 hydrographic winch is currently spooled with 9,500 meters of 0.322" UNOLS three-conductor EM cable (SWL = 4,500 pounds) and is mounted on a turntable and can be led to either the starboard side J-frame or the stern A-frame. It is equipped with 4 channel mercury slip rings and is the normal choice for MOCNESS or other over the stern operations.

### **Winch 3:**

A SMATCO traction head trawl winch. This winch is spooled with 9,000 meters of 9/16" 3x19 wire rope (SWL = 14,300 pounds). The winch is equipped with 28.8" root diameter Nylatron sheaves. This winch can only be operated through the stern A-frame.

### **Portable Winches:**

TSE mooring winch

## **Cranes Frames and Booms**

### **Frames:**

Two permanently installed hydraulic frames facilitate equipment deployment. Both are fitted with pad eyes for hanging blocks or other equipment.

### **Starboard Side J-Frame:**

Safe working load (SWL) 22,400 lbs. static, 5000 lbs. dynamic

Clearance height is 21'; clearance of frame to pad eye is 7' 3"

Swings from 4' inboard at vertical to 6' 2" outboard full extension

Top mounted floodlight, ladder and top access with grab rail

Normally used with winches 1 and 2 or science-supplied equipment.

### **Fantail A-Frame:**

Safe working load (SWL) 18,200 lbs. static, 12,000 lbs. dynamic

Clearance height is 20'; maximum clearance width is 11'

Swings from 9'6" inboard at vertical to 5'6" outboard full extension

Top mounted floodlights, ladder rungs up both legs, top grab rail

Can be used with winches 2 and 3

### **Main Crane:**

An Aurora telescoping boom marine crane is mounted at the centerline, after end of the O1 deck. The telescoping boom extends to 70 feet, covers all sections of open fantail and will extend 15 feet over the stern at 0 degrees elevation.

Dockside Capacity is 20,000 lbs. maximum lift with minimum extension (35 ft.)

Use of the crane at sea is highly dependent on sea state and is at best 50% of dockside capacities.

### Other Equipment:

#### **Knuckle Boom Crane:**

A portable Heila HLRM 19-35 fully folding crane is available and is normally mounted on the main deck, starboard side. Maximum reach is 30 feet. Capacity is 3,500 lbs up to 20 feet, 2,000 lbs beyond 20 feet.

#### **Air Tuggers:**

two (2) units are available with deck mounting stands, 1100 lbs. SWL

#### **Rosette/CTD Boom:**

Extends by means of a hydraulic ram a total distance of 6', from inside the wet lab through a 6' wide by 8' high double watertight door, to a point 3'6" outside of the door. The boom is fitted with a lifting wire operated by a hydraulic winch. Lifting capacity (SWL) is 2,200 lbs. at maximum extension. Normally used to bring the CTD into the Wet lab to avoid freezing, heavy weather or sample contamination.

#### **Capstan:**

Endeavor's capstan is a vertical 18" diameter drum from New England Trawler. The capstan is portable and bolts to the deck bolt pattern on the fantail. The capstan is rated to 7,800 lbs. at 10 MPM (slow speed) and 3,900 lbs. at 20 MPM (fast speed). The capstan is not rated for continuous duty.

# Cruise Planning

A scientific expedition onboard a research ship is commonly known as a cruise, which can give the wrong impression. A research cruise is an exceedingly busy and complex exercise, requiring detailed planning and preparation. For many scientists, the cruise will be the culmination of several years of effort, and they have high expectations. Endeavor operates around the clock. Transition time while swapping between different sampling systems has to be minimized. The technical manning, working decks and labs all have to be individually organized and optimized for each cruise. Additionally, once the ship is on-site, going back to port because something has been forgotten isn't really an option.

Preparing for a successful cruise on Endeavor takes many months of careful planning. The planning process should begin as soon as possible and a minimum of 120 days before the cruise loading period. There are many logistical issues and equipment preparations which need to be identified well in advance. The most successful research cruises are typically the ones that are planned early, with an awareness of both the big picture and the fine details.

## Vessel Scheduling

Vessel scheduling is a joint effort among the various UNOLS operator institutions, with the following objectives: cost effective and efficient utilization of oceanographic facilities and access to these facilities by the oceanographic community. The Director of Marine Operations is responsible for ship scheduling at URI. Requests are submitted on line to the UNOLS Ship Time Request and Scheduling System: [https://strs.unols.org/Public/diu\\_login.aspx](https://strs.unols.org/Public/diu_login.aspx) at the time of proposal submission to the federal agencies approximately one year before the expected cruise. The PI must be careful to account for ALL vessel operational days required. When away from homeport, Mobilization, Demobilization, To/From Transit, and Science days are considered "Operating Days."

The scheduling process begins in the late spring with most schedules finalized at the annual meeting of the UNOLS Ship Scheduling Committee hosted by the National Science Foundation each September. Cruises are scheduled according to compatibility in terms of inclusive dates, area of operation, and equipment requirements. Transit times for Endeavor are calculated using a ship speed of 10 knots.

### Definitions

**OPERATING DAYS** – Operating days are defined as all days away from the vessel's homeport in an operating status incident to the scientific mission. This includes days in other ports for the purpose of fueling, changing personnel, mobilization, demobilization, and transit time. This also includes day of arrival and day of departure from homeport. Operating days do not include maintenance days, lay days, or any days in homeport except unusual cases to meet a specific cruise need. The Operating Day is the basic unit for ship time funding and support.

**SEA DAYS** – Sea days are defined as all days actually at sea incident to the scientific mission. This includes the day of arrival and day of departure as well as transit time, time anchored, hove to, and drifting. This does not include anchorages in a port of call or non-science days in foreign ports.



### *Ship Time Request*

UNOLS, with support from NSF, ONR, NOAA, MMS, USGS and USCG, has developed an updated Ship Time Request and Scheduling system that continues to provide online resources for requesting the use of UNOLS research vessels and submersibles, Coast Guard icebreakers and other related facilities. This new system is database driven and uses standard web browsers for user input.

### *Ship Time and Other Costs*

The NSF and ONR funding includes ship time and marine technician support for funded investigators. At times a PI may need to cover internet and telephone charges when the ship is outside the satellite footprint that provides Internet connectivity. Other specialized costs, such as a shore crane rental or additional ship's agents fees, are paid by the PI, especially when the Endeavor is loading or unloading away from her homeport of Narragansett, Rhode Island. Special equipment requirements should be identified in the ship time request and early in the cruise planning process so arrangements can be made and funds requested from the federal agencies if necessary.

Investigators funded by agencies other than NSF and ONR should include ship time and technician support charges in their proposal budget. Ship time and technician day rates can be obtained from the Director of Marine Operations.

The cost for ship time is based on a ship-operating day. This is defined as any day away from the dock in Narragansett, RI, the Endeavor's homeport, including the day of departure and the day of arrival. Any part of a day away from homeport is considered a full operating day and is charged as such. Typically the Endeavor sails at 0900 hours local time from Narragansett on the day of departure. Endeavor returns on the last day of the cruise during daylight hours, depending on the time of the flood tide. Taking this information into consideration, please budget enough days for transits to and from the study site, required Mobilization and Demobilization days, and days at sea to conduct proposed science operations. Departure and arrival times when Endeavor is away from Narragansett should be arranged in consultation with the ship's Master and Chief Scientist prior to departing on the cruise.

## ***Duties and Responsibilities***

A successful research cruise aboard Endeavor requires a lot of careful preparation and hard work. Every person, whether on shore or the ship has an important role in the cruise planning process.

### *Scientists and Science Party Members*

Scientists and other members of the science party should read this cruise planning guide thoroughly. Sections of particular importance are the Safety and Standard Procedures and Life Aboard Endeavor. Scientists working on board Endeavor should coordinate with their PI/Chief Scientist to submit all required forms and documents in a timely manner. Scientists should also remember to enter the information for whatever hazardous substances they are bringing in the online cruise planning application at <http://techserv.gso.uri.edu/Cruise>. Additionally an up to date hard copy MSDS for hazardous substances shall be presented to the Marine Technician when you arrive on the ship.

### Marine Superintendent

The Marine Superintendent is the primary contact for ship operations, scheduling, foreign clearances and fiscal management of the operation. The Marine Superintendent is also responsible for the day-to-day operation and maintenance of the Endeavor.

### Lead Marine Technician

The Lead Marine Technician is responsible science support, instrumentation and equipment, logistics and shipping.

### Marine Technician

The Marine Technician is responsible for the set up and operation of shipboard equipment such as the Shipboard Scientific Computer system, bathymetric sonar systems, ADCP, CTD and other ship supplied shared-use systems. The Technician will assist with operation and instruction in the use of shared-use equipment and with scientific operations as time permits. The Technician will also provide assistance with investigators equipment as time and resources permit, but cannot be responsible for use or maintenance of project specific equipment. Duty hours for Marine Technicians at sea will generally be set in consultation with the Chief Scientist, bearing in mind that his primary duties generally make him most effective with a flexible watch.

If you will have specific duties for the Marine Technician outside those listed above, please discuss it with the Science Officer before the cruise date. Duties outside the normally defined duties of the Technician may require funding from the PI's project funding for overtime worked beyond the Technician's 8-hour day. Any questions or problems, which arise at sea, should be directed to the Marine Technician aboard. The Marine Technicians are here to help you have a successful cruise. Please feel free to call with any questions or problems.

### Chief Scientist

#### **Pre Cruise**

The Chief Scientist will be contacted by the Marine Superintendent and Lead Marine Technician months ahead of the scheduled cruise to begin the planning process. An email invitation to Endeavor's online cruise planning application will be sent around the same time. The Chief Scientist is urged to start the online cruise plan and keep adding information as it becomes available up to the cruise departure. This online tool is reviewed by all the key personnel on Endeavor's crew as well as shore support personnel.

#### **At Sea**

The Chief Scientist is responsible for supervising the scientific party on board in matters of organization, administration, safety, compliance with shipboard regulations, and for performance of the scientific work. Assignment of a Chief Scientist is the responsibility of the PI of the primary project for whom the vessel is scheduled. The individual selected should be of faculty, senior staff, or a senior graduate student with previous experience conducting oceanographic research.

Conduct a pre-cruise briefing for the ship's Master and key crewmembers to cover cruise objectives and procedures, and to amplify the cruise plan. Ideally such a briefing should take place prior to departure, but if this is not feasible then prior to arrival in the work area. Our experience has shown such a briefing

promotes harmony and a more successful cruise by clarifying potential misinterpretations and identifying problem areas and conflicts before they arise. It is now a required element of our Safety Management System to conform to new International Safety Management regulations.

Make berthing assignments for the science party and post a berthing diagram on the bulletin board in the Main lab.

Exchange information daily with the ship's Master concerning progress of the scientific work, the need for changed procedures or additional assistance, changes required in the cruise plan, or other actions necessary to ensure success of the scientific mission and smooth operation of the vessel.

Consult often with the assigned Marine Technician concerning progress of work, problems and questions.

Require that members of the scientific party be aware of and comply with shipboard policies as outlined in the following sections below. Personally ensure all members of the scientific party are aware that use of illegal drugs or alcoholic beverage consumption and possession is prohibited. Any form of sexual harassment or other inappropriate conduct aboard Endeavor is strictly forbidden.

Ensure that all members of the science party have gotten their sea legs after a day or two. Make sure no one is confined to their bunk, especially without taking liquids. If someone is severely seasick this needs to be brought to the attention of the Master so the situation can be monitored.

Supervise the daily work and safety of the scientific party. Ensure safe working conditions and avoid hazards. Instruct science personnel in the day-to-day operational plan and procedures.

If ancillary projects are scheduled during the cruise, the authority and responsibilities of the Chief Scientist extend to the personnel assigned to those projects.

### **Post Cruise**

The Chief Scientist will be sent a Post-Cruise Reporting Package after the cruise. This package will include a cover letter explaining what the post-cruise obligations are, when they are due, and where to send them. The forms include the NODC Cruise Summary Report detailing the observations/samples collected by the program; the NSF/UNOLS Ship Utilization Data Report; and directions to file a UNOLS Post-Cruise Assessment (PCA) by the Chief Scientist via the Internet. It is desired that the Chief Scientist complete the PCA within 30 days of the completion of science operations. The Endeavor's Captain and Marine Technician also file a UNOLS PCA for each cruise.

## **Online Cruise Planning**

Once a Ship Time Request has been assigned to Endeavor, the Lead Marine Technician will create a new Cruise Profile on the UNOLS Cruise Planning website at <https://cruiseplanner.unols.org>. The Chief Scientist or designated individual will then be invited to administrate the Cruise Profile via an invitation email with an alphanumeric key.

The Chief Scientist is encouraged to invite other personnel to view or edit the Cruise Profile by inviting them to join the cruise on the Cruise Profile home page, or by providing them with one of the alphanumeric keys on the Cruise Profile home page. Two keys are provided; one for “Users” and one for “Administrators.”

“**Administrators**” can *edit* all sections of the Cruise Profile.

“**Users**” can *view* all sections of the Cruise Profile. They can also add themselves to the participant roster, upload documents and photos, and declare hazardous materials they plan to bring along.

Because of security concerns involved with ship schedule and operations, a secure account will need to be created by users who wish to view and edit the Cruise Profile.

### General Information

The General Information section of the Endeavor online Cruise Profile provides the important header information for the cruise. Most of this information is imported and synced with the UNOLS Ship Time Request. The Chief Scientist is asked to provide a detailed project description which will be displayed to the public on the Where is Endeavor Now page.

### Personnel Roster

The Personnel Roster section of the Endeavor online Cruise Profile identifies who will be going to sea on Endeavor. Individuals may add themselves to the roster if they have been invited to the cruise. The personnel roster will identify special dietary needs of the cruise participants so that Endeavor can plan the menu and order appropriate stores. Cruise participants are required to provide a University of Rhode Island Consent and Release form and are encouraged to provide a medical profile form in case there is a medical emergency while onboard.

### Questionnaire

The Questionnaire section of the Endeavor online Cruise Profile identifies the operations and equipment which are needed for the cruise. The questionnaire should be filled out in a timely manner and should be as detailed as possible. Endeavor’s marine technicians and crew rely on the questionnaire very heavily while planning and preparing for your cruise.

### Uploads

The Uploads section of the Endeavor online Cruise Profile provides a tool for sharing information, photos, and documentation between the science personnel and Endeavor’s crew. Photographs or detailed drawings of large or unusual equipment are particularly useful for planning how to use Endeavor’s deck and lab space.

### Hazardous Materials

The Hazardous Materials section of the Endeavor online cruise profile allows anyone with access to the cruise the opportunity to declare hazardous substances they are bringing along. This helps Endeavor’s crew be prepared for especially dangerous substances as they might affect personnel safety and firefighting.

## **Pre-cruise Meeting**

Principal Investigators, the Chief Scientist, and important personnel should arrange a visit to the ship with the Marine Office prior to the cruise. This often proves invaluable for both the ship and the science party to identify problems before they occur. Every cruise has its own unique challenges often pertaining to the location and mounting of equipment and the location of vessel services. No amount of photos or text can replace seeing the ship in person.

## **Science Party Personnel**

### **Special Note about Photographers and Journalists**

Observers and Photographers must receive pre-approval to sail from the URI Director of Marine Operations.

### **Minors**

Approval by parents or guardians is required for any member of the science party who is under 18 years of age to participate on a cruise. Final approval rests with the Director of Marine Operations.

### **Credentials (TWIC, Passport)**

For cruises that will load and unload at U.S. ports other than Narragansett, it is strongly advised that science party members obtain a Transportation Worker Identification Credential (TWIC) card.

Information about obtaining a TWIC card can be found at:

[http://www.tsa.gov/what\\_we\\_do/layers/twic/index.shtm](http://www.tsa.gov/what_we_do/layers/twic/index.shtm).

Science party members are responsible for applying and paying for their TWIC card. Persons without a TWIC card must be escorted in secure facilities. Please note that TWIC is only required for U.S. ports and does not apply to foreign ports.

## **Foreign Clearance**

When a cruise is planned in the territorial waters of another nation, the UNOLS ship time request should list the country or countries for which a clearance is required. The PI is now required to contact the Office of Ocean and Polar Affairs (OPA) at the U.S. Department of State

(<http://www.state.gov/g/oes/ocns/opa/rvc/index.htm>). In accordance with the Law of the Sea Convention, coastal States have the right to regulate and authorize marine scientific research in these maritime areas and, in all instances; consent of the coastal State is required. All applications for consent must be submitted to OPA via the [Research Application Tracking System](#), an online data management system designed to improve the transparency and efficiency of OPA's implementation of the marine

scientific research consent regime. The PI must notify the Director of Marine Operations when the submission to RATS is completed since the operating institution needs to verify the information for the process to proceed. The submission of the application should take place at least six months before the beginning of the cruise. The U.S. Department of State OPA sends notification of approval to the PI and Director of Marine Operations. A copy of the clearance will be given to Endeavor'S Master. Post-cruise reporting requirements are the responsibility of the PI. Please note that the clearance authorization document may include the requirement for observers to be embarked on Endeavor. All costs for foreign observers to sail on the ship as a condition for receiving authorization to conduct marine research in the territorial waters of a foreign nation are the responsibility of the PI. Please be aware that some countries require retrieval of mooring anchors at the end of project. This should be taken into account during project planning.

There is no guarantee in advance that authorization for marine scientific research in foreign maritime area will be approved and by law, Endeavor will not enter a foreign coastal state's EEZ to conduct ANY oceanographic observations unless previous authorization has been received from the U.S. Department of State.

All crewmembers, marine technicians and scientists participating on cruises that will make port stops outside the U.S. or its territories are required to bring valid passports with them. It is prudent to carry a passport if the ship is traveling to areas where an unplanned stop in a foreign country could take place. When applicable, visas must be obtained and are the responsibility of members of the science party. The GSO Marine Office can assist if a specific country's requirements are not known.

Vaccinations may be required for some countries. Maintenance of immunity against tetanus is required of crewmembers and it is strongly recommended for science party members. Possession of an International Vaccination Certificate is highly desirable.

Crewmembers and scientists can be subject to customs searches by U.S. and foreign officials. Individuals are responsible for declaring to U.S. Customs on reentry all items purchased abroad. Personal items, particularly those of high value or foreign manufacture, should be registered with U.S. Customs before departure.

While in foreign ports crewmembers and scientists should conduct themselves in a proper manner and in accordance with all local laws.

Upon completion of foreign cruises in which a clearance to conduct marine research was obtained, a preliminary cruise report must be submitted within 30 days after completion of the cruise as outlined in the clearance approval received from the State Department. The report should report any of the obligations or conditions required of the research as specified by the host country on the clearance approval form. Please note the preliminary report need not be as detailed as a final report and its primary purpose is to notify the State Department and the host country that the planned work has been completed. Failure to comply with reporting requirements jeopardizes future clearance applications for all researchers using the academic fleet and will be reported to the program manager responsible for funding the program.

# **Logistics, Loading, Shipping and Port Services**

## **Loading and Port Services in Narragansett, RI**

The ship support facility at Narragansett has space set-aside for the reception, storage and staging of advance shipments of cruise equipment. Advance staging requirements should be coordinated with the Lead Marine Technician well ahead of cruise departure. For your and our protection, we are not responsible for unannounced or unaccompanied shipments. Forklifts with a variety of lifting capacities, up to 20,000 pounds, are available. Shipments should be sent to:

University of Rhode Island  
Graduate School of Oceanography  
215 South Ferry Road  
Narragansett, RI 02882-1197  
ATTN: Lead Marine Technician  
Endeavor Cruise EN-XXX

PIs are responsible for ALL SHIPPING COSTS to and from Narragansett. PIs are also responsible for making all arrangements (including paperwork) for equipment and cruise gear to be trucked or shipped back to their home institution at the end of the cruise. Ship's crew and technicians will assist loading gear onto trucks or taking gear to GSO Shipping and Receiving for return shipment but they are not responsible for packing, securing or labeling boxes for shipment.

In Narragansett the ship will normally be available for loading on the day following arrival from the previous cruise and will be offloaded on the day of return. Cruise preparations requiring more port time, vessel services, or crew assistance will require careful planning to prevent conflicts. Routine vessel maintenance and logistics can interfere with laboratory setup. To minimize disruptions, please consult with the Director of Marine Operations and Lead Marine Technician well in advance so we can plan for your loading and setup requirements. Crew rest must be provided for during in port periods. When in port the crew typically works from 8 a.m. to 4 p.m. SOLAS rest requirements dictate that loading extending beyond 4 p.m. will not permit the ship to depart until the next day.

## **Loading and Port Services at Ports other than Narragansett, RI**

PI's are responsible for all shipping costs including, but not limited to, packaging, customs clearance out of the U.S., transportation to the port where it will be loaded, customs clearance into the port, storage and delivery to the ship's berth is the responsibility of the PI. It is also the responsibility of the PI to make the necessary arrangements for payment of these services. In addition, PI's are responsible for ALL SHIPPING COSTS and any staging costs at departure and termination ports other than Narragansett. This includes all cranes, containers, additional agent's fees, storage, forklifts, trucking, etc.

A Ship's agent will be selected by the Director of Marine Operations to provide logistical support to the ship. Once the selection is complete, contact information will be sent to the PI to distribute to the science party. The PI and science party are free to select any agent to assist with the activities noted above. If the PI and science party elect to use the ship's agent, separate arrangements for direct payment of

additional services is required. If the PI and science party need assistance from their agent with shore accommodations before and after your cruise, transportation to and from the airport or to and from the ship, this should be included in your service arrangement with the agent.

During port stops, at the beginning and end of your cruise, the ship's agent is instructed not to charge any services performed for the science party to the ship's account unless authorized by Endeavor's Master. Times may arise when the science party (which has not set up an account with the agent for pre- and post-cruise services) has a need to use these services. In these cases, the Chief Scientist or their representative needs to clear this with the Master and fill out and sign the request form so we can cross reference charges against the agent's bill. The scientist will be invoiced for these charges.

Once the ship has arrived at its assigned berth and the science gear is on the pier ready to be loaded, the ship takes over responsibility for loading. Once equipment is back on the pier at the end of a cruise, it becomes the responsibility of the scientists to arrange and pay for all activities until it reaches its final destination. Lack of planning for return shipments of scientific equipment and samples can result in serious problems in foreign ports. Please prepare accordingly in advance.

If samples and equipment, including containers, are to be shipped at the end of a cruise, please make all arrangements before the cruise commences so the agent is prepared to handle your request.

It is mandatory that manifests and Bills of Lading for any shipment to Endeavor be forwarded to the Lead Marine Technician. They will be passed along to the ship's Master. The PI should also provide a copy to the agent the science party is using. If these documents are not provided, delivery of shipments may be delayed. International Ship and Port Security regulations prevent the ship's Master from accepting deliveries unless these documents are in hand.

All mail and/or shipments should be sent to the appropriate agent's address. The address label should include the name of the person, the name of the ship, the name of the agent and the agent's address. All mail should be marked: "please hold for the arrival of the R/V Endeavor." Failure to follow these instructions may result in a delay in the delivery of your shipments and impact the ability of the science party to conduct science.

### *Arrival and Departure of Scientific Personnel*

In homeport (Narragansett), the science party will normally move aboard the vessel on the afternoon or evening prior to departure. Meals will be served commencing with breakfast on the morning of departure. The science party will normally disembark the vessel by 4 p.m. on the day of arrival. Dinner will not be available.

When prearranged with the Master and Director of Marine Operations, the science party and their support personnel may berth on the vessel if science berths are available. The same procedure will apply to any post-cruise unloading operations extending beyond the day of arrival. Meals will generally not be available in homeport.

In ports other than Narragansett (two or more days in port) the embarking science party may move aboard the vessel after noon on the first mobilization day prior to the cruise. The disembarking party must have cleaned and vacated their cabins before noon or their last demobilization day. Only one science party, a maximum of 17 people, can be accommodated for meals at any given time. Persons



sailing on two consecutive cruises or legs may berth and eat on the ship between cruises if the regular crew is on board. If the crew is off the ship, then science berthing and meals will not be available. Special circumstances will be accommodated by the Master and Director of Marine Operations whenever possible.

### *Directions to the URI Graduate School of Oceanography*

#### **From the West Via Rt. 1**

Take Interstate 95N to Exit 92 in Conn. Right turn after leaving expressway, then about 1.5 mi. on Conn. 2 to 78. Take Rt. 78E (a barrier divides the roadway) 4 mi. to Rt. 1N in Westerly, R.I. Go left on Rt. 1N for about 27 mi. to intersection of Rts. 1 and 138. Make a right onto Bridgetown Rd. Continue to next traffic signal (intersection of Bridgetown Road and Scenic 1A). Cross intersection onto South Ferry Rd. Continue past South Ferry Industrial Park on the right and South Ferry Church on the left. Entrance to campus is on the right.

#### **Via Rt. 138:**

Take Interstate 95N to exit 3A in R.I. (Kingston exit). Turn right off exit ramp onto Rt. 138E (Kingstown Rd.). Continue on 138 (passing the University's Kingston Campus on the left) to Rt. 1 and cross the junction onto Bridgetown Rd. Continue on Bridgetown Rd. to South Ferry Rd. Continue past South Ferry Industrial Park on the right and South Ferry Church on the left. Entrance to campus is on the right.

#### **From the North:**

Take Interstate 95 south toward N.Y. and Narragansett. (From T.F. Green Airport, follow the Airport Connector signs to join 95S at exit 13.) Continue on 95S to Exit 9 and exit in left lane off highway onto Rt. 4S. Continue to Rt. 1 and the junction of Rt. 138W. Take a left at the tower onto Bridgetown Rd. Continue to South Ferry Rd. Continue past South Ferry Industrial Park on the right and South Ferry Church on the left. Entrance to campus is on the right.

#### **From the East:**

Take Rt. 195 to 24S to 138W. Cross Newport (toll bridge) and Jamestown Bridges. Take the first exit after the bridge onto Rt. 1A toward Narragansett. Continue south to the first traffic signal and make a left onto South Ferry Rd. Continue past South Ferry Industrial Park on the right and South Ferry Church on the left. Entrance to campus is on the right.

# **Safety and Standard Procedures**

## **Safety Standards and Training Manual**

### UNOLS Research Vessel Safety Standards

The UNOLS Research Vessel Safety Standards (RVSS) are the standards for the operation of oceanographic research vessels owned, operated or chartered by members of the University-National Oceanographic Laboratory System (UNOLS). As a UNOLS member, the University of Rhode Island uses the RVSS as a foundation for safety policy and procedures aboard the R/V Endeavor. The RVSS can be downloaded here:

<https://www.unols.org/document/research-vessel-safety-standards-rvss-tenth-edition-july-2015>

### RVOC Safety Training Manual - Chapter 1

Oceanographic research vessels are unique; they are away from homeport for extended periods and often operate independently in remote areas, well away from shipping lanes. For all these reasons, safety should be a personal issue with each crew member and researcher on board. To this end, the RVOC Safety Training Manual is comprised of fourteen chapters written to provide guidance and heighten awareness of both personal safety and vessel safety for seamen and scientists aboard UNOLS vessels.

The Chapter 1 Research Party Supplement contains selected material from the *Safety Training Manual* and is oriented towards the research party member. The supplement is an overview of the entire manual and has been prepared to provide researchers and new crew members with an overview of important safety information that they may digest in a relatively short period of time. This supplement can be downloaded here:

<https://www.unols.org/document/rvoc-safety-training-manual-chapter-1-research-party-supplement>

## **Hazardous Materials**

The PI must ensure that the Lead Marine Technician receives notification of the planned use of chemicals, gasoline, compressed gases, cryogenic materials and explosives well in advance of the cruise. The information provided should include the chemical name, common name, type of compound, and its classification. Some materials are restricted as to where they may be used or stored on the vessel and advance warning of arrival will simplify cruise loading. PIs should ensure that persons using or responsible for hazardous materials review the requirements for their use at sea as presented in chapter 9 of the UNOLS Research Vessel Safety Standards (RVSS) <https://www.unols.org/document/research-vessel-safety-standards-rvss-2009>. Prior to the cruise departing, the PI will complete a hazardous material inventory sheet and give it to the marine technician. An example of this sheet is provided at the end of this section. The PI is responsible to oversee the following:

For each hazardous material brought aboard, please provide:

- Well labeled containers for use and waste. The labels must include, at a minimum
  - Full and common names of the material inside the container
  - Name, institution, email and phone of the responsible person
  - An appropriate hazard warning that identifies the primary hazard(s)
    - Physical, i.e., water-reactive, flammable or explosive
    - Health, i.e., carcinogen, corrosive, or irritant
- Plans for removal of waste and unused portions after the cruise
- Equipment and materials for normal use, spills and accidents
- An MSDS for each material
- A short statement or bullet list, in plain English, explaining
  - Why the material is hazardous
  - Standard precautions
  - Incompatibilities with other materials
- Protocols for
  - Use
  - Storage
  - Waste storage
  - Spill cleanup and mitigation after an accident

The Material Safety Data Sheet (MSDS) for each hazardous material brought on board shall be given to the Marine Technician assigned to the cruise. The PI is responsible for ensuring the proper packing, shipping, and disposal of all hazardous materials, waste materials, and empty containers associated with their project. Transportation and disposal must be carried out in accordance with federal, state, and local regulations. In no case will this responsibility be passed to the ship's crew, Marine Technicians, or URI/GSO personnel unless arrangements are made with the Lead Marine Technician in advance.

Federal Occupational Health and Safety (OSHA) rules require chemical manufacturers, importers, and distributors to label containers of hazardous chemicals. Persons bringing hazardous materials aboard are required to keep these labels intact on the containers. In addition, laboratory supervisors must brief all persons on board who work with, or who could be exposed to the materials as follows:

- Applicable laboratory rules
- Potential physical and health hazards
- Appropriate personal protective equipment
- How to handle spills, accidents and injuries

### **Compressed Gas Cylinders**

Gas cylinders must always be secured in an upright position, and with the valve cover installed when not in use. The ship has a variety of brackets and straps that are available for securing single cylinders and double compressed gas cylinders. The Marine Technician can provide this equipment.

### **Bulk Storage**

A hazardous material locker (about 2.5'w x 2'd x 4'h) is permanently mounted next to the trawl winch for the storage of large quantities of chemicals. Only daily working amounts of chemicals should be kept inside the ship. Incompatible chemicals must not be stored together. This information is readily available on the MSDS.

### **Explosives:**

The Director of Marine Operations must authorize any use of explosives aboard Endeavor in advance of the cruise. The UNOLS Research Vessel Safety Standards for explosives will be strictly followed at a minimum:

Since USCG rules dealing with explosives are stringent and strictly enforced, the Port Captain, USCG Office should be contacted at least 8 weeks prior to the departure date of the cruise. In addition, Fish and Game Departments, local and state law enforcement agencies, the fire department etc., should be contacted for information on possible restrictions, truck routing, spot assistance and inspections, etc.

Special hazards to submarine operations and navigation are presented by the use of explosives, sonic emitters, or towed devices (as well as instrumented moorings). The National-Geospatial Agency (NGA) (Formerly the National Imagery and Mapping Agency) has agreed to disseminate information concerning underwater hazards as part of the Notice to Mariner system. See chapter 4 in the RVSS (Operations) for details on reporting these hazards.

Rules for carrying, stowage, and labeling of explosives on board inspected ships are given in Subchapter U, CFR. All UNOLS research vessels should follow these rules. In addition, 49 CFR 176 prescribes requirements for all vessels carrying hazardous materials in the domestic waters of the United States, with some exceptions. Magazines and storage areas should be properly labeled and inspected daily, and safety precautions should be posted. (46 CFR 194.05, 194.10, 196.80, 196.85)."

## ***Lithium and Lithium Ion Batteries***

There are two types of lithium batteries in general use

Primary or non-rechargeable lithium cells: These cells have lithium metal or lithium compounds as the anode and are non-rechargeable. Many different primary cell chemistries are available. Lithium metal is water reactive and forms hydrogen and lithium hydroxide in aqueous solution. The lithium in primary cells is hermetically sealed to avoid this exothermic reaction. Lithium's melting point is 357°F.

Secondary or rechargeable lithium-ion cells: These cells do not contain metallic lithium and are rechargeable. Secondary cells contain lithium intercalation anode materials, where the lithium ion moves from the anode to the cathode during discharge and from the cathode to the anode when charging.

All Primary lithium batteries and noncommercial mass produced lithium ion batteries must be declared in the hazardous materials section of the pre cruise planning web site. Please do not include lithium ion batteries used in laptop computers, cordless drills, cell phones and similar devices.

The full policy for lithium battery use aboard R/V Endeavor can be found here:

<http://techserv.gso.uri.edu/Library>

# **Radioactive Materials**

The use of radioisotopes and electron capture detectors (e.g., gas chromatographs) aboard Endeavor requires authorization by the URI Radiation Safety Committee. The use of radioactive materials aboard Endeavor follows procedures specified by the URI Radiation Safety Officer (RSO) and the RSO at the PIs home institution, which at a minimum will adhere to the UNOLS Research Vessel Safety Standards.

Initial contact regarding the use of radioactive materials on a cruise is made to the Lead Marine Technician through submission of the pre-cruise questionnaire. The Lead Marine Technician informs the URI RSO of the PIs request to use radioactive materials onboard Endeavor. The URI RSO contacts the PI and initiates the application process. Application to use radioactive materials on board the vessel should be made as far in advance of the cruise as possible to facilitate review of the application by the URI Radiation Safety Committee and to allow time for shipments and paperwork.

PIs that make an application must have authorization to use the equivalent type and amount of isotope material at their home institution. This will be verified by telephone and written contact with the home institution's RSO. When all requirements have been satisfied, the RSO will issue a permit to the PI to possess and use the material on board the vessel. At that time shipment of material will be made to the RI Nuclear Science Center and the Lead Marine Technician will receive authorization to allow radioactive material on board the vessel.

## **Shipping and Disposal of Radioactive Materials**

Arrangements to remove radioactive waste and any unused radioactive material must be in place prior to the departure of the cruise. The discharge of any radioactive material at sea is strictly prohibited. No radioactive material will be accepted for disposal at or by URI/GSO. The PI must either arrange to return unused materials and waste to their home institution or to a licensed facility. Shipments must be made or cleared by the URI RSO. All necessary papers must be filled out and all DOT and international regulations adhered to.

For cruises beginning and terminating at Narragansett the URI RSO will oversee the receipt and departure of shipments and document and review third party swab tests of the vessel. In the case of cruises beginning or ending at foreign ports, arrangements must be made between the PIs institution and URI for a RSO from a recognized nearby institution to undertake this responsibility.

In the event that the PI leaves the vessel prior to the ultimate destination of the radioactive material, the authority for oversight on the vessel will be undertaken by a member of the GSO Marine Technician group but *only if arrangements have been made in advance*. The PI must reassume responsibility for the ultimate disposal of the material when the vessel returns to the offloading port.

## **Laboratory Space for Radioisotope Use**

All shipboard radioisotope use and storage, other than sealed sources mounted within instruments, must be inside a radioisotope or rad. van. Absolutely no radioactive material is permitted on board in locations other than inside this van. Advance notice is required for studies with radioactive materials so arrangements can be made with the UNOLS Van Pool to have a rad. van and liquid scintillation counter

on board for the cruise. PIs should bring a decontamination kit with them and use disposable shoe covers when working inside the van to reduce the possibility of contaminating the inside of the ship. If a spill occurs it must be reported to the Marine Technician immediately and decontamination procedures begun. Failure to report spills will result in NSF being notified by the Lead Marine Technician.

## **Use of Unmanned Aerial Systems (UAS) or Flying Drones**

Permission to use a UAS or flying drone aboard R/V Endeavor will be in accordance with [The University of Rhode Island's UAS Policy](#) and applicable sections of [UNOLS RVSS chapter 19](#).

Use of a UAS or flying drone will always be at the captain's discretion on a case by case basis. In preparation for the best possible usage outcome, please provide the following well in advance of the cruise.

- Description and specifications of the aircraft and support systems
- Description of adherence to The University of Rhode Island UAS policy
- Description of adherence to inspection and certification standards as per section 19.4.1 of the RVSS
- Statement specifying the type(s) of airspace in which the drone will be operating and a description of adherence to all applicable regulations pertinent to that airspace as per section 19.4.2 of the RVSS
- Description of credentials, training and experience of the operator(s)
- Written procedures that include
  - Pre-flight preparations
  - The fly, no-fly decision
  - Take off
  - Ship handling during flight
  - Permitted operations aboard ship during flight
  - Landing
  - Loss of communication with aircraft

All of this information, organized and sufficiently detailed to demonstrate operator competence and a high regard for safety, will help the captain evaluate the risks and make fly, no-fly decisions. Procedures can and should be modified, with the captain's approval, during the cruise as experience and situations dictate.

## **Medical Capabilities at Sea**

The ship does not carry a medical doctor, however all crewmembers aboard the vessel are trained in advanced or basic first aid and CPR. The vessel has personnel with advanced Medical certifications (Medical Person In Charge – MPIC) aboard. The ship maintains a medical chest under control of the Master, which contains emergency supplies and some commonly used over the counter medications. If a member of the science party has a known medical problem, they should bring an adequate supply of

prescription medication, and note the particulars on the medical profile submitted to the Marine Office. Individuals, together with the P.I., should judge health and medical problems to identify their potential liability posed to the scientific mission. In case of a serious injury or medical emergency, all scientific work will be terminated and the ship moved as necessary to simplify evacuation of the patient to the nearest competent medical facility.

UNOLS has contracted with Medical Advisory Systems, Inc. (MAS) for a complete medical support program for Endeavor while at sea. MAS is organized and equipped to provide direct medical advice to subscriber ships at sea by satellite or radio. A physician is on duty around-the-clock in a Medical Telecommunications Response Center (MTRC). By using a protocols manual, a medical situation can be diagnosed, treatment prescribed and a rational decision reached on when, where and how to evacuate a patient, if necessary. MTRC personnel clearly understand the need to allow a ship to complete its mission without jeopardizing the health of a patient. The MTRC will continually monitor a case with a ship and its operator until final resolution, including hospitalization in the closest port and repatriation if hospitalized outside of the U.S.

Users of any UNOLS vessel, particularly those participating in long, distant-water voyages are asked to fill out a medical profile. This form will be sent to MAS and the Captain will keep a copy for the duration of the cruise. The contents of the form will be kept confidential and the form destroyed at the end of the voyage. The medical profile form could help save a life in case of a serious injury or illness. The Marine Office will provide forms and procedures.

## **Medical and Accident Insurance**

Insurance is not provided for persons on board who are not employed by the State of Rhode Island. Individuals not covered by their respective institution's liability insurance (worker's compensation) should make provisions for this type of coverage. Each member of the science party must complete a medical profile form and a consent and release form prior to departure. These forms are available online at: <http://techserv.gso.uri.edu/Forms.asp>. The medical information is kept in strict confidentiality and both forms are destroyed at the end of each cruise.

## **Emergency Procedures**

Endeavor's general alarm bell and whistle is used to alert everyone on the vessel that an emergency situation exists. When the general alarm sounds the science party should muster in the main lab or on the upper deck aft of the bridge as announced and await instructions. Wear a jacket, trousers, cap, shoes and your life jacket. Life jackets are located in all the berthing spaces and are also available in the lab for people on watch. The Chief Scientist should take attendance to make sure that all members of the science party are accounted for. The attendance report should be given to the Marine Technician as soon as possible, especially if anyone is missing from the muster.

### **Fire and Emergency**

Fire and Emergency are announced by continuous sounding of the ship's alarm bells and whistle for ten seconds. Emergency breathing apparatuses are available in every stateroom to assist in vacating.

### Abandon Ship

Abandon Ship is announced by seven short and one long blast on alarm bells and whistle. Do not break out survival suits until so instructed. The station card at your bunk has your life raft assignment

### Man Overboard

In the event of a man overboard, call out "MAN OVERBOARD" loudly, throw a life ring and notify the Deck Watch Officer immediately. It is imperative that visual contact be kept on the person overboard at all times.

### Engineering Emergency

Engineering emergencies are announced by a continuous buzzer and horn for ten seconds. An Engineering emergency does not require any immediate action of scientists on board except to stay out of the way of responding personnel.

## **Personal Protective Equipment (PPE)**

Endeavor follows all appropriate OSHA and US Coast Guard guidelines for Personal Protective Equipment (PPE) at sea including:

### **Shoes**

Open-toed shoes or sandals are hazardous to the wearer on board ship and are not allowed when working on deck or in the laboratories. The recommended minimum requirement on duty is a completely enclosed shoe (toe and heel) of any material. Persons working on deck, with moving equipment, should consider safety shoes (reinforced toe).

### **Safety Glasses and Face Protection**

Eye and face protection must be provided whenever necessary to protect against chemical, environmental, and radiological hazards or mechanical irritants. Safety glasses are available on board the ship. Special safety glasses and face protection appropriate for the science work performed are the responsibility of the participant.

### **Life Jackets/Work Vests**

A flotation work vest is required at all times while working on any of Endeavor's weather decks. Work vests and safety jackets are provided by Endeavor.

### **Hard Hats**

Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.

## **Special Dietary and Medical Requirements**

If anyone in the science party has a special dietary and/or medical requirement that needs to be accommodated during the cruise, please make this information known to the Master and Director of Marine Operations.



## ***Deploying Powered Equipment***

Electrically powered equipment will be deployed and recovered de-energized in accordance with [UNOLS RVSS Safety bulletin 2014-1](#). Equipment that must be deployed energized should be brought to the attention of the Lead Marine Technician prior to the cruise for a thorough risk assessment.

# Life Aboard Endeavor

## General

At the beginning of the cruise the First Mate will give an extensive safety briefing to orient everyone in the science party. Many items discussed are critical to your survival in the event of a catastrophe, so pay close attention to the material presented and ask questions on any topics that you do not fully understand. The UNOLS Safety video will be shown at this briefing. This video is also available for viewing at any time during the cruise.

- The Master is responsible for the overall safety of the vessel, crew and science party.
- The ship's officers and crew will assist you in carrying out your operations safely.
- The Chief Scientist is responsible for safety in the labs. Follow their instructions.
- Get permission from the Deck Officer on watch before putting anything over the side.

The following general policies are deliberately brief, but should be kept in mind at all times:

- A ship is an unsteady platform. Keep one hand free to hold onto a railing or stanchion. Tie down portable equipment securely. Do not climb the mast, or top of the pilothouse without receiving permission from the ship's officer on watch.
- A person should not go out on deck alone at night or in rough weather. If you must, first alert the bridge, assign someone to watch you from inside the ship, and if conditions warrant, use a tether.
- Hard hats and life vests are required when working on deck.
- Most fires can be prevented. Smoking is not allowed inside the ship. Empty trash cans frequently. Learn the location of fire extinguishers and fire alarm pull stations in your areas. Sound the alarm and notify the Watch Officer immediately if you are the first on the scene of a fire.

## **Items Provided for You**

A number of personal items are provided by Endeavor's stewards at the start of your cruise. There is also a limited supply of general use items and equipment which may be used if you've forgotten your own. Your Welcome Aboard kit will be placed in your stateroom, and contains the following items.

### **Bedding**

- Two bed sheets- one fitted and one flat
- Two pillows with fresh pillow cases
- Two cotton/polyester blankets

### **Towels**

- Two bath towels
- Two washcloths
- One hand towel

### **Miscellaneous**

- One pair of work gloves
- One bar of soap
- Foam ear plugs

## **What You Should Bring**

Scientists working aboard Endeavor should consider bringing following.

### **Personal Items**

- Toiletries
- Sunscreen
- Prescription medications

### **Clothing Items**

- Flip-flops for use in the shower
- Rain gear
- Waterproof rubber boots (Wellington boots)
- Closed toed shoes (required)
- Work boots or safety shoes (highly recommended)
- Climate appropriate clothing
- Lots of extra socks

### **Additional Recommended Items**

- Snacks or food for those with special dietary needs
- Bedding for those who prefer to use their own
- Sunglasses (polarized lenses work well on the water)

# **Shipboard Amenities**

While long hours and hard work are part of any seagoing cruise, there is always some free time. Endeavor has a number of amenities to make life at sea a bit more comfortable.

## **Laundry**

A washer and dryer plus laundry soap and bleach are available for use on board. Individuals should bring an adequate supply of clothing. A seven-day supply is recommended for longer cruises. Be considerate and do not leave laundry in the washer or dryer after their cycles are complete. Because freshwater is a precious commodity on ships, only wash full loads. During rough weather the laundry may be secured to protect the machines. Clean the lint trap in the dryer after removing your clothes.

## **Library/Lounge**

The ship's library is located on the main deck just aft of the galley. In the library you will find an impressive collection of books, VHS, and DVD movies. There is also a small selection of board games and playing cards. Books should always be returned where they were found at the end of the cruise. The lounge has a single couch and three chairs. As with all common spaces, cleanliness is appreciated. The library/lounge is not to be used for sleeping.

## **Satellite Television**

A 32" television is located in the Galley for use between meal hours. Endeavor has DirecTV satellite television service when operating within ~200 nautical miles of the continental United States.

## **Digital Media**

Endeavor has an impressive collection of VHS and DVD movies and television shows located in the library/lounge area. Please return all movies upon your departure.

A dedicated media server is also available on the ship's network which can be accessed over the ship's Wi-Fi.

## **Satellite Internet**

Endeavor has multiple at sea internet services which may or may not be available depending on the geographic location of your cruise. Personal internet use is limited to light browsing, email, and text-only communication (no video). Internet via satellite is considerably slower than what you may be accustomed to on land. You can expect download speeds of roughly 1Mbps and upload speeds of 500Kbps; the rough equivalent of DSL internet on shore.

Internet at sea is still a very new, very limited, and very costly technology. Priority internet access is given to use which is directly related to the cruise objectives.

## **Gym/Workout Area**

A small workout area is available in Endeavor's after storage hold area. The workout area has a selection of free weights, a multi-station, and an exercise bike. It should be noted that space for science equipment has priority and this equipment may be removed at any time if space is needed.

## **Working at Sea**

Science time at sea is very valuable. Endeavor is capable of working 24 hours a day in a myriad of weather conditions. Long and odd hours are a way of life at sea and should be expected. As with all scientific research vessels, Endeavor prides itself on adaptability. Science missions vary widely and you will see that Endeavor is a very capable and configurable ship.

While working aboard Endeavor there are a few core policies. Some of these policies are mentioned elsewhere in this manual, but warrant further mention:

The Master is responsible for the overall safety of the vessel, crew and science party.

The ship's officers and crew will assist you in carrying out your operations safely.

The Chief Scientist is responsible for safety in the labs. Follow their instructions.

Get permission from the Deck Officer on watch before putting anything over the side.

A ship is an unsteady platform. Keep one hand free to hold onto a railing or stanchion. Tie down portable equipment securely. Do not climb the mast, or top of the pilothouse without receiving permission from the ship's officer on watch.

A person should not go out on deck alone at night or in rough weather. If you must, first alert the bridge, assign someone to watch you from inside the ship, and if conditions warrant, use a tether.

Hard hats and life vests are required when working on deck.

Closed toed shoes are mandatory. Safety shoes are preferred.

## **Food and Drink**

Endeavor's chefs and stewards take great pride in making a great variety of high quality meals. You will never be hungry on the RV Endeavor! Fresh fruits, vegetables, and perishable stores are loaded as close to sailing time as possible to ensure the freshest possible food.

Endeavor is happy to accommodate those with restrictive diets such as vegetarians, vegans, and those with food allergies. Please bring your dietary restrictions to the attention of your Chief Scientist or cruise planner.

The mess hall will be cleared one hour before and after a meal for cleaning and preparation. In special cases, prior arrangements for limited late meals can be made with the steward. The seating area cannot accommodate a full complement of crew and science party members at one time. It is therefore important that you be cognizant of people waiting for a place to sit and eat their meal.

## Meals and Snacks

Endeavor provides three meals a day at the following times:

Breakfast	0730-0830
Lunch	1130-1230
Dinner	1700-1800

These times are strictly observed so scientists should plan their work accordingly.

## Snacks

Endeavor's chefs always try to have freshly made snacks available between meals. The type and variety are always changing, but in general you will find one or more of the following:

- Fresh pastry or cookies
- Fruit salad
- Muffins
- Fresh bread
- Various hors-d'oeuvres

In addition to the freshly made items there are also always available:

- Cereals and oatmeal
- Snack bars
- Yogurt
- Packaged cookies
- Candy
- Crackers

## Beverages

Endeavor loads a variety of beverages for your enjoyment. The stock is always rotating, but in general you will find the following basic items:

- Coffee (very important to life at sea!)
- Black, grey, green, and herbal tea
- Milk (usually whole milk)
- Creamer
- Various fruit juices
- Hot cocoa
- Canned sodas and seltzers

## Dining Etiquette

The close proximity of persons eating in the mess hall requires a high standard of neatness and cleanliness. The following are not acceptable and will not be tolerated:

- Coveralls

- Clothes smelling of fish, chemicals, diesel oil, etc.
- Dirty or ragged clothing
- Open-toed shoes or sandals
- Extremely abbreviated shorts and shirts
- Gym attire

Food service may be denied if a person is not clean and neatly attired.

There may be times when it is necessary to use the mess hall tables for scientific paper work. To prevent any misunderstanding arising from such occasional use, consult with the steward. Please do not interfere with meal preparation and clean up or to monopolize facilities such that they are not available for normal use by others. The mess area also contains the TV and VCR and will often be dark during the showing of a video.

## **Other Considerations for Life at Sea**

### **Appropriate Use of Labs and Public Areas**

The public areas and amenities are for the use of all onboard; therefore these spaces are not to be used for napping or sleeping.

Long hours and rotating sleep schedules are a way of life on a ship. Try to be as quiet as possible while working in lab spaces above the berthing area. Sound passes very easily through the steel hull of a ship!

### **Fresh Water**

The ship's supply is adequate, but limited. Endeavor carries 8,600 gallons of fresh water in tanks. The water maker is capable of producing 1,900 gallons of fresh water each day by distilling seawater and/or reverse osmosis. Under ideal conditions water production can be pushed to 2,600 gallons per day for limited periods. Although this may seem like a lot, consumption normally runs about 1000 gallons per day with a full crew and scientific complement. The indiscriminate use of water in the laboratory or by a few persons soaking in the shower could lead to consuming water faster than it can be produced. Should the water maker fail, the amount of water left in the ship's tanks would determine how long the vessel would remain at sea. Even with stringent water rationing this would be but a few days at best. Do not waste water. Report any leaks or dripping taps to the duty engineer at once!

### **Personal Appliances**

Personal coffee pots, kettles, espresso machines, hot plates, etc. for food or drink preparation are not permitted at any time.

### **Cleanliness**

Clean up as you go in the labs, your stateroom and the mess hall. Other people must live and work in the same space and are not responsible for cleaning up after others. Cleaning supplies are available onboard.

### **Tours**

Science party members are welcome on the bridge or in the engine room. Please ask permission of the Deck Watch Officer or the duty engineer before entering either of these spaces. If you need help or tools, notify the Marine Technician or engineer on watch through the science watch chief.

### **Personal Items and Medications**

Individuals should bring all personal toilet articles and medications they normally require for travel, including seasickness medication if needed. Bed linens, soap and towels are provided. Items for food preparation, such as coffeepots or hot plates are not permitted in the berthing area. A microwave and toaster oven is available in the mess area for heating food.

### **Special Dietary and/or Medical Requirements**

If anyone in the science party has a special dietary and/or medical requirement that needs to be accommodated during the cruise, please make this information known to the Chief Scientist or Cruise Administrator well in advance of the cruise.



# Policies

## *Prohibited Items*

### *Alcohol/Illegal Drugs*

The possession or use of alcoholic beverages, narcotics, marijuana, or other controlled substances is PROHIBITED. URI/GSO supports the "Zero Tolerance" of the U.S. Customs Service, against illegal drug possession aboard vessels and strict enforcement of existing policies. Discovery by Customs or the U.S. Coast Guard of any amount of illegal drugs on a vessel may lead to the seizure of the vessel and the arrest, where appropriate, of those on board. Crewmembers and the Master are alert to the use and possession on board of prohibited articles. In the case of illegal drugs, the Master is expected to notify federal authorities, terminate the voyage, and proceed directly to a U.S. port. By completing the required Confidential Release and Consent Form, each member of the scientific party agrees not to bring prohibited articles onto the vessel. Any involvement in a serious accident may subject all involved to a drug and alcohol test. Illegal drugs do not include medications, for which you have a doctor's prescription, and are listed on the Medical History Questionnaire.

### *Smoking*

Smoking is not permitted in **any** of the interior spaces of the ship, especially staterooms. Smoking is allowed outside on the decks away from the gasoline and chemical storage lockers.

### *Firearms*

Firearms are not permitted on board.

## *Americans with Disabilities Act (ADA)*

The Americans with Disabilities Act (ADA) recognizes and protects the civil rights of people with disabilities and is modeled after earlier landmark laws prohibiting discrimination on the basis of race and gender. In 2008 UNOLS published the American Disabilities Act (ADA) Guidelines for UNOLS vessels. This report can be downloaded from:

[http://www.unols.org/committees/fic/ADA/ADA\\_Guidelines.html](http://www.unols.org/committees/fic/ADA/ADA_Guidelines.html)

Early in the cruise planning process, the Director of Marine Operations should be made aware if someone with a hearing or visual impairment will be participating on a cruise. We highly recommend that all members of the science party adopt a "buddy system" to increase safety. Some things to consider and discuss early in the cruise planning process include:

### **Safety Guidelines for Disabled Scientists on UNOLS Vessels**

**Safety Drills and Oversight:** These should include specific procedures for impaired members of the science party that would require personnel to abandon the vessel or muster in safe areas of the ship. Procedures should be discussed and rehearsed for donning survival suits and possible deployment of life rafts.

**Overall Safety Considerations for Disabled Scientists:** Safety procedures for disabled scientists should be reviewed and discussed with the Director of Marine Operations prior to the embarkation of a scientific cruise. It is generally a good policy for the disabled scientist to discuss their abilities with the ship's Master and other safety officers among the crew in order that ship's personnel fully understand special requirements in work and emergency situations.

**Rescue Procedures for Disabled Scientists:** Specific rescue procedures should be in place and include abandon ship plans, as well as procedures for addressing special needs of the disabled scientist after abandoning ship.

## **Sexual Harassment**

Shipboard life puts people in close proximity for extended periods. This closeness can sometimes lead to unwanted attention of one person by another. The University of Rhode Island has strict policies that prohibit discrimination and harassment based on sex, religion, age, color, creed, disability and sexual orientation. If anyone in the science party feels that they are the object of any of the above they should immediately report it to the Master.

Please see <http://web.uri.edu/hr/personnel-policies/sexual-harrassment/> for information and forms for filing a formal complaint.

## **Pregnancy Policy**

The full policy for pregnant women sailing aboard R/V Endeavor can be found here:

<http://techserv.gso.uri.edu/Library>

This policy applies to all passengers and crew aboard the R/V Endeavor.

### **Overview**

The University of Rhode Island (URI) Graduate School of Oceanography (GSO) is committed to reasonably accommodating all persons who wish to work and/or travel aboard research vessels operated by the University of Rhode Island. In complying with industry standards, pregnant women are welcome aboard vessels under the following conditions:

1. they are within the first 24 weeks of their pregnancy, and
2. they are medically fit for marine travel (requires a note from a physician prior to boarding).