# NOAA OFFICE OF OCEAN EXPLORATION AND RESEARCH

## Final Project Instructions

**Date Submitted:** October 16 , 2012

**Platform:** NOAA Ship *Okeanos Explorer (EX)*

**Cruise Number:** EX-12-06

**Project Title:** Northeast and Mid-Atlantic Canyons Exploration

**Cruise Dates:** October 30- November 20, 2012

Prepared by: Adam D. Skarke
Physical Scientist / Hydrographer
Office of Ocean Exploration & Research

Approved by: _____ Dated: _____
Craig W. Russell, NOAA
Program Manager
Office of Ocean Exploration & Research

Approved by: _____ Dated: _____
CAPT Anita L. Lopez, NOAA
Commanding Officer
Marine Operations Center – Atlantic

# I. OVERVIEW

## A. Cruise Period

EX-12-06 operations are expected to commence on October 30, 2012 at Davisville, RI and conclude on November 20, 2012 at Davisville, RI. The planned transit line is 4,325 nautical miles and is expected to take 21.2 days at an average speed of 8.5 knots (figure 1). Multibeam and single beam mapping operations will be conducted 24 hours a day during the transit. Sub-bottom profile mapping will be conducted each day between the hours of 1000 and 1800 during the transit.

## B. Operating Area

The operating area is the North Atlantic Ocean between Cape Hatteras, NC and the US-Canadian teretorial boundary. The proposed survey lines lay entirely within the 200 nm exclusive economic zone (EEZ) maritime boundary of the United States of America (Figure 1).

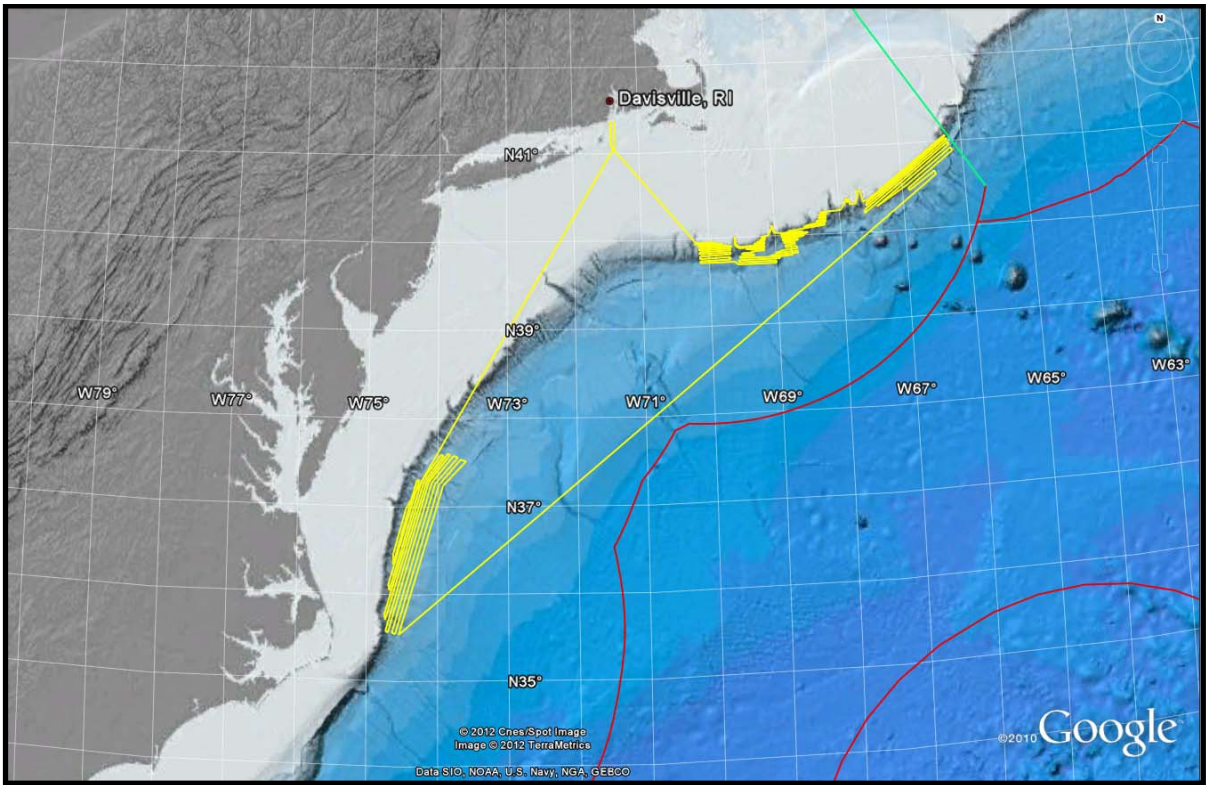


***Figure 1:*** *Operating area with proposed cruise track between Cape Hatteras, NC and the US-Canadian territorial boundary. The track is 4325 nm long and will require approximately 21.2 days at a speed of 8.5 knots. The actual cruise track is subject to change due to weather and survey conditions. National 200nm EEZ boundaries are shown in red and shared EEZ boundaries are shown in green. Image created with Google Earth.*

| EX-12-06 Transit Waypoints (approximate) | | |
|---|---|---|
| **Latitude** | **Longitude** | **Remarks** |
| 41° 22.632' | -71° 25.360' | Narragansett Bay Outbound *RW "NB"* |
| 41° 05.265' | -71° 25.437' | |
| 39° 57.411' | -70° 11.840' | |
| 39° 57.511' | -69° 58.496' | |
| 39° 57.095' | -69° 53.983' | |
| 39° 56.865' | -70° 12.029' | |
| 39° 56.363' | -70° 12.118' | |
| 39° 56.514' | -69° 50.884' | |
| 39° 55.888' | -69° 47.887' | |
| 39° 55.500' | -70° 09.195' | |
| 39° 54.569' | -70° 09.094' | |
| 39° 55.069' | -69° 45.214' | |
| 39° 54.200' | -69° 39.510' | |
| 39° 53.468' | -70° 08.798' | |
| 39° 52.203' | -70° 08.646' | |
| 39° 53.040' | -69° 41.109' | |
| 39° 51.719' | -69° 41.326' | |
| 39° 50.971' | -70° 08.651' | |
| 39° 49.645' | -70° 08.520' | |
| 39° 50.317' | -69° 41.148' | |
| 39° 49.025' | -69° 41.185' | |
| 39° 48.017' | -70° 08.494' | |
| 39° 46.297' | -70° 08.332' | |
| 39° 47.177' | -69° 41.673' | |
| 39° 45.446' | -69° 41.782' | |
| 39° 44.802' | -70° 08.006' | |
| 39° 43.587' | -70° 08.091' | |
| 39° 43.773' | -69° 37.227' | |
| 39° 41.870' | -69° 34.359' | |
| 39° 41.988' | -69° 00.656' | |
| 39° 43.447' | -69° 00.460' | |
| 39° 43.237' | -69° 33.448' | |
| 39° 44.693' | -69° 33.264' | |
| 39° 44.945' | -68° 57.085' | |
| 39° 46.187' | -68° 57.392' | |

| | | |
|---|---|---|
| 39° 46.205' | -69° 32.722' | |
| 39° 47.311' | -69° 32.094' | |
| 39° 47.456' | -69° 20.349' | |
| 39° 48.439' | -69° 20.376' | |
| 39° 48.488' | -69° 30.273' | |
| 39° 49.496' | -69° 30.420' | |
| 39° 49.571' | -69° 23.400' | |
| 39° 50.636' | -69° 18.310' | |
| 39° 50.803' | -69° 10.870' | |
| 39° 51.966' | -69° 10.828' | |
| 39° 51.612' | -69° 21.519' | |
| 39° 52.197' | -69° 27.033' | |
| 39° 53.029' | -69° 10.315' | |
| 39° 53.838' | -69° 10.597' | |
| 39° 52.876' | -69° 32.047' | |
| 39° 53.701' | -69° 35.291' | |
| 39° 55.950' | -69° 37.159' | |
| 40° 00.142' | -69° 36.717' | |
| 40° 00.177' | -69° 36.206' | |
| 39° 56.114' | -69° 36.354' | |
| 39° 54.405' | -69° 34.790' | |
| 39° 53.765' | -69° 31.976' | |
| 39° 54.796' | -69° 10.621' | |
| 39° 55.445' | -69° 10.757' | |
| 39° 55.110' | -69° 19.448' | |
| 39° 55.704' | -69° 19.109' | |
| 39° 56.017' | -69° 10.984' | |
| 39° 56.547' | -69° 10.790' | |
| 39° 56.416' | -69° 16.864' | |
| 39° 56.934' | -69° 15.496' | |
| 39° 57.078' | -69° 10.597' | |
| 39° 57.696' | -69° 10.372' | |
| 39° 57.577' | -69° 14.268' | |
| 39° 58.102' | -69° 13.829' | |
| 39° 58.106' | -69° 10.284' | |
| 39° 58.651' | -69° 09.713' | |
| 39° 58.531' | -69° 12.492' | |

| | | |
|---|---|---|
| 39° 59.005' | -69° 12.257' | |
| 39° 59.169' | -69° 09.462' | |
| 39° 59.630' | -69° 09.169' | |
| 39° 59.678' | -69° 12.509' | |
| 40° 00.210' | -69° 11.880' | |
| 40° 00.654' | -69° 07.052' | |
| 40° 04.843' | -69° 03.461' | |
| 40° 07.629' | -69° 02.873' | |
| 40° 04.477' | -69° 01.976' | |
| 40° 02.732' | -69° 01.184' | |
| 40° 02.053' | -68° 54.604' | |
| 40° 02.896' | -68° 38.087' | |
| 40° 02.611' | -68° 34.822' | |
| 40° 01.429' | -68° 54.585' | |
| 40° 00.662' | -68° 54.122' | |
| 40° 02.330' | -68° 30.928' | |
| 40° 01.529' | -68° 30.979' | |
| 39° 59.893' | -68° 54.094' | |
| 39° 58.961' | -68° 53.753' | |
| 40° 00.460' | -68° 33.942' | |
| 39° 59.351' | -68° 35.855' | |
| 39° 57.934' | -68° 53.635' | |
| 39° 56.957' | -68° 53.310' | |
| 39° 58.023' | -68° 39.593' | |
| 39° 56.938' | -68° 40.744' | |
| 39° 56.120' | -68° 52.749' | |
| 39° 55.082' | -68° 51.701' | |
| 39° 55.778' | -68° 43.293' | |
| 39° 54.416' | -68° 42.740' | |
| 39° 53.657' | -68° 51.294' | |
| 39° 52.193' | -68° 50.872' | |
| 39° 53.041' | -68° 41.785' | |
| 39° 51.392' | -68° 40.900' | |
| 39° 50.408' | -68° 53.921' | |
| 39° 48.609' | -69° 00.455' | |
| 39° 49.733' | -68° 41.016' | |
| 39° 48.367' | -68° 40.027' | |

| | | |
|---|---|---|
| 39° 47.167' | -69° 04.763' | |
| 39° 46.074' | -69° 04.665' | |
| 39° 46.879' | -68° 45.461' | |
| 40° 03.366' | -68° 47.737' | |
| 40° 06.477' | -68° 14.791' | |
| 40° 07.530' | -68° 14.691' | |
| 40° 05.654' | -68° 33.677' | |
| 40° 06.915' | -68° 29.995' | |
| 40° 08.710' | -68° 13.434' | |
| 40° 09.521' | -68° 13.628' | |
| 40° 08.714' | -68° 22.489' | |
| 40° 09.661' | -68° 20.520' | |
| 40° 10.361' | -68° 13.608' | |
| 40° 11.485' | -68° 13.481' | |
| 40° 10.924' | -68° 19.637' | |
| 40° 11.844' | -68° 19.286' | |
| 40° 12.225' | -68° 13.701' | |
| 40° 13.033' | -68° 13.190' | |
| 40° 12.632' | -68° 18.684' | |
| 40° 13.685' | -68° 18.585' | |
| 40° 13.933' | -68° 12.747' | |
| 40° 14.719' | -68° 12.585' | |
| 40° 14.567' | -68° 17.699' | |
| 40° 15.319' | -68° 17.226' | |
| 40° 16.157' | -67° 59.138' | |
| 40° 21.483' | -67° 54.650' | |
| 40° 23.342' | -67° 54.047' | |
| 40° 23.753' | -67° 53.052' | |
| 40° 21.498' | -67° 53.095' | |
| 40° 21.551' | -67° 52.121' | |
| 40° 23.876' | -67° 51.574' | |
| 40° 21.698' | -67° 50.753' | |
| 40° 19.844' | -67° 50.163' | |
| 40° 20.142' | -67° 45.034' | |
| 40° 25.204' | -67° 42.930' | |
| 40° 28.027' | -67° 43.373' | |
| 40° 29.013' | -67° 42.506' | |

| | | |
|---|---|---|
| 40° 28.313' | -67° 39.787' | |
| 40° 21.224' | -67° 38.152' | |
| 40° 22.434' | -67° 32.922' | |
| 41° 04.273' | -66° 16.670' | |
| 41° 03.314' | -66° 16.299' | |
| 40° 20.463' | -67° 34.458' | |
| 40° 18.200' | -67° 35.348' | |
| 41° 02.180' | -66° 15.809' | |
| 41° 00.922' | -66° 14.792' | |
| 40° 16.030' | -67° 36.011' | |
| 40° 13.193' | -67° 36.935' | |
| 40° 59.573' | -66° 14.007' | |
| 40° 57.388' | -66° 13.380' | |
| 40° 17.387' | -67° 25.421' | |
| 40° 30.749' | -66° 56.713' | |
| 40° 55.343' | -66° 12.117' | |
| 40° 53.437' | -66° 10.218' | |
| 40° 28.856' | -66° 54.809' | |
| 40° 27.389' | -66° 53.496' | |
| 40° 39.914' | -66° 29.109' | |
| 40° 37.435' | -66° 27.832' | |
| 35° 32.790' | -74° 32.625' | |
| 37° 15.090' | -73° 55.312' | |
| 37° 31.628' | -73° 35.769' | |
| 37° 32.780' | -73° 40.425' | |
| 37° 15.482' | -73° 58.967' | |
| 35° 33.484' | -74° 35.463' | |
| 35° 34.179' | -74° 38.300' | |
| 37° 16.265' | -74° 02.154' | |
| 37° 34.123' | -73° 42.770' | |
| 37° 35.287' | -73° 46.465' | |
| 37° 17.206' | -74° 04.963' | |
| 35° 34.481' | -74° 41.594' | |
| 35° 35.498' | -74° 43.694' | |
| 37° 17.387' | -74° 07.749' | |
| 37° 35.770' | -73° 49.469' | |
| 37° 36.742' | -73° 51.324' | |

| | | |
|---|---|---|
| 37° 17.349' | -74° 09.667' | |
| 35° 43.128' | -74° 43.968' | |
| 35° 47.080' | -74° 44.675' | |
| 37° 17.381' | -74° 11.875' | |
| 37° 35.135' | -73° 55.145' | |
| 37° 36.101' | -73° 57.003' | |
| 37° 17.877' | -74° 13.905' | |
| 36° 03.426' | -74° 40.466' | |
| 36° 07.442' | -74° 41.460' | |
| 37° 18.605' | -74° 15.846' | |
| 37° 18.335' | -74° 17.853' | |
| 36° 21.097' | -74° 37.609' | |
| 36° 27.649' | -74° 37.657' | |
| 36° 59.371' | -74° 26.916' | |
| 41° 04.977' | -71° 21.755' | |
| 41° 22.418' | -71° 22.246' | Narragansett Bay Inbound *RW "NB"* |

***Table 1:*** *Approximate waypoints for the EX-12-06 transit. The actual cruise track will vary due to prevailing conditions and the discretion of the Commanding Officer.*

### C. Summary of Objectives

EX-12-06 will be primarily focused on supplementing Northeast canyon and continental shelf mapping efforts carried out on *Okeanos Explorer* cruises EX-11-06, EX-12-01, EX-12-04, EX-12-05 Leg 2 and during 2011-2012 by NOAA Ships *Nancy Foster, Henry B. Bigelow, Ronald H. Brown,* and *Ferdinand R. Hassler*.

The shelf break and slope off the northeastern US support a diversity of habitats including more than 70 canyons ranging from depths of ~100m to ~3500m. The canyons provide a refuge for a variety of fauna including species of deep water corals, fish and other animals. While some canyons have been studied previously, most are poorly known and are of high interest to federal and state agencies with research and management responsibilities. NOAA's Office of Ocean Exploration and Research's (NOAA OER) previous work on NE canyons includes "Deep Water Mid-Atlantic Canyon Exploration" in 2011 which focused on Norfolk, Washington, Accomac and Baltimore canyons. Other NOAA programs [e.g., National Marine Fisheries Service (NMFS) Northeast Fisheries Science Center (NEFSC) and NMFS Deep Sea Coral Research and Technology Program (DSCRTP)] also have a stated interest in understanding the geomorphology and habitat complexity of these canyons. In 2012 NOAA OER initiated a program to explore these canyons in partnership with NOAA NMFS, NOAA National Ocean Service (NOS), NOAA Office of Marine and Aviation Operations (OMAO), Virginia Sea Grant, and the Mid Atlantic

Regional Council on the Ocean (MARCO). A majority of this exploration work was completed by the EX during EX-12-01, EX-12-04, and EX-12-05 Leg 2, and was supplemented by coordinated mapping efforts conducted by NOAA Ships *Henry B. Bigelow* and *Ferdinand R. Hassler* in July of 2012.

EX-12-06 will focus on mapping all canyon and shelf priority areas not addressed in EX-12-01, EX-12-04, EX-12-05 Leg2, or by NOAA Ships *Bigelow* or *Hassler*. This work will include, but is not limited to, surveys of priority area margins and previous survey data holidays. Survey mapping during EX-12-06, in concert with existing data, is expected to result in near complete multibeam coverage of the seafloor between the 400 m contour and Extended Continental Shelf (ECS) survey between Cape Hatteras and the US-Canadian maritime territorial boundary. Additionally, it is expected that multibeam data collected on EX-11-06, EX-12-01, EX-12-04, EX-12-05 Leg 2, and EX-12-06 will inform planning by OER, NMFS, and other NOAA science partners, of telepresence enabled ROV expeditions to the continental shelf canyons scheduled for the summer of 2013 on *Okeanos Explorer*. During EX-12-06, multibeam and single beam 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. Additionally, sub bottom profile data will be collected between the hours of 1000 and 1800. All data will be fully processed according to standard onboard procedures and will be archived with the National Geophysical Data Center. The following are mission objectives for EX-12-06 presented in order of priority.

1. Collect deep water multibeam sonar data (MBES)
    a. Conduct 24-hr mapping operations for the duration of the cruise.
    b. Collect bathymetric, sea floor backscatter, and water column backscatter data.

2. Collect ancillary sonar data
    a. EK60 single beam
    b. Knudsen sub-bottom profiler

3. XBT operations
    a. XBT casts will be collected at regular interval of no more than 6 hours and likely less in the vicinity of the Gulf Stream and associated eddies.

4. Conduct training of new personnel in all data collection and processing procedures (continuous throughout cruise).
    a. Training of new OMAO ST Jaclyn James, if hired by cruise departure date
    b. Training of contractors/ physical scientists new to the ship
    c. Training of mapping interns

5. Testing of new mission hardware and software
    a. New mission software has been provided by QPS Fledermaus and Lockheed-Martin Sippican. This software will be tested onboard on a separate computer

prior replacing operational computers to avoid any disruption in the cruise operations.

b. Operational software for the Kongsberg EK60 sonar will be migrated to a new hardware and tested on the cruise. The prior computer will be preserved as a backup in case there are any problems with the migration.
c. A new Lockheed-Martin Sippican XBT launch gun has been purchase and will be tested.

6. Telepresence (VSAT 5 mb/sec ship to shore; T1 shore to ship)
    a. Test and refine ship-to-shore communications and operations procedures
    b. Test and refine operating procedures and products

7. Underway testing of SCS processing automation by NODC representative (John Relph).
    a. At sea testing will support NOAA IOCM/R2R fleet wide data management initiative for FY13.
    b. Additional details being prepared by Sharon Mesick of NCDDC.

## D. 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) - Jere A. Chase Ocean Engineering Lab, 24 Colovos Road, Durham, NH 03824 USA

## E. 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.

| Name | Affiliation | Position | M/F | Status |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Adam Skarke | NOAA OER (ERT Inc) | Expedition Coordinator / Mapping Lead | M | US Citizen |
| Ash Harris | UCAR | Mapping Watch Leader | M | US Citizen |
| Elaine Stuart | UCAR | Mapping Watch Leader | F | US Citizen |
| Joseph Dumont | UCAR | Mapping Watchstander/Intern | M | US Citizen |
| Kayleigh Wilson | UCAR | Mapping Watchstander/Intern | F | US Citizen |
| Erika Young | UCAR | Mapping Watchstander/Intern | F | US Citizen |
| John Relph | NODC | IT/SCS testing | M | US Citizen |

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

## F. Administrative

Key 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)
LCDR Jason Appler
Telephone: (757) 441-6842
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*Mission Operations*

Adam Skarke, Expedition Coordinator
NOAA Office of Ocean Exploration
and Research (ERT, Inc)
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E-mail : Adam.Skarke@noaa.gov

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

Mashkoor Malik, Mapping Lead (shoreside)
NOAA Office of Ocean Exploration

LT Laura Gallant, NOAA
Operations Officer

and Research (ERT, Inc.)
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E-mail: Mashkoor.Malik@noaa.gov

NOAA Ship *Okeanos Explorer*
Phone: (207) 240-0957 (c)
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*Other Mission Contacts*

Craig Russell, EX Program Manager
NOAA Ocean Exploration & Research
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John McDonough, Deputy Director
NOAA Ocean Exploration & Research
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E-mail: John.McDonough@noaa.gov

Webb Pinner, Telepresence Lead
NOAA Office of Ocean Exploration & Research
Phone: (401) 874-6250 (o) / (401) 330-9662 (c)
Email: Webb.Pinner@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 Davisville Depot prior to **COB October 19th, 2012**.

Vessel shipping address:

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

### G. Diplomatic Clearances

***NOT APPLICABLE TO THIS CRUISE***

### H. Licenses and Permits

See appendix C for categorical exclusion documentation

## II. OPERATIONS

### A. Cruise Plan Itinerary *(All times and dates are subject to prevailing conditions and the discretion of the commanding officer)*

*Sunday, October 28*

- Mission personnel arrive to ship, particularly air travelers

*Monday, October 29*

- Mission personnel orientation, ops meeting, and preparation for departure

*Tuesday, October 30 - Tuesday, November 20*

- Transit mapping and survey mapping operations (24 hours/day)
- November 20: *Okeanos Explorer* Change of Command at 1400.
- November 20 or 21: Afternoon tour of *Okeanos Explorer* by three IFREMER representatives. Time TBD based on when ship is alongside. Foreign national visitor clearance and hosting being handled by LTJG Brian Kennedy.

*Wednesday, November 21*

- Mission personnel depart ship in morning

**B. Telepresence Events**

There are no telepresence events anticipated during this leg.

**C. In-Port Events**

- Mr. Xavier Lurton of IFREMER will be visiting the ship prior to the cruise on October 24. A time is yet to be determined. He will be hosted by LTJG Brian Kennedy and accompanied by Mashkoor Malik of OER.

- Three representatives from IFREMER will be visiting the ship on the afternoon of November 20 at a time TBD based on when the ship is alongside. Foreign national visitor clearance and hosting being handled by LTJG Brian Kennedy. Visitors will be accompanied by Nathalie Valette-Silver of OER.

- NOAA Ship *Okeanos Explorer* change of command proceedings are planned for 11/20/2012.

**D. Staging and Destaging**

***NOT APPLICABLE TO THIS CRUISE***

**E. Sonar Operations**

*Multibeam Operations*

Continuous EM 302 and EK 60 data acquisition is planned for this cruise. The mapping team will ensure that all the standard protocols, as laid out by the Commanding Officer and mapping lead directives will be followed for efficient and safe mapping operations.

Knudsen sub-bottom profiler has been synchronized with EM 302 but 24 hour operations are not anticipated due to excessive audible noise within the vessels living quarters. As a compromise, it is anticipated that Knudsen sub-bottom profiler will be operated during day time hours (1000-1800) to minimize impact of excessive noise on the crew. The final decision to operate and collect sub-bottom profiler data will be at the discretion of the Commanding Officer.

### F. Dive Plan

***NOT APPLICABLE TO THIS CRUISE***

### G. Applicable Restrictions

***NOT APPLICABLE TO THIS CRUISE***

## III. EQUIPMENT

### A. Equipment and capabilities provided by the ship

- Kongsberg Simrad EM302 Multibeam Echosounder (MBES)
- Kongsberg Simrad EK60 Deepwater Echosounder
- Knudsen Chirp 3260 Sub-bottom profiler (SBP)
- LHM Sippican XBT (various 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 (Comtech 5 Mbps ship to shore; 1.54 Mbps shore to ship)
- Cruise Information Management System (CIMS)

### B. Equipment and capabilities provided by the scientists

None

## IV. HAZARDOUS MATERIALS

### A. Policy and Compliance

The Expedition Coordinator is responsible for complying with DMS, Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

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 the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard. The amount of hazardous material arriving and leaving the vessel shall be accounted for by the Expedition Coordinator.

### B. Radioactive Isotopes

***NOT APPLICABLE TO THIS CRUISE***

### C. Inventory

***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

### 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)

- Mapping data report
- 2012 System Readiness 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.

## B. Pre and Post Cruise Meeting

*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.

*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 ).

## C. Ship Operation Evaluation Report

Within seven days of the completion of the cruise, a Ship Operation Evaluation form is to be completed by the Expedition Coordinator and lead scientist. The preferred method of transmittal of this form is via email to OMAO.Customer.Satisfaction@noaa.gov. If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations
NOAA Office of Marine and Aviation Operations
8403 Colesville Road, Suite 500
Silver Spring, MD 20910

## VII. MISCELLANEOUS

### A. Meals and Berthing

Meals and berthing are required for up to 19 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: 08/08) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Expedition Coordinator or the NOAA website at NOAA HEALTH SERVICES QUESTIONNAIRE found at http://www.omao.noaa.gov/medical/NHSQ_Final_wi_Instructions_fill.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 the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the cruise 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. Clearances are valid for 2 years for personnel under age 50 and 1 year for age 50 and over. All PPD's expire after one year from the date of administration. 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 medical.explorer@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

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/phone.htm

**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) 378-7947
*Okeanos Explorer* Iridium: (808) 659-9179
OER Mission Iridium (dry lab) : (808) 851-3827

EX INMARSAT B
Line 1: 011-872-764-852-328
Line 2: 011-872-764-852-329

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**

PRINT CLEARLY

**NAME: _____**
(Last, First, Middle)

Mailing Address _____

_____

_____
(Other than the ship address)

Phone (Home) _____

(Cell) _____

Date of Birth _____

Email Address: _____

Emergency Contact: _____
(Name and Relationship)

E.C. Address: _____

_____

_____

E.C.Phone (Home) _____

(Work) _____

(Cell) _____

E.C. Email: _____

Signature _____ Date _____

**Appendix B**

**EX-12-06 Data Management Plan**

*In production POC: Susan Gottfried*

## Appendix C

### EX-12-06 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

October 9, 2012

MEMORANDUM FOR: The Record

FROM: John McDonough
Deputy Director NOAA Office of Ocean Exploration and Research (OER)

SUBJECT: Categorical Exclusion for NOAA Ship *Okeanos Explorer* cruise EX1206

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.

**Description of Project**
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 "EX1206 Northeast and Mid-Atlantic Canyons Exploration" and will be led by Adam Skarke, a physical scientist for the *Okeanos Explorer* program within OER. NOAA ship *Okeanos Explorer* will depart Davisville, Rhode Island on October 30, 2012, return to Davisville, Rhode Island on November 20, 2012, and 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 between Cape Hatteras and the US-Canadian maritime territorial boundary. Acoustic instruments that will be operational during the project are a 30 kHz multibeam echosounder (Kongsburg 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.

**Effect of Projects**
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.

**Categorical Exclusion**
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.

Signed: _____ Date: 10/9/12
John McDonough, Deputy Director

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