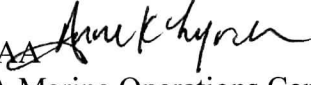




UNITED STATES DEPARTMENT OF COMMERCE

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

MEMORANDUM FOR: Commander Ricardo Ramos, NOAA
Commanding Officer, NOAA Ship *Okeanos Explorer*

FROM: Captain Anne K. Lynch, NOAA  CAPT NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for EX-14-02
Exploration, Gulf of Mexico Mapping

Attached is the final Project Instruction for EX-14-02, Exploration, Gulf of Mexico Mapping, which is scheduled aboard NOAA Ship *Okeanos Explorer* during the period of 24 February – 15 March, 2014. Of the 20 DAS scheduled for this project, 20 DAS are base funded by OAR Allocation. This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to OpsMgr.MOA@noaa.gov at Marine Operations Center-Atlantic.

Attachment

cc:
MOA1





Project Instructions

Date Submitted: February 18, 2014

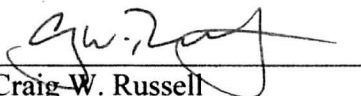
Platform: NOAA Ship *Okeanos Explorer*

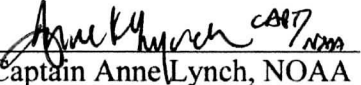
Project Number: EX-14-02 LEG 1

Project Title: Exploration, Gulf of Mexico (Mapping)

Project Dates: February 24 – March 15, 2014

Prepared by: Elizabeth Lobecker, NOAA
Expedition Coordinator
Office of Ocean Exploration & Research

Approved by:  Dated: 2/19/14
Craig W. Russell
Program Manager
Office of Ocean Exploration & Research

Approved by:  Dated: 2/21/14
Captain Anne Lynch, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. OVERVIEW

A. Brief Summary and Project Period

This document contains project instructions for EX-14-02 LEG 1. EX-14-02 LEG 1 operations are expected to commence on February 24, 2014 at North Kingston, RI and conclude on March 15, 2014 at Galveston, TX. Multibeam, singlebeam, and subbottom mapping operations will be conducted 24 hours a day throughout the cruise. A Kongsberg technician will be onboard for 3 days in the Gulf of Mexico for EK 60 calibration.

B. Days at Sea (DAS)

Of the 20 DAS scheduled for this project, 22DAS are funded by an OMAO allocation, 0 DAS are funded by a Line Office Allocation, 0DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a Medium Operational Tempo.

C. Operating Area

The operating area encompasses a transit path south along the edge of the Atlantic continental shelf south of Rhode Island, top priority exploration targets in U.S. federal waters offshore of Florida in both the Atlantic Ocean and Gulf of Mexico, and a transit path to port in Galveston, TX. All operations will be conducted within the U.S. EEZ.

Refer to Figure 1 for the Operating Area summary map, and Table 1 for key operating area coordinates. The approximate ship track line is shown in bright yellow. Ship track lines and specific exploration targets will be refined based on additional consultation with partner scientists and input from vessel crew on field conditions. Map Priority Areas 1 and 2 indicate the core operating areas where exploratory mapping work will be focused when the vessel is not in transit. Map Priority Area 1 is the top mapping priority area to complete during EX-14-02 LEG1. The ship track includes a port stop in Key West, FL to pick up a Kongsberg engineer, transit to the EK 60 calibration site in Map Priority Area 1, and transit to return the Kongsberg engineer to port in Key West.

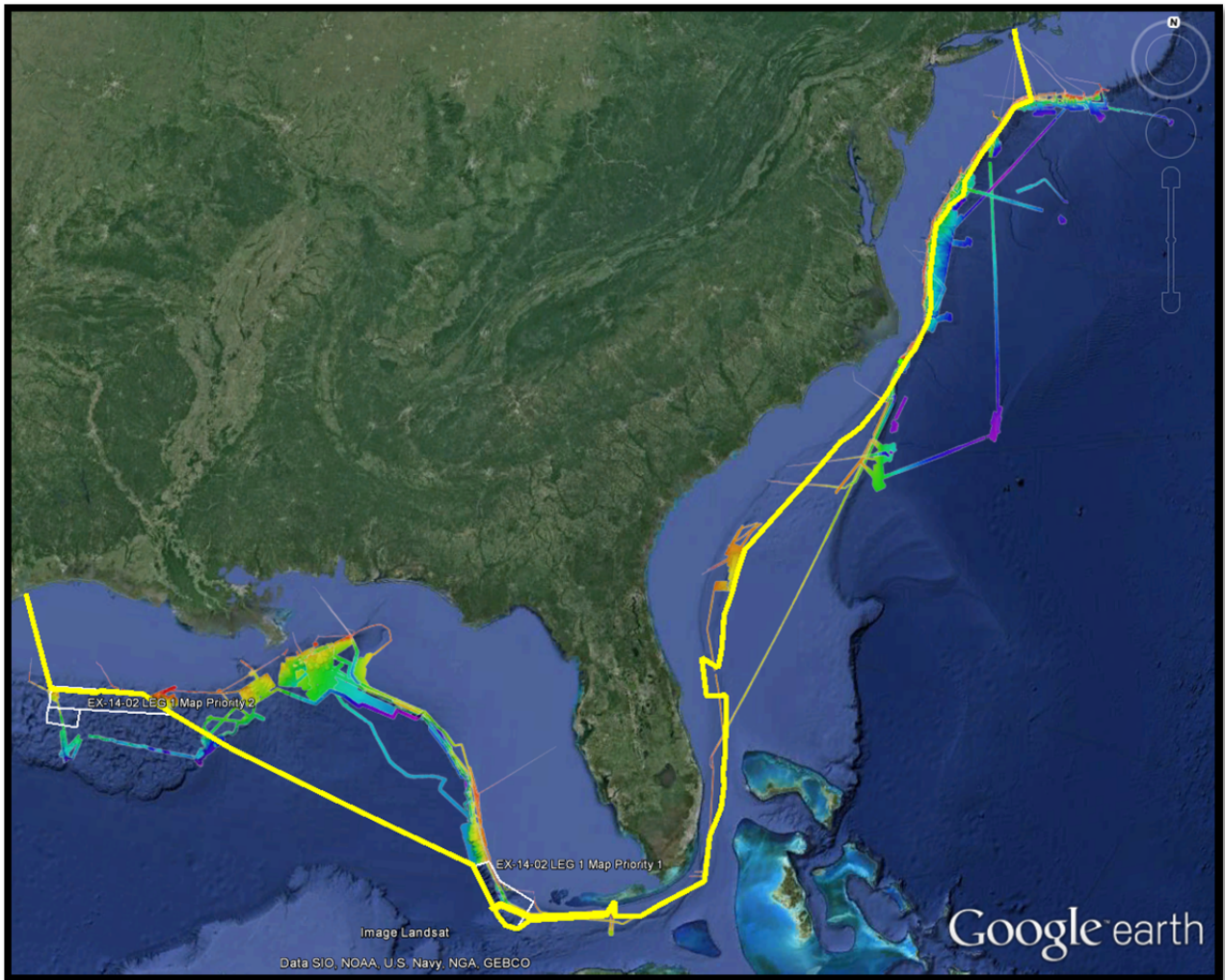


Figure 1: Approximate operating area of Okeanos Explorer for EX-14-02 LEG 1. Color-coded bathymetry previously collected by the Okeanos Explorer is shown in the background of the operating area for context. Detailed mapping survey lines within mapping priority areas will be provided separately by the EX Mapping Team. Figure produced in Google Earth Pro with data credits shown on the figure.

Table 1: Approximate waypoints for the EX-14-02 LEG 1 transit. The actual cruise track will vary due to prevailing conditions, exploration opportunities, and the discretion of the Commanding Officer.

EX-14-02 LEG 1 Transit Waypoints (approximate, in degrees, decimal minutes)		Remarks
71 25.414 W	41 21.065 N	Exit Narragansett Bay
71 16.300 W	39 50.991 N	Transit to edge of continental shelf
81 48.160 W	24 26.563 N	Enter/Exit approach to port at Key West, Florida

83 45.533 W	23 57.240 N	Begin mapping survey of Map Priority Area 1
91 11.325 W	27 28.987 N	Begin mapping survey of Map Priority Area 2
94 42.836 W	29 20.638 N	Enter Galveston Bay

D. Summary of Objectives

EX-14-02 LEG 1 is a deep water exploratory mapping expedition. During EX-14-02 LEG1 multibeam, single beam, and subbottom data will be collected 24 hours a day and XBT casts will be conducted at an interval defined by prevailing oceanographic conditions, but not to exceed 6 hours. All multibeam data will be fully processed according to standard onboard procedures and will be archived with the National Geophysical Data Center (NGDC). Subbottom sonar data will also be archived with NGDC. Split-beam EK60 data will be archived at the National Oceanographic Data Center.

EK60 sonars calibration will be completed during this cruise, with an expected visit of a Kongsberg technician on the ship for 2-3 days. This visit must occur during the vessel's time in the Gulf of Mexico in order to properly calibrate the EK60 to water conditions in this region. Key West, Florida provides a pickup/return point for the technician with the least amount of shallow water transit time. Calibration of the sonar with the Kongsberg technician is planned for the area of the SW Florida escarpment closest to Key West.

FEB 24 2014 –Mar 15 2014(North Kingstown, Rhode Island to Galveston, Texas)

The following are cruise objectives for EX-14-02 LEG1:

1. Collect deep water multibeam sonar data (MBES)
 - a. Conduct 24-hr mapping operations for the duration of the cruise
 - b. Collect bathymetric, seafloor backscatter, and water column backscatter data.
2. Collect ancillary sonar data
 - a. EK60 single beam sonar (24 hours/day)
 - b. Knudson sub-bottom profiler (24 hours/day)
3. Calibrate EK60 in Gulf of Mexico waters, as part of sonar maintenance visit by Kongsberg technician.
4. Perform baseline characterization mapping of highest priority areas based on feedback from other NOAA Offices, Programs and Labs, and regional management councils. Top priority areas for characterization mapping are within boxes identified as "Map Priority1"

and “Map Priority 2” of Figure 1.

5. During transit southward to the Gulf of Mexico along the Atlantic continental slope, re-map mid-slope areas of previous EX MBES coverage that had poor original backscatter data and/or previously documented seep locations to assess ephemerality of known seeps. The transit line is plotted to avoid survey operations along the top of the continental slope and at canyon heads where interaction with fishing vessels can pose a challenge to safe navigation of the EX.
6. XBT operations
 - a. XBT casts will be collected at regular interval of no more than 6 hours to ensure accurate sound velocity profiles for operating the MBES.
7. Conduct training of new personnel in all mapping data collection, including sonars and sound velocity profiling sensors and processing procedures (continuous throughout cruise).
8. Collect SCS data.
 - Compare surface sound speed data from Reson SVP-70 probe to data from calculated thermosalinograph.
9. TelepresenceObjectives:
 - Stress Test RAID Arrays on E48 SAN
 - Data flow check
 - Test daily multibeam product data stream to shoresidetethys FTP.
 - ProRes Record flow check
 - Test Video and Still Post Workflow
 - Set up editing stations

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

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

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

F. Personnel (Science Party)

A full mapping complement is necessary for this cruise. Required mission personnel include a mapping lead/expedition coordinator as well as two qualified watchstanders for each of the three eight hour watches. The mapping lead is responsible for facilitating overall mapping operations, including participating in operational meetings, providing guidance for mapping/survey troubleshooting, and communicating status of mapping sensors to personnel on shore.

Table 2: Full list of the science party members and their affiliation

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Drewniak, Jared	Telepresence Lead			M	NOAA OER (ERT Inc)	US Citizen
Ferraro, Danielle	Mapping Watchstander/Intern			F	UCAR	US Citizen
Lobecker, Elizabeth “Meme”	Expedition Coordinator/ Mapping Team Lead			F	NOAA OER (ERT Inc)	US Citizen
McKenna, Lindsay	Mapping Watchstander			F	NOAA OER (ERT Inc)	US Citizen
Mueller, Kurt	Watch Leader	2/22	3/15 or 3/16	M	NOAA AHB	US Citizen
Reser, Brendan	Telepresence			M		US Citizen
Sowers, Derek	Mapping Watchstander			M	NOAA OER (ERT Inc)	US Citizen
Weller, Erin	Watch Leader	2/22	4/4 or 4/5	F	NOAA AHB	US Citizen
TBD	AUX Technician					
TBD	AUX Technician					
Tony Dalheim	Kongsberg Technician	3/2	3/4 or 3/5	M	Kongsberg	US Citizen
David Barbee	Kongsberg Technician	3/2	3/4 or 3/5	M	Kongsberg	US Citizen

G. Administrative

1. Points of Contact:

Ship Operations

Marine Operations Center, Atlantic (MOA)
439 West York Street
Norfolk, VA 23510-1145
Telephone: (757) 441-6776
Fax: (757) 441-6495

Chief, Operations Division, Atlantic (MOA)
LT Laura Gibson, NOAA
Telephone: (757) 441-6842
E-mail: Laura.Gibson@noaa.gov

Mission Operations

Elizabeth 'Meme' Lobecker,
Coordinator/Mapping Team Lead
NOAA Office of Ocean Exploration
and Research (ERT, Inc)
Phone : (401) 662-9297/(603)862-1475
E-mail : elizabeth.lobecker@noaa.gov

Expedition CDR Ricardo Ramos, NOAA
Commanding Officer
NOAA Ship *Okeanos Explorer*
Phone: (401) 378-8284
Email: CO.Explorer@noaa.gov

LT Emily Rose, NOAA
Operations Officer
NOAA Ship *Okeanos Explorer*
Phone: (206-604-7587
E-mail: Ops.Explorer@noaa.gov

Other Mission Contacts

Craig Russell, EX Program Manager
NOAA Ocean Exploration & Research
Phone: 206-526-4803 / 206-518-1068
E-mail: Craig.Russell@noaa.gov

LCDR Nicola VerPlanck, NOAA
NOAA Ocean Exploration & Research
Phone: 206-526-4801
E-mail: Nicola.Verplanck@noaa.gov

John McDonough, Deputy Director
NOAA Ocean Exploration & Research
Phone: 301-734-1023 / 240-676-5206
E-mail: John.McDonough@noaa.gov

Jared Drewniak, Telepresence Lead
NOAA Office of Ocean Exploration & Research
(Acentia)
Phone: (401) 874-6250 (o) / (401) 330-9662 (c)
Email: jared.drewniak@noaa.gov

Shipments:

Send an email to the *Okeanos Explorer* Operations Officer at OPS.Explorer@noaa.gov indicating the size and number of items being shipped. All items should arrive at DavisvilleDepot prior to **COB February 19, 2014**.

Vessel shipping address:

ATTN: LT Emily Rose, NOAA
NOAA Ship *Okeanos Explorer*
2578 Davisville Rd.
North Kingstown, RI 02852

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

See Appendix C for categorical exclusion documentation.

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 *(All times and dates are subject to prevailing conditions and the discretion of the commanding officer)*

Saturday, February 22

- Mission personnel arrive to ship, particularly air travelers

Sunday, February 23

- All mission personnel arrive to ship, orientation, operations meeting, and preparation for departure

Monday, February 24 - Friday, March 14

- Departure day; commence survey mapping operations (24 hours/day)

March 2

- Small boat transfer in Key West to pick up Kongsberg technician, who will be onboard for 2-3 days for EK60 calibration, then transferred back to shore

March 4 or 5

- Small boat transfer in Key West to return Kongsberg technician to shore

Saturday, March 15

- Arrive in port at Galveston, TX

Saturday, March 15 / Sunday March 16

- Mission personnel departship

B. Telepresence Events

Saturday, March 8 - UNH Center for Coastal and Ocean Mapping will be hosting a professional development for Educators of grades 5-12 entitled "NOAA Ship Okeanos Explorer: America's Ship for Ocean Exploration, Volume 2: How Do We Explore?" A brief interaction with the ship is planned. More information is provided at <http://marine.unh.edu/outreach/workshops>.

C. In-Port Events

There are currently no port events scheduled.

D. Staging and Destaging

NOT APPLICABLE TO THIS CRUISE

E. Dive Plan

Dives are not planned for this project.

F. Sonar Operations

Continuous EM 302, EK 60, and subbottom 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 sub-bottom profiler data will be at the discretion of the Commanding Officer.

EK 60 calibration is planned in the vicinity of the SW Florida escarpment with a visiting technician from Kongsberg.

G. Applicable Restrictions

NOT APPLICABLE TO THIS CRUISE

III. EQUIPMENT

A. Equipment and capabilities provided by the ship

- Kongsberg Simrad EM302 MultibeamEchosounder (MBES)
- Kongsberg Simrad EK60DeepwaterEchosounder
- Knudsen Chirp 3260 Sub-bottom profiler (SBP)

- 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)

B. Equipment and capabilities provided by the scientists

- Microtops II Ozone Monitor -Sunphotometer and handheld GPS required for NASA Marine Aerosols Network supplementary project.

IV. HAZARDOUS MATERIALS

A. Policy and Compliance

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

B. Inventory

NOT APPLICABLE TO THIS CRUISE

C. Chemical safety and spill response procedures

NOT APPLICABLE TO THIS CRUISE

D. Radioactive Materials

NOT APPLICABLE TO THIS CRUISE

V. ADDITIONAL PROJECTS

A. Supplementary Projects

NASA Maritime Aerosol Network

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 resides on the ship and is stewarded by ENS Pawlenko.

See Appendix D for full Survey of Opportunity Form.

B. NOAA Fleet Ancillary Projects

NOT APPLICABLE TO THIS CRUISE

VI. DISPOSITION OF DATA AND REPORTS

A. Data Responsibilities

All data acquired on *Okeanos Explorer* will be provided to the public archives without proprietary rights. All data management activities shall be executed in accordance with NAO 212-15, Management of Environmental and Geospatial Data and Information [http://www.corporateservices.noaa.gov/ames/administrative_orders/chapter_212/212-15.html].

Ship Responsibilities

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.

NOAA OER Responsibilities

The Expedition Coordinator will work with the *Okeanos Explorer* Operations Officer to ensure data pipeline protocols are followed for final archive of all data acquired on *Okeanos Explorer* without proprietary rights.

Deliverables

- a. At sea
 - Daily plans of the Day (POD)
 - Daily situation reports (SITREPS)
 - Daily summary bathymetry data files
- b. Post cruise
 - Refined SOPs for all pertinent operational activities
 - Assessments of all activities
- c. 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
 - Mapping data report

Archive

- The Program and ship will work together to ensure documentation and stewardship of acquired data sets in accordance with NAO 212-15. The Cruise Information Management System is the primary tool used to accomplish this activity.

VII. Meetings, Vessel Familiarization, and Project Evaluations

A. Pre and Post Cruise Meetings

Pre-Cruise Meeting

Prior to departure, the Operation's Officer will conduct a meeting of the scientific party to inform them of cruise objectives and vessel protocols, e.g., meals, watches, etiquette, etc.

Post-Cruise Meeting

Upon completion of the cruise, a meeting will be held by the Operation's Officer and attended by the ship's Survey Technicians, the Expedition Coordinator and members of the scientific party to review the cruise. Concerns regarding safety, efficiency, and suggestions for improvements for future cruises should be discussed.

B. Shipboard Meetings

Daily Operations Briefing meetings will be held at 1500 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. A safety brief and overview of POD will occur on the Bridge each morning at 0800. Daily Situation Reports (SITREPS) will be posted as well and shared daily through e-mail and/or the EX PLONE site (<http://tethys.gso.uri.edu/OkeanosExplorerPortal>).

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.

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.

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.

C. 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 <http://www.oma.noaa.gov/fleeteval.html> and provides a "Submit" button at the end.

The Customer Satisfaction Survey is one of the primary methods OMAO and Marine Operations (MO) utilize to improve ship customer service. Information submitted through the form is automatically input into a spreadsheet accessible to OMAO and MO management for use in preparing quarterly briefings. Marine Operations Centers (MOC) address concerns and praise with the applicable ship. Following the quarterly briefings the data are briefed to the Deputy Director of OMAO.

VIII. MISCELLANEOUS

A. Meals and Berthing

Meals and berthing are required for up to 20 scientists. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the cruise, and ending two hours after the termination of the cruise. 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 twenty-one days prior to the survey (e.g., Expedition Coordinator is allergic to fin fish). Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Expedition Coordinator. The Expedition Coordinator and Operations 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 cruise 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 7, 1999 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, Revised: 02 JAN 2012) 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>. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan and send via secure e-mail the form using the contact information below; participants should take precautions to protect their Personally Identifiable Information (PII) and medical information. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the project to allow time for the participant to obtain and submit additional information that health services might require before clearance to

sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the 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. Contact information:

Regional Director of Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757.441.6320
Fax 757.441.3760
E-mail: MOA.Health.Services@noaa.gov

Please make sure the medicalexplorer@noaa.gov email address is cc'd on all medical correspondence.

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.

Emergency contact form is included as Appendix A.

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. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also 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.

Operational Risk Management: For every operation to be conducted aboard the ship (NOAA-wide initiative), risk management procedures will be followed. For each operation, risks will be identified and assessed for probability and severity. Risk mitigation strategies / measures will be investigated and implemented where possible. After mitigation, the residual risk will have to be assessed to make Go-No Go decisions for the operations. Particularly with new operations, risk

assessment will be ongoing and updated as necessary. This does not only apply to over-the-side operations, but to everyday tasks aboard the vessel that pose risk to personnel and property.

- CTD,ROV(and other pertinent) ORM documents will be followed by all personnel working on board *Okeanos Explorer*.
- All personnel on board are in the position of calling a halt to operations/activities in the event of a safety concern.

D. Communications

A daily situation report (SITREP) on operations prepared by the Expedition Coordinator will 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 modes of communication, the ship is able to maintain contact with the Marine Operations Center on an as needed basis. These methods will be made available to the Expedition Coordinator upon request, in order to conduct official business. The ship's primary means of communication with the Marine Operations Center is via e-mail 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 it must be arranged 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#EX>
Important Telephone and Facsimile Numbers and E-mail Addresses

Ocean Exploration and Research (OER):

OER Program Administration:
Phone: (301) 734-1010
Fax: (301) 713-4252
E-mail: Firstname.Lastname@noaa.gov

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 NMAO Fleet IT Security Policy 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 these 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](#).

The following are basic requirements. Full compliance with [NAO 207-12](#) is required.

Responsibilities of the Expedition Coordinator:

1. Provide the Commanding Officer with the e-mail generated by the FRNS granting approval for the foreign national guest's visit. This e-mail 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. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators [NAO 207-12](#)) at least annually or as required by the servicing Regional Security Officer.

3. Export Control - The NEFSC currently neither possesses nor utilizes 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 NMAO approval 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 FRNS e-mail 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 cruise, 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](#)) at least annually or as required by the servicing Regional Security Officer.

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, NOAA (or DOC) employee. According to DOC/OSY, this requirement cannot be altered.

3. Ensure completion and submission of the Certification of Conditions and Responsibilities for a Foreign National Guest as required by [NAO 207-12](#) Section 5.03.h.

Appendix A

EMERGENCY DATA SHEET

NOAA OKEANOS EXPLORER

Scientists sailing aboard the *Okeanos Explorer* should fill out the form found at the following link location:

https://docs.google.com/a/noaa.gov/forms/d/1pcoSgPluUVxaY64CM1hJ751iIYirTk48G-lv37Am_k/viewform with their emergency contact information

Appendix B

Data Management Plan Ship Shakedown and Patch Test (EX1401)



Data Management Objectives

Specific objectives by the Okeanos Explorer Data Management Team for this cruise are to initialize the shoreside repository server for the current cruise; monitor existing data pipelines already installed on the Okeanos Explorer; and address any issues post-mission and during the first leg of the next cruise.

14-Jan-14

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1. General Description of Data to be Managed

1.1 Name of the Dataset of Data Collection Project

Ship Shakedown and Patch Test (EX1401)

To assess ship's essential operational equipment and procedures; to conduct emergency drills; to assess ship's equipment necessary to support operations; to test ship's ROV support systems; to conduct multibeam system testing in the vicinity of Veatch Canyon, to conduct sound velocity comparison cast between CTD and XBT; to collect deep-water multibeam sonar, subbottom and singlebeam sonar data; to train new personnel in all mapping data collection processes and procedures; to assess affect of subbottom noise mitigation measures; to verify inventory of spares of all mapping sensors, to test telepresence operations, and to prepare the 2014 readiness report.

1.2 If this mission is part of a series of missions, what is the series name?

Okeanos Explorer

1.2 Keywords that could be used to characterize the data.

expedition, exploration, explorer, marine education, noaa, ocean, ocean discovery, ocean education, ocean exploration, ocean exploration and research, ocean literacy, ocean research, OER, science, scientific mission, scientific research, sea, stewardship, systematic exploration, technology, transformational research, undersea, underwater, Davisville, mapping survey, multibeam, multibeam backscatter, multibeam sonar, multi-beam sonar, noaa fleet, okeanos, okeanos explorer, R337, Rhode Island, scientific computing system, SCS, single beam sonar, singlebeam sonar, single-beam sonar, sub-bottom profile, water column backscatter, Veatch Canyon, Northeast U.S. Deepwater Canyons, Continental Shelf, oceans

1.4 Summary description of the data to be generated.

Multibeam and singlebeam mapping operations will be conducted 24 hours a day throughout the cruise. Sub-bottom profile mapping will be conducted each day between the hours of 1000 and 2200 throughout the cruise.

1.5 Anticipated temporal coverage of the data.

Cruise Dates: 2/6/2014 to 2/9/2014

1.6 Anticipated geographic coverage of the data.

Latitude Boundaries: 41 to 40

Longitude Boundaries: -72 to -69

1.7 What platforms will be employed during this mission?

Ship Shakedown and Patch Test (EX1401)

NOAA Ship Okeanos Explorer

1.8 What data types will you be creating or capturing?

Cruise Plan, Cruise Summary, Data Management Plan, Multibeam (raw), XBT (raw), Sub-Bottom Profile data, Water Column Backscatter, SCS Output (native), Multibeam (processed), Multibeam (product), Mapping Summary, EK60 Singlebeam Data, CTD (processed), CTD (product), CTD (raw)

1.8 What data types will you be submitting for archive?

Cruise Plan, Cruise Summary, Data Management Plan, Multibeam (raw), XBT (raw), Sub-Bottom Profile data, Water Column Backscatter, SCS Output (native), Multibeam (processed), Multibeam (product), Mapping Summary, EK60 Singlebeam Data, CTD (processed), CTD (product), CTD (raw)

1.9 What volume of data is anticipated to be collected in the Project Time Frame?

not known at this time

2. Points of Contact

2.1 Who is the overall point of contact for the data collection?

Elizabeth Lobecker, Multibeam Mapping Expert, NOAA Office of Ocean Exploration and Research

2.2 Who is responsible for verifying the quality of the data?

Elizabeth Lobecker, OER, Expedition Coordinator and Mapping Team Lead, elizabeth.lobecker@noaa.gov

2.3 Who is responsible for data documentation and metadata activities?

OER Data Management Coordinator, National Coastal Data Development Center, Stennis Space Center, MS 228-688-2936, oer.info.mgmt@noaa.gov

2.4 Who is responsible for data storage and data disaster recovery activities?

NOAA National Data Centers (National Geophysical Data Center for geophysical data; National Oceanographic Data Center for oceanographic, navigational data; NOAA Central Library for products/reports)

3. Data Stewardship

3.1 What quality control procedures will be employed?

Quality control procedures for the data from the Kongsberg EM202 is handled at UNH CCOM/JHC. Raw (level-0) bathymetry files are cleaned/edited into new data files (level-1) and converted to a variety of products (level-2). Data from sensors monitored through the SCS are archived in their native format and are not quality controlled. Data from XBT firings are archived in their native format and are not quality controlled.

4. Data Documentation

4.1 Which metadata repository will be used to document this data collection?

An ISO format collection-level metadata record will be generated during pre-cruise planning and published in an OER catalog and Web Accessible Folder (WAF) hosted at NCDDC for public discovery and access. The record will be harvested by data.gov

4.2 What additional metadata or other documentation is necessary to fully describe the data and ensure its long-term usefulness?

Additional metadata includes: Multibeam metadata to file level; Scientific Computing System (SCS) metadata; MARC metadata for Library items

Ship Shakedown and Patch Test (EX1401)

4.3 What standards will be used to represent data and metadata elements in this data collection?

ISO 19115-2 Geographic Information with Extensions for Imagery and Gridded Data will be the metadata standard employed; A NetCDF-4 standard for oceanographic data will be employed for the SCS data.

5. Data Sharing**5.1 What date will the data be made available to the public?**

All ship data from this mission is expected to be archived and accessible within 60-90 days post-mission. METOC data from the SCS and CTD data are converted in a post-mission model into archive ready compressed NetCDF4 format and stored within the NCDDC THREDDS open-access server.

5.2 If the data are not to be made publicly available, under what authority are the data restricted?

not applicable

5.2a Access Constraints Statement?

No data access constraints, unless data are protected under the National Historic Preservation Act of 1966.

5.2b Use Constraints Statement?

Data use shall be credited to NOAA Office of Ocean Exploration and Research.

6. Initial Data Storage and Protection**6.1 Where and how will the data be stored initially (prior to archive submission)?**

Data are recorded and stored on NOAA shipboard systems compliant with NOAA IT procedures. Data are moved from ship to shore using a variety of standard, documented data custody transfer procedures. Data are transferred to NOAA Data Centers using digital and physical data transfer models depending upon the data volume.

6.2 Discuss data back-up, disaster recovery, contingency planning and off-site storage relevant to this data collection.

Data management standard operating procedures minimizing accidental or malicious modification or deletion are in place aboard the Okeanos Explorer and will be enforced.

6.3 Describe how the data will be protected from unauthorized access, how permissions will be managed and what process will be followed in the event of unauthorized access.**7. Long-Term Archiving and Preservation****7.1 In what NOAA Data Center(s) will the data be archived and preserved?**

Data from this mission will be preserved and stewarded through the NOAA National Data Centers. Refer to the Okeanos Explorer FY14 Data Management Plan (EX_FY14_DMP.pdf) for detailed descriptions of the processes, procedures, and partners involved in this collaborative process.

7.1a If you do not plan to archive in the NOAA Data Centers, what is your long-term strategy for maintaining, curating, and archiving the data?**7.2 What transformations or procedures will be necessary to prepare data for preservation or sharing?**

SCS data shall be delivered in archive-ready compressed NetCDF-4 format to NODC; multibeam data and metadata will be compressed and delivered in a bagit format to NGDC.

Ship Shakedown and Patch Test (EX1401)

Appendix C Categorical Exclusion



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OCEANIC AND ATMOSPHERIC RESEARCH
Office of Ocean Exploration and Research
Silver Spring, MD 20910

January 23, 2014

MEMORANDUM FOR: The Record John
FROM: John McDonough Mcdonough
Acting Director NOAA Office of Ocean Exploration
and Research (OER)
SUBJECT: Categorical Exclusion for NOAA Ship *Okeanos Explorer*
cruise EX-14-01

Digitally signed by John McDonough
DN: cn=John McDonough, o=OER,
ou=NOAA, email=john.
mcdonough@noaa.gov, c=US
Date: 20140123 15:37:35 -0500

NAO 216-6, Environmental Review Procedures, requires all proposed projects to be reviewed with respect to environmental consequences on the human environment. This memorandum addresses the NOAA Ship *Okeanos Explorer's* scientific sensors possible affect on the human environment.

This project is part of the NOAA Office of Ocean Exploration and Research's "Science Program" and entails multi-disciplinary ocean mapping and exploration activities designed to increase knowledge of the marine environment. This project is entitled "EX-14-01 Leg Ship Shakedown and Patch Test (Mapping)" and will be lead by Elizabeth Lobecker, physical scientist for the *Okeanos Explorer* program within OER. NOAA Ship *Okeanos Explorer* will depart Davisville, Rhode Island on February 6, 2014, return to Davisville, Rhode Island on February 9, 2014, and will conduct sonar mapping operations at all times during the cruise. Focused mapping and sonar testing operations will occur at offshore areas adjacent to the continental shelf break in the vicinity of Veatch Canyon. Acoustic instruments that will be operational during the project are a 30 kHz multibeam echosounder (Kongsberg EM 302), an 18 kHz singlebeam echosounder (Kongsberg EK 60), and a 3.5 kHz sub-bottom profiler (Knudsen Chirp 3260). Additionally, expendable bathythermographs (XBTs) will be deployed regular intervals in association with multibeam data collection.

As expected for ocean research with limited duration or presence in the marine environment, this project will not have the potential for significant impacts. Knowledgeable experts who are aware of the sensitivities of the marine environment will conduct the at-sea portions of this project.

This project would not result in any changes to the human environment. As defined in Sections 5.05 and 6.03.c.3 (a) of NAO 216-6, this is a research project of limited size or magnitude or with only short-term effects on the environment and for which any cumulative effects are negligible. As such, this project is categorically excluded from the need to prepare an environmental assessment.



Appendix D. NASA Maritime Aerosols Network Survey of Opportunity

Survey or Project Name

Maritime Aerosol Network

Points of Contact (POC)

<i>Lead POC or Principle Investigator (PI & Affiliation)</i>	<i>Supporting Team Members ashore</i>
POC: Dr. Alexander Smirnov	<i>Supporting Team Members aboard (if required)</i>

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

<p>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.</p>
