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**Project Instructions DRAFT**

**Date Submitted:** December 23, 2015

**Platform:** NOAA Ship *Okeanos Explorer*

**Project Number:** EX-16-02

**Project Title:** Mission System Shakedown/ CAPSTONE Mapping

**Project Dates:** February 12-17, 2016

Prepared by: Lindsay McKenna and Kasey Cantwell, NOAA

 Expedition Co-Coordinators

 Office of Ocean Exploration & Research

Approved by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dated: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 John McDonough

 Deputy Director

 Office of Ocean Exploration & Research

 Approved by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dated: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Captain Anne K. Lynch, NOAA

 Commanding Officer

 Marine Operations Center - Atlantic

**I.** Overview

A. Brief Summary and Project Period

During the winter repair and drydock period a number of new systems were installed on NOAA Ship Okeanos Explorer, including new sonar systems and a new VSAT. From February 12 to February 17th the team will shakedown these new systems, test data work flow and integrations, and prepare for the rest of the field season. EX-16-02 operations will consist of ROV and mapping operations with a primary focus on completing engineering priorities and testing new systems. As time and completion of priority objectives allow, operations will collect data in support of the Campaign to Address Pacific monument Science, Technology, and Ocean NEeds (CAPSTONE).

CAPSTONE is a three year initiative to collect critical baseline NOAA science and management needs in largely unknown areas of US waters in the Pacific. The campaign serves as an opportunity for NOAA and the Nation to highlight the uniqueness and importance of the Pacific Monuments and Sanctuaries, which are national symbols of ocean conservation. Operations conducted during this campaign support NOAA missions to understand and predict changes in climate, weather, oceans and coasts, and share that knowledge and information with others. Much of this work associated with CAPSTONE will contribute to and complement Deep Sea Coral Research and Technology Program’s three-year Pacific Islands Regional Initiative.

This document contains project instructions for EX-16-02, the first ROV cruise of the 2016 field season. Operations for this cruise will include ROV, CTD, and mapping system shakedowns and exploration throughout the main Hawaiian Islands as time allows.

The expedition will be staged in and out of Honolulu, HI with operations beginning on February 12th and concluding on February 17th. Operations will use the ship’s deep water mapping systems (Kongsberg EM302 multibeam sonar, EK60 split-beam fisheries sonars, Knudsen 3260 chirp sub-bottom profiler sonar, Teledyne RDI Workhorse Mariner and Ocean Surveyor ADCPs), NOAA’s two-body 6,000 m remotely operated vehicle (ROVs Deep Discoverer and Seirios) system, CTD rosette, and the ship’s high-bandwidth satellite connection for real-time ship to shore communications. ROV dives will mostly be conducted during the day, while CTD casts, and multibeam, singlebeam, and sub-bottom acoustic mapping will occur when the ROV is on deck. Exact locations of discrete ROV dives and mapping operations will be determined during the cruise as results of engineering and shakedown tests are evaluated and once weather and operational constraints are factored in.

B. Days at Sea (DAS)

Of the 6 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 6 DAS are funded by an OAR Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are other agency funded. This project is estimated to exhibit a High Operational Tempo due to daily ROV operations, nighttime mapping, and possible CTD work.

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

EX-16-02 is a mission system shakedown cruise that will consist of daily ROV dives, mapping, and significant training and testing of new systems. Operations will primarily be based in the main Hawaiian Islands. Exact locations will be primarily dictated by engineering and testing needs as the mission team is familiarized with the new VSAT, sonars, underway CTD, and ROV equipment. The ship will conduct 24 hour operations, likely consisting of daytime ROV dives and mapping operations during the nighttime operations and transits. Opportunistic CTD rosette operations are not anticipated, but if needed will be scheduled around the availability of ship’s personnel. ROV operations will focus in depths between 400 and 4,000 meters and will include high-resolution visual surveys and limited sample collection.

During this cruise we will conduct 8-hour ROV dives on most days with the potential for an occasional 10 or 12 hour dive. Extended dive operations will be planned in with consult of the ship’s CO and mission team leads.

Mapping operations will include overnight multibeam, split-beam, and sub-bottom data collection over key features. Additionally, any mapping objectives defined in the EX1601 Project Instructions that are not accomplished during EX1601 could be carried over to this expedition. considerations, and input from scientific partners.

*Figure 1: This figure shows the approximate operating area of Okeanos Explorer for EX-16-02. The red boxes outline initial planned operating area, but may change underway as engineering and shakedown needs evolve.*

San
Francisco

Oahu

Murray Fracture Zone

Molokai Fracture Zone

D. Summary of Objectives

**EX-16-02: February 12- 17, 2016 (Honolulu, HI to Honolulu, HI) Telepresence-enabled ROV cruise with mapping and CTD operations**

EX-16-02 operations will cover a wide area of the US EEZ around the Hawaiian Island Chain, focusing primarily around the main Hawaiian Islands. The primary goals for this cruise include shakedown of all mission systems to ensure they are prepared for the rest of the field season, familiarization with newly installed systems, ensuring the data workflow for new systems, and when possible collection of baseline-characterization data of poorly known and unexplored areas in the US EEZ. Additional objectives for EX-16-02 will also include any objectives from EX1601 that were not accomplished as they relate to shakedown of new systems, including but not limited to EK60 calibrations and ADCP testing and calibration.

Mission objectives for EX-16-02 include a combination of operational, science, education, outreach, and data management objectives:

1. Science
	1. TBD
2. ROV
	1. Integrate ROV into ship systems
		1. Connect .68 cable to ROVs
		2. Test all ROV systems while alongside, including a test deployment (potentially on Feb. 11
		3. Conduct ROV launch and recovery training for new crew members
		4. Test USBL alongside
	2. Daytime ROV dives on targets identified by engineering needs
	3. Ongoing training of pilots
		1. Train team members on use of ROV manipulator’s during operations (no samples will be collected)
	4. Ongoing system familiarization, documentation, and training
	5. Test new ROV systems and pilot sampling protocol (see Appendix D)
3. Telepresence (VSAT 10 mb/sec ship-to-shore; 2 mb/sec shore-to-ship)
	1. Turn on and test terrestrial and high-speed satellite links
	2. Support telepresence-enabled operations
	3. Collect/create all standard video products
	4. Facilitate live outreach events between ship and shore
	5. Continue to refine protocols for the new WOWZA servers at the Inner Space Center
	6. Continue to refine protocols for using YouTube live to host live video
	7. Configure new video editing workstation
	8. Work with the NASA xGDS team to improve telepresence software.
	9. Develop protocols and procedure for using the Telestream video recording suite
4. Mapping
	1. Complete any mapping system shakedown objectives not completed on EX1601
	2. Continue to test and shakedown new sonar systems and workflows
	3. Support ROV operations with mapping products and expertise
	4. Conduct mapping operations during transits and overnight in priority areas as dictated by operational needs as well as science and management community needs
	5. Collect XBT or UnderwayCTD at regular intervals no longer than 6 hours, as data quality requires, during mapping operations
	6. Create daily standard mapping products
	7. Collection of sun photometer measurements as part of survey of opportunity
5. CTD operations
	1. TBD
6. Data Management
	1. TBD
7. Outreach
	1. TBD

 E. Participating Institutions

National Oceanic and Atmospheric Administration (NOAA), Office of Ocean Exploration and Research (OER)–1315 East-West Hwy, Silver Spring, MD 20910 USA

NOAA, National Oceanographic Data Center, National Coastal Data Development Center, Stennis Space Center MS, 39529 USA

NOAA, Office of Coast Survey, Hydrographic Surveys Division, Atlantic Hydrographic Branch, 439 W. York St., Bldg 2, Norfolk, VA 23510 USA

University Corporation for Atmospheric Research Joint Office for Science Support (JOSS), PO Box 3000 Boulder, CO 80307 USA

University of Hawai’i Manoa- 2500 Campus Rd, Honolulu, HI 96822

University of New Hampshire (UNH) Center for Coastal and Ocean Mapping (CCOM) Jere A. Chase Ocean Engineering Lab, 24 Colovos Rd, Durham, NH 03824 USA

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

**Table 1: EX-16-02—Full list of sea going mission party members and their affiliations**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name** **(Last, First)** | **Title** | **Date Aboard** | **Date Disembark** | **Gender** | **Affiliation** | **Nationality** |
| McKenna, Lindsay | Expedition Co-Coordinator & Mapping Team Lead | 2/10/2016 | 2/18/2016 | F | NOAA OER (ERT, Inc.) | US Citizen |
| Cantwell, Kasey | Expedition Co-Coordinator | 2/10/2016 | 2/18/2016 | F | NOAA OER(CollabraLink Technologies, Inc.) | US Citizen |
| Freitas, Dan | Mapping Watch Leader | 2/10/2016 | 2/18/2016 | M | UCAR | US Citizen |
| Bittinger, Amanda | Mapping Watch Leader | 2/10/2016 | 2/18/2016 | F | UCARContractor | US Citizen |
| Drewniak, Jared | Telepresence Engineer | 2/8/2016 | 2/18/2016 | M | NOAA OER (ERT, Inc) | US Citizen |
| O’Brien, Andy | Data Engineer | 2/8/2016 | 2/18/2016 | M | NOAA NCDDC (DGIT) | US Citizen |
| Brian, Roland | Video Engineer | 2/8/16 | 2/18/16 | M | UCAR Contractor | US Citizen |
| TBD |  |  |  |  |  |  |
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**Table 2: EX-16-02 - Shore-based Operations Team**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Last Name** | **First Name** | **Organization** | **Area of interest or expertise.** | **Location**  |
| Kennedy | Brian | NOAA OER | Shore-side Ops |  ISC |
| Pawlenko | Nikolai | NOAA OER | Shore-side Ops | ISC |
| Martinez | Catalina | NOAA OER | Shore-side Ops | ISC |
| Crum | Emily | NOAA OER (ERT) | Outreach Coordinator | Key West |
| Wagner | Katie | NOAA OER (Collabralink) | Media specialist  | SS ECC |

G. Administrative

1. Points of Contacts:

*Ship Operations*

|  |  |
| --- | --- |
| Marine Operations Center, Atlantic (MOA)439 West York StreetNorfolk, VA 23510-1145Telephone: (757) 441-6776Fax: (757) 441-6495 | Chief, Operations Division, Atlantic (MOA)LCDR Donald BeaucageTelephone: (757) 441-6842E-mail:chiefops.moa@noaa.gov |
|  |  |

|  |  |
| --- | --- |
| *Mission Operations* |  |
| Lindsay McKennaCo-Expedition Coordinator & Mapping LeadNOAA Office of Ocean Exploration (ERT)and Research Office: 603-862-5246E-mail : lindsay.mckenna@noaa.govKasey CantwellCo-Expedition Coordinator NOAA Office of Ocean Exploration and Research (CollabraLink)Office: 301-734-1050 E-mail : kasey.cantwell@noaa.gov Jared Drewniak,Telepresence NOAA Office of Ocean Exploration & Research (ERT)Phone: (401) 874-6250 / (401) 330-9662 Email: jared.drewniak@noaa.gov | CDR Mark Wetzler, NOAACommanding OfficerNOAA Ship *Okeanos Explorer*Phone: (401) 378-8284Email: CO.Explorer@noaa.govLT Emily Rose, NOAAOperations OfficerNOAA Ship *Okeanos Explorer*Phone: (808) 659-9197 (Ship’s Iridium)E-mail: Ops.Explorer@noaa.govDave LovalvoEngineering Group LeadNOAA Office of Ocean Exploration and Research Phone : (401) 874-6150/ (706) 540-2664E-mail :david.lovalvo@noaa.gov |

### *Other Mission Contacts*

|  |  |
| --- | --- |
| John McDonoughDeputy DirectorNOAA Ocean Exploration & ResearchPhone: (301) 734-1023 / (240) 676-5206E-mail: John.McDonough@noaa.gov | Kelley ElliottActing EX Program Manager NOAA Office of Ocean Exploration and Research Phone : (301) 734-1024Mobile: (703) 927-5449E-mail :Kelley.Elliott@noaa.gov |
| Jeremy PotterExpeditions DirectorNOAA Office of Ocean Exploration and ResearchPhone: (301) 734-1145 / (240) 215-7101E-mail: jeremy.potter@noaa.gov | Alan Leonardi, DirectorNOAA Ocean Exploration & ResearchPhone: 301-734-1016/ Mobile: 202-631-1790E-mail: alan.leonardi@noaa.gov |

2. Diplomatic Clearances

None Required. All operations in US and International waters.

3. Licenses and Permits

None Required. See Appendix for Categorical Exclusion documentation.

**II. Operations**

The Expedition Coordinator 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.

1. **Project Itinerary** *(All times and dates are subject to prevailing conditions and the discretion of the Commanding Officer)*

We will conduct primarily 8 hour ROV dives, and operate on Hawaii time. CTD casts are expected and requested, but will be TBD based on the availability of ship personnel and operational constraints.

**Table 3: Detailed Itinerary**

*This is an approximate itinerary and is subject to change*

|  |  |  |
| --- | --- | --- |
| **Date** | **Activity**  | **Notes and Requirements** |
| 2/8/16 | Crew Rest. Mission personnel will start arriving. | ROV team members will begin to arrive. |
| 2/9/16 | ROV mobilization  |  |
| 2/10/16 | ROV mobilization and mission personnel arriving |  |
| 2/11/16 | Mission prep and test deployment | Train new mission personnel, test new systems, ROV test deployment.  |
| 2/12/16 | Departure | Departure from pier. Potential for sonar calibration or shortened ROV Dive. |
| 2/13/16 | ROV Dive- TBD | Engineering ROV Dive; mapping operations at night |
| 2/13/16 | ROV Dive- TBD | Engineering ROV Dive; mapping operations at night |
| 2/14/16 | ROV Dive- TBD | Engineering ROV Dive; mapping operations at night |
| 2/15/16 | ROV Dive- TBD | Engineering ROV Dive; mapping operations at night |
| 2/16/16 | ROV Dive- TBD | Engineering ROV Dive; mapping operations at night |
| 2/17/16 | Return to port  | Potential shortened ROV dive depending on what engineering requirements remain. Return to Ford Island. |
| 2/18/16 | Demob, Mission personnel start to depart | Mission personnel that will be sailing on EX1603 will stay on the ship through the in-port period, pending ship approval. No significant demob requiring ship personnel is planned at this time. |
| 2/19/16 | Preparations for EX1603 |  |

B. Staging and Destaging:

* 1. The majority of the ROV mobilization effort took place prior to this cruise. ROV personnel will need to be on board a few days before the cruise to run systems checks and install new sampling equipment. *Seirios* will also need to be moved on to the fantail and the A-frame block will need to be reset once the ship reaches Hawaii. EX1603 is an ROV cruises, so there will be no significant destaging after EX-16-02. The ROVs will be secured after the final ROV dive for transit and the in port period.

C. Operations to be Conducted:

*Telepresence Events* – TBD

*In-Port Events* – TBD

*Sonar Operations* - EM 302, EK 60, ADCP, and sub-bottom profiler data acquisition is planned for this cruise. All data acquisition will be conducted in accordance with established standard operating procedures under the direction of the mapping team lead. The final decision to operate and collect 24-hour sub-bottom profiler data will be at the discretion of the Commanding Officer.

D. Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship’s Commanding Officer.

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations: (1) XBTs, UnderwayCTD casts, and CTDs will not be conducted in very rough sea states or when there is significant risk of lightning. (2) If rough sea state is resulting in very poor data quality, sonar data may not be collected for that period of time. (3) EK 60 and multibeam sonar calibration work cannot be conducted in rough seas.

**III. Equipment**

1. Equipment and Capabilities provided by the ship (itemized)
* Kongsberg Simrad EM302 MultibeamEchosounder (MBES)
* Kongsberg Simrad EK60DeepwaterEchosounders and GPTs (18, 38, 70, 120, 200 kHz)
* Knudsen Chirp 3260 Sub-bottom profiler (SBP)
* Teledyne RDI Workhorse Mariner (300 kHz) ADCP
* Teledyne RDI Ocean Surveyor (38 kHz) ADCP
* Teledyne UnderwayCTD
* LHM Sippican XBT (Deep Blue probes)
* Seabird SBE 911Plus CTD
* Seabird SBE 32 Carousel and 24 2.5 L Niskin Bottles
* Light Scattering Sensor (LSS)
* Oxidation – Reduction Potential (ORP)
* Dissolved Oxygen (DO) sensor
* Altimeter Sensor and battery pack
* CNAV GPS
* POS/MV
* Seabird SBE-45 (Micro TSG)
* Kongsberg Dynamic Positioning-1 System
* NetApps mapping storage system
* CARIS HIPS Software
* IVS Fledermaus Software
* SIS Software
* Hypack Software
* Scientific Computing System (SCS)
* ECDIS
* Met/Wx Sensor Package
* Telepresence System
* VSAT High-Speed link (Comtech5Mbps ship to shore; 1.54 Mbps shore to ship)
* Cruise Information Management System (CIMS)
* NOAA OER 6000 m *Deep Discoverer* ROV
* NOAA *Seirios* Camera Platform
1. Equipment and Capabilities provided by the scientists (itemized)
* Microtops II Ozone Monitor -Sunphotometer and handheld GPS required for NASA Marine Aerosols Network supplementary project.
* Equipment associated with new sampling protocol (See Appendix D)
* EK60 calibration equipment and spheres

**IV. Hazardous Materials**

 A. Policy and Compliance

The Expedition Coordinator is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). The Expedition Coordinator and Science Team Lead will be responsible for transporting all samples and HAZMAT on and off the ship. By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and quantity, MSDS, appropriate spill cleanup materials (neutralizing agents, buffers, or absorbents) in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and chemical safety and spill response procedures. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per OMAO procedure, the scientific party will include with their project instructions and provide to the CO of the respective ship 30 days before departure:

* + - List of chemicals by name with anticipated quantity
		- List of spill response materials, including neutralizing agents, buffers, and absorbents
		- Chemical safety and spill response procedures, such as excerpts of the program’s Chemical Hygiene Plan or SOPs relevant for shipboard laboratories
		- For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify ship’s Operations Officer regarding quantity, packaging and chemical to verify safe stowage is available as soon as chemical quantities are known.

Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

* An inventory list showing actual amount of hazardous material brought aboard
* An MSDS for each material
* Confirmation that neutralizing agents and spill equipment were brought aboard sufficient to contain and cleanup all of the hazardous material brought aboard by the program
* Confirmation that chemical safety and spill response procedures were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory showing that all chemicals were removed from the vessel. The CO’s designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship’s complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to spills of scientific hazardous materials. Overboard discharge of hazardous materials is not permitted aboard NOAA ships.

1. Inventory

|  |  |  |
| --- | --- | --- |
| Item | Use | Aprox. locations |
| Aqua Shield | Underwater Lubricant | ROV Workshop Fire Cabinet, Pit |
| Dow Corning 4 | Electrical insulating compound | ROV Workshop Fire Cabinet, Pit |
| Fluid Film Spray | Silicone Lubricant | ROV Workshop Fire Cabinet |
| Isopropanol Alcohol | Solvant | ROV Workshop Fire cabinet |
| Scotchkote | Electrical insulating compound | ROV Workshop Fire cabinet |
| 3M Silicone Spray | Silicone Lubricant | ROV Workshop Fire cabinet |
| Synthetic AW Hydraulic Oil, ISO-22 | Amsoil (AWG-05) | Hanger, Pit, Vehicles |
| Tap Magic Cutting Fluid | Cutting/Machining Lubricant | ROV Workshop Fire cabinet |
| Tap Magic Heavyweight Cutting Fluid | Cutting/Machining Lubricant | ROV Workshop Fire cabinet |
| Tuff Coat M | Marine Lubricant | ROV Workshop Fire cabinet |
| Dow Corning Molykote 111 | Valve Lubricant and Sealant | ROV Workshop Fire cabinet, Pit |
| WD40 | Lubricant | ROV Workshop Fire cabinet |
| Loktite | Bolt adhesive | ROV Workshop Fire cabinet |
| Minearl Oil | Vitrea | Hanger, Vehicles |
| Por-15 | Paint Kit | ROV Workshop Fire cabinet |
| Univis HVI 13 | Hydraulic Fluid | Hanger, ROV D2 |
| Ultratane | Butane fuel | ROV Workshop fire cabinet |
| Rust-oleum | Protective Enamel | ROV Workshop fire cabinet |
| Flux-Off | Soldering Flux remover | ROV Workshop fire cabinet |
| Propane | Torch Fuel | ROV Workshop fire cabinet |
| 95% Denatured Ethanol | Sample preservation | Wetlab, under the chemical hood |
| 10% Buffered Formalin | Sample preservation | Wetlab, under the chemical hood |

1. Chemical safety and spill response procedures
	1. All safety and spill response procedures will be handled according to OMAO guidelines and following the manufacturers MSDS which has been provided to the ship’s ECO.
2. Radioactive Materials
*NOT APPLICABLE TO THIS CRUISE*

**V. Additional Projects**

 A. Supplementary (“Piggyback”) Projects

During the cruise the marine aerosol layer observations will be collected for the NASA Maritime Aerosol Network (MAN). Observations will be made by mission personnel (mapping interns) with a sun photometer instrument provided by the NASA MAN program. Resulting data will be delivered to the NASA MAN primary investigator Alexander Smirnov by the expedition coordinator. All collected data will be archived and publically available at: <http://aeronet.gsfc.nasa.gov/new_web/maritime_aerosol_network.html>. Equipment is stewarded by OER physical scientists. See Appendix C for full Survey of Opportunity Form.

 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.

1. Data Classifications: *Under Development*
	1. OMAO Data

The Commanding Officer is responsible for all data collected for missions until those data have been transferred to mission party designees. Data transfers will be documented on NOAA Form 61-29. Reporting and sending copies of project data to NESDIS (ROSCOP form) is the responsibility of OER.

* 1. Program Data
		+ At sea
			- Daily plans of the Day (POD)
			- Daily situation reports (SITREPS)
			- Daily summary bathymetry data files
			- Summary forms for each ROV dive
			- Summary forms for each CTD rosette cast
		+ Post cruise
			- Refined SOPs for all pertinent operational activities
			- Assessments of all activities
		+ Science
			- Multibeam and XBT raw and processed data (see appendix B for the formal cruise data management plan)
			- EK 60 raw data
			- Knudsen 3260 sub-bottom profiler raw data
			- Cruise report
1. Responsibilities: *Under Development*

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

A safety brief and overview of POD will occur on the Bridge each morning at 0800. Daily Operations Briefing meetings will be held at 1330 in the forward lounge to review the current day, and define operations, associated requirements, and staffing needs for the following day. A Plan of the Day (POD) will be posted each evening for the next day in specified locations throughout the ship. Daily Situation Reports (SITREPS) will be posted as well and shared daily through e-mail and/or the EX FTP site.

1. Pre-Project Meeting: The Expedition Coordinator 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 Expedition Coordinator in arranging this meeting.
2. 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.
3. 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 Expedition Coordinator, and members of the scientific party and is normally arranged by the Operations Officer and Expedition Coordinator.
4. Project Evaluation Report: Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Expedition Coordinator. The form is available at <http://www.omao.noaa.gov/fleeteval.html> and provides a “Submit” button at the end of the form. 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 Expedition Coordinator. The Expedition Coordinator 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 Expedition Coordinator 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 Expedition Coordinator 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 Expedition Coordinator will ensure that all non NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Expedition Coordinator 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 Expedition Coordinator 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](http://www.moc.noaa.gov/all-ships/index.html)- Tuberculosis Screening Document in compliance with [OMAO Policy 1008](http://www.moc.noaa.gov/all-ships/index.html) (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>).

The only secure email process approved by NOAA is [Accellion Secure File Transfer](https://sft2.doc.gov/courier/web/1000%40/wmLogin.html)which requires the sender to setup an account. [Accellion’s Web Users Guide](https://sft2.doc.gov/courier/1000%40/Accellion_Secure_Collaboration_Guide.pdf)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 toaccellionAlerts@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:

|  |  |
| --- | --- |
| Regional Director of Health ServicesMarine Operations Center – Atlantic439 W. York StreetNorfolk, VA 23510Telephone 757-441-6320Fax 757-441-3760EmailMOA.Health.Services@noaa.gov |  |

Prior to departure, the Expedition Coordinator must provide a listing of emergency contacts to the Operations Officer for all members of the scientific party, with the following information: name, address, relationship to member, and telephone number using the Google Form at

<https://docs.google.com/a/noaa.gov/forms/d/1pcoSgPluUVxaY64CM1hJ75l1iIYirTk48G-lv37Am_k/viewform>

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 Expedition Coordinator to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the Expedition Coordinator may be relayed to the program office. Sometimes it is necessary for the Expedition Coordinator to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Expedition Coordinator. 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.

Specific information on how to contact NOAA Ship *Okeanos Explorer* and all other fleet vessels can be found at [http://www.moc.noaa.gov/MOC/phone.html#EXhttp://www.moc.noaa.gov/MOC/phone.html - EX](http://www.moc.noaa.gov/MOC/phone.html#EX)

Important Telephone and Facsimile Numbers and E-mail Addresses

Ocean Exploration and Research (OER):

Phone: (301) 734-1010

Fax: (301) 713-4252

#### University of New Hampshire, Center for Coastal and Ocean Mapping

Phone: (603) 862-3438

Fax: (603) 862-0839

#### NOAA Ship Okeanos Explorer - Telephone methods listed in order of increasing expense:

*Okeanos Explorer* Cellular: (401) 713-4114

*Okeanos Explorer* Iridium: (808) 659-9179

OER Mission Iridium (dry lab): (808) 851-3827

EX INMARSAT B

Line 1: 011-870-764-852-328

Line 2: 011-870-764-852-329

Voice Over IP (VoIP) Phone:

301-713-7772 (expect a delay once picked up by directory)

E-Mail: Ops.Explorer@noaa.gov - (mention the person’s name in SUBJECT field)

expeditioncoordinator.explorer@noaa.gov - For dissemination of all hands emails by Expedition Coordinator while on board. See ET for password.

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

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow’s March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated Line Office Deemed Export point of contact to assist with the process.

Full compliance with NAO 207-12 is required.

Responsibilities of the Expedition Coordinator:

1. Provide the Commanding Officer with the email generated by the Servicing Security Office granting approval for the foreign national guest’s visit. (For NMFS-sponsored guests, this email will be transmitted by FNRS.)This email will identify the guest’s DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Expedition Coordinator is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel’s DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.
4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR)*.*

The Commanding Officer and the Expedition Coordinator will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Expedition Coordinator or the DSN of the FNRS or Servicing Security Office email granting approval for the foreign national guest’s visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel’s visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Expedition Coordinator with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Expedition Coordinator of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Expedition Coordinator can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Expedition Coordinator will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national’s sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology’s ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

**VIII. Appendices**

Appendix 1. Data Management Plan (to be added)

**Appendix 2. Categorical Exclusion (to be added)**

**Appendix 3. Survey of Opportunity**

**NASA Maritime Aerosols Network Survey of Opportunity**

**Survey or Project Name**

|  |
| --- |
| **Maritime Aerosol Network** |

**Points of Contact (POC): Dr. Alexander Smirnov**

**Activities Description(s)** *(Include goals, objectives and tasks)*

|  |
| --- |
| **The Maritime Aerosol Network (MAN) component of AERONET provides ship-borne aerosol optical depth measurements from the Microtops II sun photometers. These data provide an alternative to observations from islands as well as establish validation points for satellite and aerosol transport models. Since 2004, these instruments have been deployed periodically on ships of opportunity and research vessels to monitor aerosol properties over the World Oceans.** |