



**UNITED STATES DEPARTMENT OF COMMERCE**

National Oceanic and Atmospheric Administration  
NOAA Marine and Aviation Operations  
Marine Operations Center  
439 W. York Street  
Norfolk, VA 23510-1114

October 20, 2016

MEMORANDUM FOR: Captain Donn Pratt, NOAA

Master, NOAA Ship *Nancy Foster*

FROM:

*Fox* Captain Scott M. Sirois, NOAA *Scott Sirois*  
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT:

Project Instruction for NF-16-09  
Mid Atlantic Benthic Habitat and Cultural Resource Mapping and  
Characterization Survey to Support Ecosystem Management and  
Ocean Planning

Attached is the final Project Instruction for NF-16-09 Mid Atlantic Benthic Habitat and Cultural Resource Mapping and Characterization Survey to Support Ecosystem Management and Ocean Planning, which is scheduled aboard NOAA Ship *Nancy Foster* during the period of October 24 to November 10, 2016. Of the 18 DAS scheduled for this project, 18 days are funded by a Line Office Allocation. This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to [OpsMgr.MOA@noaa.gov](mailto:OpsMgr.MOA@noaa.gov) at Marine Operations Center-Atlantic.





**UNITED STATES DEPARTMENT OF COMMERCE**

National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Monitor National Marine Sanctuary  
100 Museum Drive  
Newport News, VA 23606

**Project Instructions**

**Date Submitted:** September 9, 2016

**Platform:** NOAA Ship *Nancy Foster*

**Project Number:** NF-16-09 (ONMS)

**Project Title:** Mid Atlantic Benthic Habitat and Cultural Resource Mapping and Characterization Survey to Support Ecosystem Management and Ocean Planning

**Project Dates:** October 24 to November 10, 2016

Prepared by: CASSERLEY.TANE.R.13658784  
27

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ou=OTHER, cn=CASSERLEY.TANE.R.1365878427  
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Tane R. Casserley  
Chief Scientist  
Monitor National Marine Sanctuary

Approved by: ALBERG.DAVID.WILLIAM.11  
54178208

Digitally signed by ALBERG.DAVID.WILLIAM.1154178208  
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David Alberg  
Superintendent  
Monitor National Marine Sanctuary

Approved by: GITTINGS.STEPHEN.R.DR.1365  
823754

Digitally signed by GITTINGS.STEPHEN.R.DR.1365823754  
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John Armor  
Director  
Office of National Marine Sanctuaries

Approved by: [Signature] Dated: 20-OCT-2016

Captain Scott M. Sirois, NOAA  
Commanding Officer  
Marine Operations Center - Atlantic

## I. Overview

### A. Brief Summary and Project Period

The mission of the Office of National Marine Sanctuaries (ONMS) is to conserve, protect, and enhance the biodiversity, ecological integrity, and cultural legacy of specially designated marine protected areas around the world. NOAA has recently given clearance to begin scoping meetings to explore expansion of the Monitor National Marine Sanctuary (MNMS). This project will allow MNMS to inventory and assess resources in the proposed new expansion areas. Data collected in these new areas and within the existing sanctuary is critical to expansion and the completion of the MNMS Condition Report. This project also furthers ONMS and NCCOS goals by providing critical data to support our understanding of essential fish habitat on both naturally occurring and anthropomorphic bottom features on the continental shelf off the mid-Atlantic coast. This project employs new advances in underwater acoustic seafloor mapping technologies that will not only assess the biota of live bottom habitats but also submerged cultural resources such as shipwrecks, that have become essential fish habitats in their current role as artificial reefs. Acoustic survey methods, along with multi-beam mapping provide an efficient method on producing information on fish distribution, areas of high productivity, seafloor features, and cultural resources.

This cruise is the primary tool available to NOAA resource managers for inventorying and characterizing the essential fish habitat and cultural resource sites off of the mid-Atlantic. The data collected during the site characterizations and surveys will support the composition of the draft environmental impact statement towards exploring MNMS boundary expansion, as stated in the MNMS management plan. Field research is a critical component of the characterization, inventory, and documentation of these non-renewable resources.

### B. Days at Sea (DAS)

Of the 18 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 18 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a Medium Operational Tempo.

C. Operating Area (include optional map/figure showing op area)

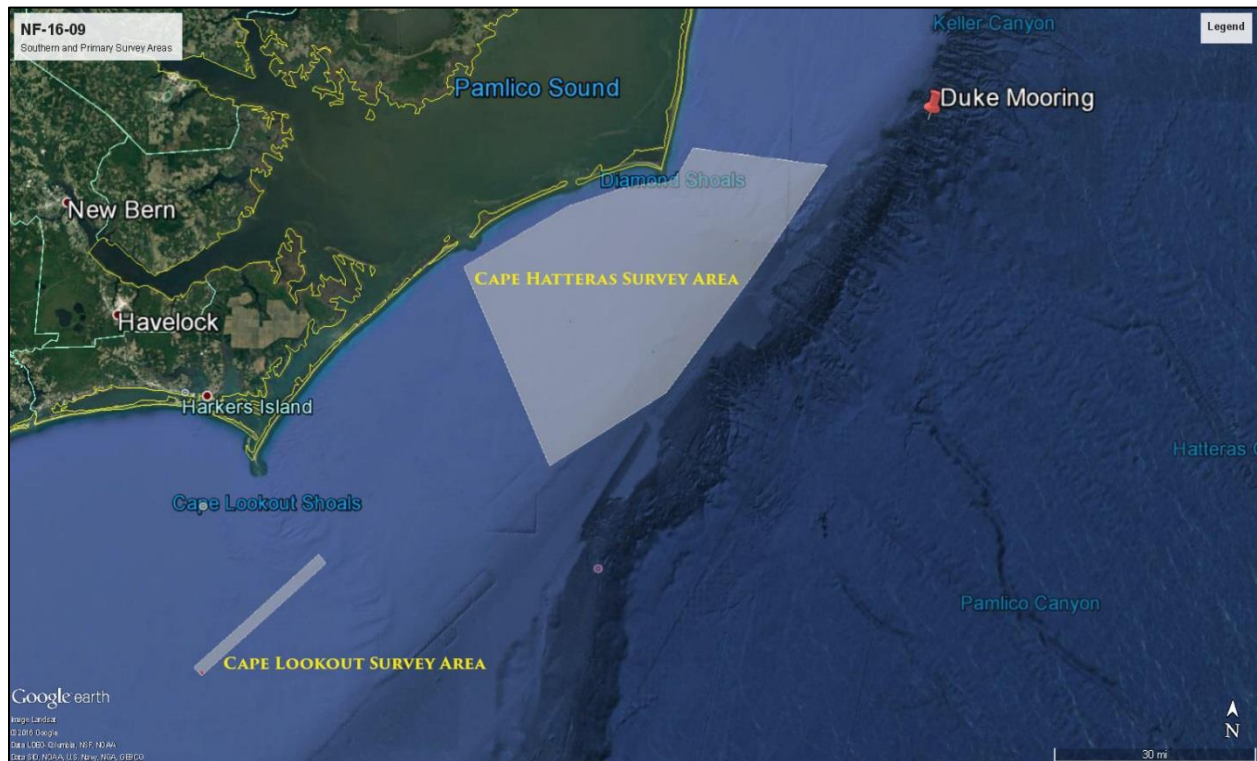


Figure 1. Overall Operating Areas for NF-16-09

The cruise will be in three (3) Legs with 2 science operations Legs.

**Leg 1:** Transit from Charleston, SC, to Morehead City, NC. Pick up Science crew. Proceed to Cape Lookout Survey Area and begin conducting the Seafloor Habitat and Cultural Resource Mapping/Multibeam Survey in the Cape Lookout Survey Area polygon.

**Leg 2:** Seafloor Habitat and Cultural Resource Mapping/Multibeam Survey in the Cape Hatteras Survey Area polygon.

**Leg 3:** Recover a deep water mooring near Cape Hatteras, North Carolina.

D. Summary of Objectives

The objectives of this project are to 1) collect high resolution multibeam data in depths *approximately* 10 to 300 meters so as to continue to characterize seafloor habitats and cultural resources in support of the expansion of MNMS, including hard bottom seafloor habitats, shipwrecks, sand shoals and ridges, and 2) validate seafloor habitat types and shipwrecks using drop cameras from small boats. In addition, this project will include one piggy-back objective: 1) recover a deep water mooring near Cape Hatteras, NC.

E. Participating Institutions

NOAA (MNMS, NCCOS), Student Interns from academic institutions

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Sort the completed table by name (in WORD: Click in the table, select Tab “Layout”, select “Sort” (upper right), select “Date Aboard” and ensure “has header row” is checked .

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Casserley, Tane	Chief Scientist	10/25/16	11/10/16	M	MNMS	US
Taylor, Chris	Co-Chief Scientist	10/25/16	11/10/16	M	NCCOS	US
More scientists	TBD					

G. Administrative

1. Points of Contacts:

Chief Scientist: Tane Casserley, NOAA/NOS/MNMS, 100 Museum Drive, Newport News, VA, 23606, 757-591-7333, [Tane.Casserley@noaa.gov](mailto:Tane.Casserley@noaa.gov)

Co-Chief Scientist: Chris Taylor, NOAA/NOS/NCCOS, 101 Pivers Island Road, Beaufort, NC, 28516, 252-838-0833, [Chris.Taylor@noaa.gov](mailto:Chris.Taylor@noaa.gov)

*Nancy Foster* Operations Officer: LT Linh Nguyen, 1050 Register St., North Charleston, SC, 29405, 843-991-6326, [ops.nancy.foster@noaa.gov](mailto:ops.nancy.foster@noaa.gov)

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

None Required.

## II. Operations

The Chief Scientist is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives and priorities. The Commanding Officer is responsible for ensuring all operations conform to the ship’s accepted practices and procedures.

A. Project Itinerary:

### Leg 1

**24 - 25 October:** NOAA Ship *Nancy Foster* transits from Charleston, SC, to Morehead City, NC.

**25 October:** Morehead City, NC. Science party boards

**26 – 31 October:** Conduct multibeam/hydrographic seafloor surveys in the Cape Lookout Survey Area polygon combined with small boat drop camera operations.

**0000-0800:** Ship conducts multibeam seafloor mapping in priority areas.

**0800-1600:** Small boats conduct drop camera operations at stations provided after interpretation of seafloor mapping products from previous day's survey. Ship continues seafloor mapping operations in priority areas while small boats are conducting drop camera operations, where safety and conditions allow.

**1600-0000:** Ship resumes multibeam seafloor mapping in priority areas.

## **Leg 2**

**31 October:** Ship transits to Cape Hatteras Survey Area and begins multibeam/hydrographic seafloor surveys within the polygon.

**31 October – 7 November:** Conduct multibeam/hydrographic seafloor surveys in the Cape Hatteras Survey Area polygon combined with small boat drop camera operations.

**0000-0800:** Ship conducts multibeam seafloor mapping in priority areas.

**0800-1600:** Small boats conduct drop camera operations at stations provided after interpretation of seafloor mapping products from previous day's survey. Ship continues seafloor mapping operations in priority areas while small boats are conducting drop camera operations, where safety and conditions allow.

**1600-0000:** Ship resumes multibeam seafloor mapping in priority areas.

## **Leg 3**

**7 - 8 November:** Recover deep water mooring near Cape Hatteras, North Carolina.

**8 November:** If the offloading will take more than a few hours, the ship returns to Morehead City, NC and unloads Science party and equipment/recovered mooring. Overnight in Morehead City.

**9 November:** If the offloading will not take more than a few hours, the ship returns to Morehead City, NC, and unloads Science party and equipment/recovered mooring. Ship departs Morehead City, NC.

**9 - 10 November:** Ship transits to Charleston, SC.

B. Staging and Destaging:

Science party and all equipment will be loaded on October 25 in Morehead City, NC. Destaging will occur in Morehead City, NC on November 9.

C. Operations to be Conducted:

**Seafloor mapping: Multibeam sonar and fishery acoustic surveys (Legs 1-2)**

Seafloor mapping will be conducted during day and night operations, during the daytime small boat operations where safety permits on Legs 1 and 2, and when sea conditions do not permit safe small boat operations, seafloor mapping will continue. Survey locations will be determined by the Chief Scientist and provided to the Ship's Survey Department prior to departure and refined during each daily plan. Ship's Survey Department will lead hydrographic multibeam surveys during transits and during Legs 1 and 2. All surveys will use the ship's multibeam sonar (Reson 7125 or Kongsberg EM710) will be used to log bathymetry and backscatter and will be operated by the survey department with assistance from science party. Multibeam will be used to develop specific habitat locations and possible targets to be validated using drop camera (Legs 1 and 2). Survey lines will be developed to ensure greater than 110% bottom coverage and cross lines. Multibeam data will be processed as collected to produce preliminary bathymetry products to select habitat validation stations the following day. Survey lines will be transmitted to survey department and bridge using Hypack. A CTD cast will be used at beginning of each night. Underway CTD system will be used for sound velocity profiles every 4 hours throughout MBES survey operations.

**Drop camera on small boats ground validation (Legs 1-2)**

Drop camera surveys will be used to validate seafloor habitat types and shipwrecks at stations dictated by outcomes from seafloor habitat mapping surveys. Small boats will carry two scientists and coxswain. Small boat will maneuver to drop camera station preloaded into boat GPS. Scientist with assistance from helper will lower small drop camera using down rigger affixed to gunwale of boat. Coxwain will maintain boat in drift while drop camera is lowered to collect imagery of seafloor. Drifts may last 5-10 minutes at each station. Two small boats are required, each with a team to operate drop cameras.

The ship's J-frame may be used to deploy a drop camera to collect images of the seafloor when conditions do not permit small boat operations, or when safe conditions permit use of j-frame while small boat operations are underway. The ship will maneuver to station and establish station keeping using dynamic positioning. The small sea-view camera in a small frame will have a 15 lb. heavy weight attached (total weight about 25 lbs). The drop camera operator will note depth at station and instruct the winch operator to lower the camera frame to just above seafloor. The camera operator may instruct the ship to make small movements using z-drives. After 5 minutes, the camera will be retrieved.

**Mooring Recovery (Leg 3)**

A deep water mooring off Cape Hatteras, North Carolina will be recovered from its position at 35 20.3473N, 74 51.2624W. An acoustic release will be triggered using the 12kHz deep echosounder on the ship or using a lower frequency transmitter hung from a pole affixed to the port side of the ship. The acoustic release will send the mooring components to the surface. The components consist of two Acoustic Doppler Current Profilers (ADCPs), glass balls, and a large (64in diameter) syntactic sphere housing an echosounder and transducers. See Appendix A for details on mooring design, components, wire lengths and deck weights.

D. Dive Plan

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations:

Equipment failure (sonars): Mitigation – at sea repair.

Poor weather: Mitigation – switch from small boats (suspend drop camera) to ship based operations (conduct multibeam operations).

Safety concerns: Mitigation – discuss and review daily operations during safety briefings with ships command each day.

**III. Equipment**

A. Equipment and Capabilities provided by the ship (itemized)

- 1) Hand held radios for communication between bridge, deck and small boats.
- 2) CTD's 1000m depth rating.
- 3) Underway CTD system
- 4) Kongsberg EM 710 and Reson Seabat 7125 multibeam sonars, and Simrad split-beam EK-60 sonars.
- 5) Simrad EK60 splitbeam calibration downriggers and calibration sphere (calibration of EK60 will be determined during cruise based on weather and operations)
- 6) Applanix Pos/MV v.4
- 7) Internet connection and connection to ship's data server for MBES and EK60 processing computers
- 8) Dynamic Positioning System
- 9) One small boats for use with the drop cameras with GPS and depth sounder to confirm depths and locate targets for legs 1 and 2.

B. Equipment and Capabilities provided by the scientists (itemized)

- 1) Three high end laptops / workstations and 4 flat screen monitors, internet connection required
- 2) 6 Tb Data Server
- 3) Laptops for data entry and data management
- 4) 2 drop cameras
- 5) Spools for buoy/mooring recovery
- 6) Spool stands
- 7) Bins for mooring gear

**IV. Hazardous Materials**

A. Policy and Compliance

No Hazardous Materials are being brought aboard the ship for this project.

**V. Additional Projects**



A. Supplementary (“Piggyback”) Projects

Piggy-back project is described above and includes the recovery of a deep water mooring.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

## VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA’s Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

A. Data Classifications: *Under Development*

a. OMAO Data

b. Program Data

B. Responsibilities: *Under Development*

## VII. Meetings, Vessel Familiarization, and Project Evaluations

A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship’s crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship’s Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.

B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project’s start and is normally presented by the ship’s Operations Officer.

C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future

projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.

#### D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <https://sites.google.com/a/noaa.gov/omao-intranet-dev/operations/marine/customer-satisfaction-survey> and provides a "Submit" button at the end of the form. It is also located at [https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J\\_FXqbJp9g/viewform](https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J_FXqbJp9g/viewform). Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

### VIII. Miscellaneous

#### A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the project.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and

equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/noaaforms/eforms/nf57-10-01.pdf>.

All NHSQs submitted after March 1, 2014 must be accompanied by [NOAA Form \(NF\) 57-10-02](#) - Tuberculosis Screening Document in compliance with [OMAO Policy 1008](#) (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance ([http://ocio.os.doc.gov/ITPolicyandPrograms/IT\\_Privacy/PROD01\\_008240](http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240)).

The only secure email process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to setup an account. [Accellion's Web Users Guide](#) is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to [accellionAlerts@doc.gov](mailto:accellionAlerts@doc.gov) requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

Contact information: [Include only the Pacific OR Atlantic Office as applicable.](#)

Regional Director of Health Services  
Marine Operations Center – Atlantic  
439 W. York Street  
Norfolk, VA 23510  
Telephone 757-441-6320  
Fax 757-441-3760  
Email [MOA.Health.Services@noaa.gov](mailto:MOA.Health.Services@noaa.gov)

Regional Director of Health Services  
Marine Operations Center – Pacific  
2002 SE Marine Science Dr.  
Newport, OR 97365  
Telephone 541-867-8822  
Fax 541-867-8856  
Email [MOP.Health-Services@noaa.gov](mailto:MOP.Health-Services@noaa.gov)

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

#### C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

#### D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required and it must be arranged through the ship's Commanding Officer at least 30 days in advance.

#### E. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

#### F. Foreign National Guests Access to OMAO Facilities and Platforms

Foreign National access to the NOAA ship or Federal Facilities is not required for this project.

## G. Best Management Practices

General vessel operations support many of the sanctuary's field projects. The small boats are operated according to the NOAA Small Boat Program guidelines (<http://www.sbp.noaa.gov/policy/manual.html>). In addition, sanctuary vessels, particularly the SRVx/Sand Tiger, follows additional standing orders imposed by ONMS management to minimize impacts on sanctuary resources. These self-imposed standing orders are modeled after USCG regulations that apply to the safe operation on USCG vessels. The standing orders include:

### Vessel Speed & Look Outs:

All vessels must reduce to prudent speed when marine mammals and sea turtles are visible within 1 nautical mile (nm) of the vessel and should not exceed 10 knots.

Reduce vessel speed to 10 knots or less as safety permits when whales are observed near an underway vessel. Always proceed with caution when a whale is sighted at the surface, as there may be additional submerged animals in the vicinity.

While transiting in areas where marine mammals and sea turtles are likely to occur, vessel operators should post a minimum of one dedicated lookout and operators should remain vigilant at the helm controls (keeping hands on the wheel and throttle at all times) and be ready to take action immediately to avoid an animal in their path.

When operating in areas where marine mammals and sea turtles are present, a dedicated lookout is required in addition to the operator. A second lookout may be posted in circumstances where visibility is restricted.

Vessel crews should be made aware of what species are present and have access to reference guides that help identify those species of marine mammals and sea turtles might be encountered in waters where the activity is being conducted.

While underway, vessel operators should always stay alert for marine mammals, sea turtles, and other collision hazards.

When whales are sighted directly in the vessel's path or in close proximity to a moving vessel, reduce speed and/or shift the engine to neutral, as safety allows. Do not engage the engines until the animals are clear of the area. Whales may surface in unpredictable locations or approach slowly moving vessels.

Due to the increased risk of collision at night, vessel operations, whenever possible, should be planned for daylight hours (i.e., between ½ hour before sunrise and ½ hour after sunset when possible).

Restricted visibility can hinder an operator's ability to see and respond to a marine mammals and sea turtles. Prudent seamanship should be applied, including posting an additional lookout when there is the potential for marine animals in the vicinity.

### Standing Order for Nighttime Operations:

If night time operations are essential and integral to the mission, the principal investigator must discuss mitigations for avoiding whales and other objects within the vessel operation corridor and incorporate them into the cruise plan. Mitigation measures could include: speed restrictions, additional lookouts, use of navigation lights, and use of sound signals, etc.

When small cetaceans are sighted while a vessel is underway (e.g., bow-riding or porpoising nearby), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area. Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits.

### Specific Distances to Avoid Interaction with Protected Species:

In the case of northern right whales, a distance of at least 500 yards should be maintained per NMFS regulations.

Vessel operators should check with various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard NAVTEX broadcasts, and Notices to Mariners.

For large whales, attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the animal has left the area.

If large whales surface within 100 yards, vessel operators should stop immediately and use prudent seamanship to decide to either move away slowly or wait for the animal to move away on its own.

Upon sighting, maintain the following distances, at a minimum, for these species:

- 200 yards from large whales,
- 500 yards from North Atlantic right whales and killer whales,
- 50 yards from sea turtles, sawfish, sturgeon, and manatees, and
- 100 yards from all other species.

### Acoustic Restrictions:

Suspend echosounder transmissions < 180kHz upon sighting whales and when ESA-listed whales are within 200 yards.

Reduce use of active acoustics as much as possible. Active acoustic sources should be used only when required for navigation or data collection and should be used at the lowest source level and highest frequency available that is suitable for the purpose.

When echosounders must be operated at frequencies below 200 kHz, stay above 50 kHz frequencies whenever possible, using the lowest possible power and ping-rate.

Single beam surveys using  $\geq 30$  kHz frequencies, use lowest possible power and ping-rate, and  $<12^\circ$  beam angle.

### VIII. Appendices (all that apply)

#### A. Detailed Maps and Transits for operating areas.

Leg 1 – Seafloor Habitat and Cultural Resource Mapping/Multibeam Survey, Cape Lookout Survey Area Polygon.



Leg 1 - Cape Lookout Polygon Boundaries:

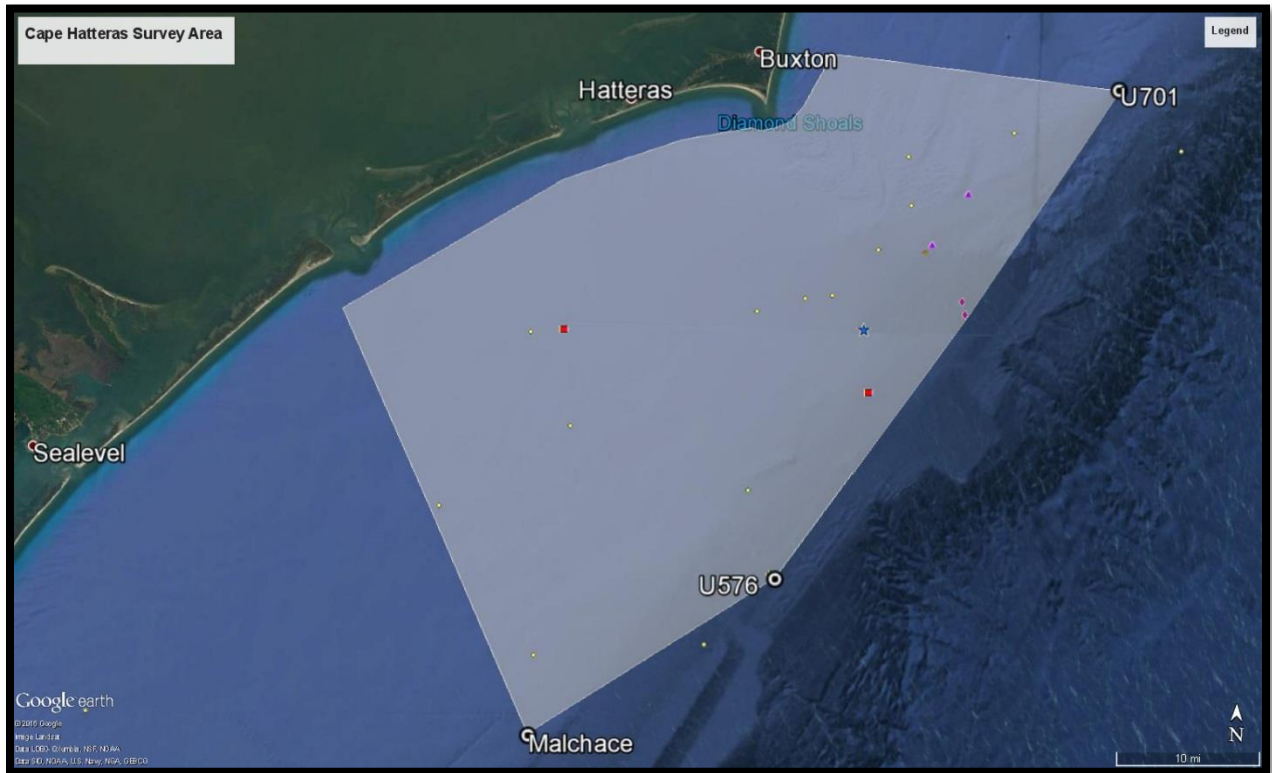
Cape Lookout Boundary Polygon NW Corner:  $34^\circ 23' 53.56''\text{N}$ ,  $76^\circ 21' 58.96''\text{W}$

Cape Lookout Boundary Polygon NE Corner:  $34^\circ 22' 43.96''\text{N}$ ,  $76^\circ 20' 45.00''\text{W}$

Cape Lookout Boundary Polygon SE Corner:  $34^\circ 8' 2.26''\text{N}$ ,  $76^\circ 39' 6.63''\text{W}$

Cape Lookout Boundary Polygon SW Corner:  $34^\circ 9' 3.49''\text{N}$ ,  $76^\circ 40' 22.43''\text{W}$

Leg 2 - Seafloor Habitat and Cultural Resource Mapping/Multibeam Survey, Cape Hatteras Survey Area Polygon.



Leg 2 - Cape Hatteras Polygon Boundaries extend out 3 nautical miles from shore and out onto the Continental Shelf:

Cape Hatteras Boundary Polygon NW Corner: 35°16'10.06"N, 75°27'4.84"W

Cape Hatteras Boundary Polygon NE (U701) Corner: 35°14'29.42"N, 75°6'23.84"W

Cape Hatteras Boundary Polygon U576 Corner: 34°45'28.89"N, 75°30'5.73"W

Cape Hatteras Boundary Polygon SE (Malchace) Corner: 34°35'52.33"N, 75°47'22.35"W

Cape Hatteras Boundary Polygon SW Corner: 35°0'26.07"N, 76°1'31.91"W

B. Leg 3 - Specifications for Mooring to be recovered near Cape Hatteras. The deep water mooring position is 35 20.3473N, 74 51.2624W.



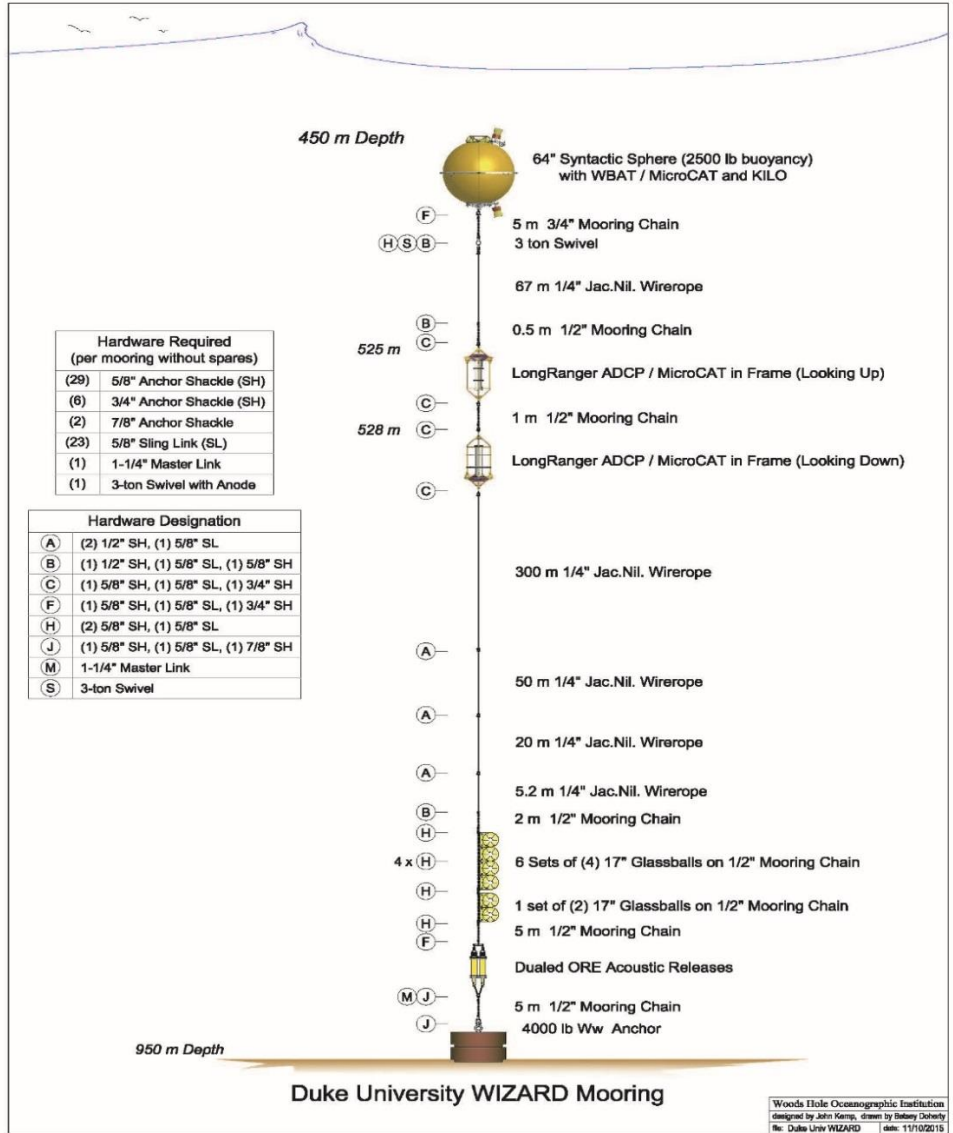


Figure 1. Image of mooring components. Train wheel anchors will not be recovered. Mooring anchor position is 35 20.3473N, 74 51.2624W. Original deck weight of components are included below (not to include mooring anchor or winch).

Piece No.	Description of Items	Unit	Weight
		Dimensions L" x W" x H"	in Lbs.
<b>Mooring Components and Equipment</b>			
1	TSE Mooring Winch	108 x 98 x 72	7000
2	64" Syntactic Sphere on Stand	48 x 48 x 60	2580
3	Wire basket containing: (12 Each) - 17" Glassballs on chain	61 x 45 x 44	883
4	Wire basket containing: (12 Each) - 17" Glassballs on chain	62 x 45 x 44	883
5	Wire basket containing: (12 Each) - 17" Glassballs on chain	63 x 45 x 44	883
6	ADCP Inline Frame	40 x 24 x 24	300
7	ADCP Inline Frame	40 x 24 x 24	300
8	Hardware Deck Box	46 x 24 x 30	1000
9	Cast Iron Mooring Anchor	32 x 32 x 40	4666
		<b>Total Weight (Lbs.)</b>	<b>18495</b>