



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

AUG 15 2011

MEMORANDUM FOR: Commander Robert Kamphaus, NOAA
Commanding Officer, NOAA Ship *Okeanos Explorer*

FROM: Captain David A. Score, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for EX-11-05
Gulf of Mexico Water Column Exploration

Attached is the final Project Instruction for EX-11-05 Gulf of Mexico Water Column Exploration, which is scheduled aboard NOAA Ship *Okeanos Explorer* during the period of 22 August- 10 September 2011. Acknowledge receipt of these instructions via e-mail to OpsMgr.MOA@noaa.gov at Marine Operations Center—Atlantic.

Attachment

cc:
MOA1



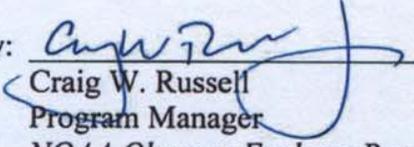


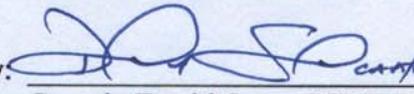
Final Project Instructions

AUG 15 2011

Date Submitted: August 03 2011
Platform: NOAA Ship *Okeanos Explorer*
Cruise Number: EX-11-05
Project Title: Gulf of Mexico Water Column Exploration
Cruise Dates: August 22 – Sept 10, 2011 (Key West, FL – Pascagoula, MS)

Prepared by: Mashkoor Malik
NOAA *Okeanos Explorer* Program
Office of Ocean Exploration & Research

Approved by:  Dated: 8/8/11
Craig W. Russell
Program Manager
NOAA *Okeanos Explorer* Program
Office of Ocean Exploration & Research

Approved by:  Dated: 8/15/11
Captain David Score, NOAA
Commanding Officer
Marine Operations Center – Atlantic

I. Overview

The EM 302 multibeam sonar onboard *Okeanos Explorer* provides a unique opportunity to collect water column backscatter. However, comprehensive tests to describe the EM 302 water column capabilities have not been conducted. Work in Gulf of Mexico (GOMex) provides an opportunity where several water column targets (seeps, oil plumes etc.) are known to be present. Coincidentally, mapping of these water column targets is important for providing locations of seeps for further analysis and research and determining the density of naturally occurring seeps. Multibeam sonars offer wider swath coverage compared to single beam fisheries sonar; however, very few deep water multibeam sonars are capable of providing water column backscatter data. Single beam fisheries sonars have been deployed in the GOMex following the Deep Water Horizon oil spill [1] but suffer from narrow swath coverage.

The primary objective for this cruise will be to test the feasibility of the EM 302 multibeam sonar to map naturally occurring and well head gaseous seeps, which will help identify future uses of EM 302 and other water column imaging enabled multibeam sonars on a larger scale in GOMex. To determine the effectiveness of EM 302 water column data to detect these seeps, independent information from other sensors (for example fisheries sonar) is required. To achieve this objective, an EK 60 (18 kHz) was installed onboard *Okeanos Explorer* in May 2011. Additionally, the cruise will rely on collaboration with the NOAA National Marine Fisheries Service (NOAA Fisheries or NMFS) and The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). The comprehensive suite of fisheries sonars installed onboard NOAA Ship *Pisces* along with the existing data available through BOEMRE (some of BOEMRE data is not in the public domain) will be used to collect data that will help to cross check the efficacy of EM 302 to detect water column targets and gaseous seeps. Along with testing water column imaging, additional tests are being planned to collect and assess the seafloor backscatter data to detect seafloor targets (seeps, pock marks etc.) and compare the backscatter data with calibrated ME70 fisheries multibeam sonar installed on *Pisces*.

The concurrent operations by the two ships (*Okeanos Explorer* and *Pisces*) present a unique opportunity to collect useful data as well as raises challenges to communicate and transfer data in real time for comparison purposes. *Pisces*, in addition to working along with *Okeanos Explorer*, will be conducting other operations and therefore effective communication between the two ships will be essential for day to day operations. *Okeanos Explorer* and mission crew, through the Operations Officer, are expected to work closely with the *Pisces* Operations Officer and Charles Thompson, of NOAA Southeast Fisheries Science Center, who will be organizing the *Pisces* expedition.

1 NOAA Ship Thomas Jefferson Deepwater Horizon response mission report, Interim Project report-Leg3, June 15-July 1, 2010.

A. Summary of Objectives

Preliminary cruise objectives (not in order of priority) are:

1. Conduct Sea Acceptance Trials (SAT) of EK 60:

Kongseberg EK 60 single beam echo sounder was recently installed onboard *Okeanos Explorer* in May 2011. The harbor acceptance trials were completed in June 2010. The SAT for EK 60 will be completed during the initial phase of the cruise. During the EK 60 SAT, calibration of the system will be attempted using small solid spheres as well as noise measurements at different speeds. It is expected that the SAT will be completed off Key West in water depth of ~ 40-600m. A suitable location will be decided during the cruise based on weather conditions, current and sea conditions. Minimal involvement of the ship's staff is expected for the calibration procedure including helping with the suspending spheres on the side of the ship.

For details about the calibration plan please see Appendix A.

2. Test EM 302 capability to detect gaseous seeps / water column targets:

Previous work in GoMex [2 and references therein] has shown presence of several deep water gaseous seeps. The EM 302 will be used to collect water column and seafloor backscatter over these gaseous seeps locations. The data from the ships' (*Okeanos Explorer* and *Pisces*) EK 60 will be used as comparison data sets. The seafloor backscatter data collected by *Okeanos Explorer* will also be analyzed to infer if gaseous seeps present any signal in the seafloor backscatter data.

The capability of water column backscatter data to detect targets of different sizes depends on frequency used. This cruise presents an interesting scenario where a broad spectrum of frequencies will be used. *Okeanos Explorer* carries 3.5 kHz Knudsen sub-bottom profiler that may be used for water column data evaluation (details are currently being worked out by the Science team and manufacturer), 18 kHz EK 60 and 30 kHz EM 302. *Pisces* carries 18 kHz, 38 kHz, 120 kHz and 200 kHz EK 60 and ~ 70 -120 kHz ME 70. The most relevant to the EM 302 comparison will be 38 kHz EK 60 onboard *Pisces* but other data from other frequencies will be valuable in understanding the water column structure and determining precisely what EM 302 can and cannot detect.

Data comparisons (from *Pisces* and *Okeanos Explorer*) will also be attempted to test the detection of other water column targets (e.g. deep scattering layer). Ship to ship data comparison will be conducted by either running the two ships on similar course separated by 1 – 3 km or by one ship following the other ship about one hour behind the other on a track line that goes over a known seep location.

2 Mineral Management Service, Gulf of Mexico OCS Region, Gulf of Mexico OCS Oil and Gas Lease Sales: 2007-2012, Draft Environmental Impact Statement, Volume I, MMS 2006-062, New Orleans, 2006.

3. Seafloor backscatter comparison

NOAA Ship *Pisces* is outfitted with a fisheries multibeam sonar ME 70 (~ 70-120 kHz) that is capable of providing calibrated seafloor backscatter data. Both ships will run a small survey in shallow waters (ME 70 depth range < 200m) to collect comparison data sets.

B. Operating Area

The primary operating area will be in the northern Gulf of Mexico (Figure 1). The coordinates of the operating areas identified in Figure 1 are provided in Table 1. The exact location of the work inside these operating boxes will be selected based on the data collected during the cruise. To maximize the mapping in poorly mapped areas in vicinity of Florida escarpment, the recommended waypoints while transiting from Key West, FL to the working grounds are also included in Table 1:

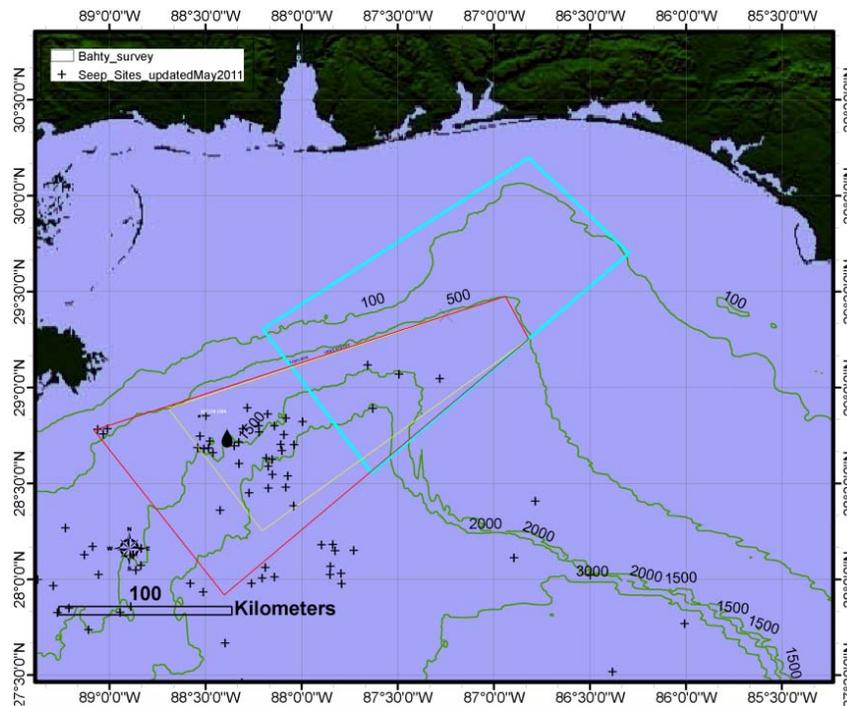


Figure 1: Overview of the working grounds for EX1105. The three boxes identify broad areas in which the seep comparison (yellow box), bathymetric and backscatter mapping (red box) and shallow water seeps and seafloor backscatter comparison site (cyan box) will be conducted. The Deep Water Horizon site is also shown (as oil drop). The possible seep locations - inferred from surface slicks- as available in literature are shown as +. (Image courtesy Dr. Larry Mayer).

Operations area	Bounding coordinates Longitude, Latitude (- West, + North)
EK 60 calibration site (subject to change)	-81.9637,24.0430
Suggested waypoint for the transit (Key West, FL – Working grounds)	-81.8162,24.5435 -81.9873,24.0582 -83.5052,24.1529 -84.0196,24.4496 -84.7023,25.6753 -85.0203,26.9378 -86.0471,27.9715 -88.3771,28.0750
Seep comparison (yellow box in Figure 1)	-88.6878,28.8852 -86.9341,29.4656 -86.8223,29.2528 -88.2026,28.2504
Backscatter and bathymetry mapping (red box in Figure 1)	-88.3966,27.9265 -86.8156,29.2445 -86.9604,29.4702 -89.0761,28.7739
Shallow water seep and backscatter comparison (cyan box in Figure 1)	-87.6319,28.5568 -86.2907,29.6995 -86.8237,30.1922 -88.1945,29.3040

Table 1: Boundary coordinates of the operating areas during EX1105.

The operating area is known to have several oil rigs and underwater structures. Vigilant ship navigation will be required to work safely in close proximity to these structures. The rig structures should not be approached less than 500 m without prior approval from the rig operator. BOERMRE onboard representative Bill Shedd is expected to help with providing more detailed information about the rigs and facilitate communications with the rig operators if closer than 500 m distance from the rigs is required. Any decision to work close to an oil rig will be reached after discussion between mission crew, ship staff and BOERMRE representative.

The operating area also includes the site of 2010 Deep Water Horizon oil spill from Macondo well. No restrictions to work near the Macondo well are known at this time but final confirmation will be obtained based on most recent notices to mariners and consultation with BOERMRE onboard representative. Although not expected, oil patches may be observed on the surface in the operating area. In case a surface oil patch is observed, necessary precautions regarding safety of personnel, water making etc. will be implemented at direction of the ship staff.

C. Participating Institutions

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

University of New Hampshire (UNH) Center for Coastal and Ocean Mapping (CCOM)
24 Colovos Road, Durham, NH 03824 USA

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

The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), *Gulf of Mexico OCS Region & Atlantic Activities* 1201 Elmwood Park Blvd, New Orleans, LA 70123

NOAA National Marine Fisheries Service, Southeast Fisheries Science Center NMFS-SSC
1103 Balch Blvd Building: Stennis Space Center, MS 39529-0001

D. Personnel (Science Party)

Following personnel will participate in EX1105.

	NAME	AFFILIATION	ROLE	M/F	STATUS
1	Mashkoor Malik	OER	Expedition coordinator	M	US Citizen
2	Tom Weber	UNH/CCOM	Lead Scientist	M	US Citizen
3	Jonathan Beaudoin	UNH/CCOM	Lead Scientist	M	Non-US Citizen
4	Bill Shedd	BOEMRE	Lead Scientist	M	US Citizen
5	LT Glen Rice	NOAA, OCS	FNG Escort	M	US Citizen
6	Gustav Karl Kågesten	UCAR	Mapping Watchstander	M	Non-US Citizen
7	Kevin Jerram	UNH/CCOM	Mapping Watch stander	M	US Citizen
8	Maddie Schroth-Miller	UNH/CCOM	Mapping Watch stander	F	US Citizen
9	Indonesian Scientist TBD				
10	Tony Dahlheim	Kongsberg	EK 60 Calibration	M	US Citizen
11	Jeff Condiotty	Kongsberg	EK 60 Calibration	M	US Citizen

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

No shore participants have been identified at this time.

E. 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

Marine Operations Center, Pacific (MOP)
2002 SE Marine Science Drive
Newport, OR 97365
Telephone: 541-867-8700

Chief, Operations Division, Atlantic (MOA)
LCDR Jennifer Pralgo
Telephone: 757-441-6716
E-mail: ChiefOps.MOA@noaa.gov

Chief, Operations Division, Pacific (MOP)
CDR Michael Hopkins
Telephone: (206) 553-8705
Email: ChiefOps.MOP@noaa.gov

Mission Operations

Mashkoor Malik,
Expedition Manager and Coordinator
NOAA Ocean Exploration and Research
Phone: 603-377-6319
Email: Mashkoor.Malik@noaa.gov

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

LCDR Jeremy Adams, NOAA
Commanding Officer
NOAA Ship Pisces
Email: CO.Pisces@noaa.gov

LT Megan Nadeau, Field Operations Officer
NOAA Ship Okeanos Explorer
Phone: 207-240-0957
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

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

LCDR (Sel) Nicola VerPlanck, EX Deputy
Program Manager
NOAA Ocean Exploration & Research
Phone: 206-526-4801
E-mail: Nicola.VerPlanck@noaa.gov

Webb Pinner, Systems Engineer
NOAA Ocean Exploration & Research (2020,
Inc.)
Phone: 401-749-9322
Email: webb.pinner@noaa.gov

Bill Shedd
BOEMRE
Phone: 504-736-2497
Email: William.Shedd@boemre.gov

Charles Thompson
Southeast Fisheries Science Center
NOAA Fisheries
Email: Charles.H.Thompson@noaa.gov

Shipments

Be sure to send an email to *Okeanos Explorer* Operations Officer OPS.Explorer@noaa.gov indicating the size and number of items being shipped and the name of person it is being shipped to.

For deliveries to arrive on the ship between August 18-21, 2011:

USCG Sector Key West
100 Trumbo Point Rd
Key West, FL 33040
Attn: NOAA Ship *Okeanos Explorer*

F. Diplomatic Clearances

Not applicable to this cruise. All areas of operation are within US EEZ

G. Licenses and Permits

NOT APPLICABLE TO THIS CRUISE

A Categorical Exclusion memo from Office of Ocean Exploration and Research for this expedition is attached as Appendix D.

II. Operations

A. Cruise Plan Itinerary

Date / Location	<i>Okeanos Explorer</i> (EX)	<i>Pisces</i> (PC)	Remarks
08/21/2011	Mission party arrives		
08/22/2011	Depart Key West for EK 60 SAT / Calibration		Kongsberg staff will be onboard. EK 60 calibration and EK60 / EM302 / Knudsen synchronization conducted
08/23/2011	Arrive Key West to drop off EK 60 / Kongsberg party by small boat (TBD)		
08/23/2011	Start transit towards working grounds following a path to maximize mapping over Florida escarpment		Recommended way points are included in Table 1.
08/26/2011	Arrive in working grounds. Commence mapping in deeper region. Conduct vertical CTD cast (TBD)		Will need 100 % bottom coverage collecting bathymetry and backscatter (both water column / seafloor)

08/27/2011	Continue mapping in deep water. Conduct vertical CTD cast (TBD)		
08/28/2011	Continue mapping in deep water. Conduct vertical CTD cast (TBD)		
08/29/2011	Continue mapping in deep water	Departure from Pascagoula, MS	
08/30/2011	Commence seep comparison tests with PC	Arrive in working ground. Commence seep comparison tests with EX	Lines to be run by EX and PC together will be decided based on the data collected. Preferable time is middle of day/night to avoid migrating DSL
08/31/2011	Transit and commence mapping in shallow water to identify a comparison site	Commence transit and commence work in shallow water	
09/01/2011	Run Shallow water backscatter comparison survey	Run Shallow water backscatter comparison survey ME 70 calibration (TBD) Repeat of backscatter survey after ME 70 calibration (TBD)	Area should be covered in ~ ½ day work
09/02/2011	Continue working in shallow water to detect shallow water seeps	Depart survey area for Pascagoula, MS	
09/03/2011	Transit to deep water sites		
09/04/2011	Continue working in deep water. Conduct vertical CTD cast (TBD)		
09/05/2011	Continue working in deep water. Conduct vertical CTD cast (TBD)		
09/06/2011	Continue working in deep water		
09/07/2011	Continue working in deep water		
09/08/2011	Continue working in deep water		
09/09/2011	Break Ops; head for Pascagoula, MS		
09/10/2011	Arrive Pascagoula		
09/11/2011	Mission party departs		
09/13/2011	Ship tours for NCDDC / Local media (TBD)		Tentative date for a brief visit by NCDDC and local media. Details are expected to be available by 9/1/2011

B. Staging and de-staging:

Mission party will arrive onboard the ship by 21 August 2011. The mission party will leave the ship no later than 11 September, 2011.

Please find below the Shipping Address for the Key West In port:

USCG Sector Key West
100 Trumbo Point Rd
Key West, FL 33040
Attn: NOAA Ship *Okeanos Explorer*

Exact location of the ship in Pascagoula, MS will be provided to the mission party before 22 August 2011. The vessel will be supported out of the Pascagoula Port Office, also known as the Gulf Marine Support Facility (GMSF); POC is Jim Rowe 228-769-0307.

C. Dive Plan (SCUBA)

NOT APPLICABLE TO THIS CRUISE

No dive operations anticipated during this cruise except for emergency dives in unforeseen circumstances of gear entanglement during EK 60 calibration.

D. Applicable Restrictions

NOT APPLICABLE TO THIS CRUISE

III. Equipment

A. Equipment and capabilities provided by the ship

- Kongsberg Simrad EM 302 Multibeam Echosounder (MBES)
- Kongsberg Simrad EK 60 Deepwater Fisheries Echosounder (18 kHz)
- Knudsen 3260 Sub-bottom profiler (SBP)
- LHM Sippican XBT (various probes)
- Seabird SBE 911Plus CTD
- Light Scattering Sensor (LSS) (2)
- Oxidation-Reduction Potential (ORP) (2)

- Dissolved Oxygen (DO) sensor (2)
- Seabird SBE 50 CTD Stand
- CNAV GPS
- POS/MV
- Seabird SBE-45 (Micro TSG)
- Kongsberg Dynamic Positioning-1 System
- NetApp 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 (As of 7/21/2011 VSAT high-speed connection is TBD)
- Cruise Information Management System (CIMS)

B. Equipment and capabilities provided by the scientists

Gear required to conduct EK 60 calibration including reels, a calibration sphere and additional hard ware will be provided by Kongsberg. The equipment will be shipped to Key West to the address provided above.

IV. Hazardous Materials

A. Policy and Compliance

NOT APPLICABLE TO THIS CRUISE

B. Radioactive Isotopes

NOT APPLICABLE TO THIS CRUISE

C. Inventory

NOT APPLICABLE TO THIS CRUISE

V. Additional Projects

A. Supplementary ("Piggyback") Projects

NOT APPLICABLE TO THIS CRUISE

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/NAOs/Chap_212/naos_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 *Okeanos Explorer* Operations Officer to ensure data pipeline protocols are followed for final archive of all data acquired on the EX without proprietary rights. The full data management plan is included in Appendix C to this cruise plan.

Deliverables

- a. At sea
 - Daily plans of the Day (POD)
 - Daily situation reports (SITREPS)
- b. Post cruise
 - Refined SOPs for all pertinent operational activities
 - Assessments of all activities
- c. Science
 - Multibeam and XBT raw and processed data, a full description is available in the data management plan.
 - Detailed cruise report including details of the operations, important scientific results

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 Expedition Coordinator will conduct a meeting of the scientific party to inform them of cruise objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Post-Cruise Meeting

Upon completion of the cruise, a meeting will be held (unless prior alternate arrangements are made) and attended by the ship 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://terra.gso.uri.edu/NOAAShipOkeanosExplorer>).

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. 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 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](#). 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 B.

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 (and other pertinent) ORM documents will be followed by all personnel working onboard *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 the 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:
 Ship (401) 932-4114
 OOD (401) 378-7414

Okeanos Explorer Iridium:
 (808) 659-9179

Okeanos Explorer 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 preferable.

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

As per guidance provided at http://www.moc.noaa.gov/all_ships/instruction.htm#forei, all foreign national access to the vessel shall be in accordance with [NAO 207-12](#) and [RADM De Bow's March 16, 2006 memo](#). **OER is currently working with OAR POC for FNG clearance Yolanda Cooper on FNG requirements.**

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. Megan Nadeau will be the escort for the Foreign National Guest during this expedition.
3. 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.
4. 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.

G. Foreign Port Entry/Exit Requirements and Visas

NOT APPLICABLE TO THIS CRUISE

Appendix A: Recommended EK 60 calibration plan

Recommended EK 60 calibration procedures are outlined in “Simrad EK 60 Scientific Echo Sounder Reference Manual Release 2.2.0, January 2008.”

Location:

It is recommended to conduct calibration at a deep pier facility (with depth > 10 m). If no deep pier facility is available the calibration can be conducted at anchor in a location where there is minimal impact by fish (to avoid acoustic interference) and current/sea conditions (to avoid excessive movement which makes the mechanics of the calibration difficult). A final location will be chosen based on the impending weather conditions and discussions with the ship.

Procedure:

The general procedure to conduct EK 60 calibration is:

1. Secure the vessel in a suitable location (bow/stern anchored in still water that is free of biological scatterers, or drifting)
2. Suspend the target sphere and weight (depending on the rigging, it may make sense to do this prior to anchoring).
 - a) Take a long line with a weight attached to the middle, and drop it down from either the bow or stern.
 - b) Walk back (or fwd) holding the two ends of the line on either side of the vessel, keeping the line/weight clear of the hull (and thrusters, etc.)
 - c) Attach one end of the line to a pole/reel on the port (or stbd) side of the vessel.
 - d) Pay out the monofilament on the port (or stbd) side reel, and pull on the opposite side until the monofilament is reached. Detach the line, and attach the two remaining reels (e.g., one reel on port, two on stbd).
 - e) Attach a piece of monofilament, the calibration sphere, and a weight (weight needs to be at least one pulse length below the calibration sphere) to the point where the monofilament from all three reels are attached.
 - f) Soap the calibration sphere using ordinary liquid hand soap to avoid bubble development on the surface of the sphere.
 - g) Lower the calibration sphere over the side until all three lines are equal (ideally, this will place the sphere underneath the EK60 transducer). Ship's drawing will be consulted to precisely position the reels.

h) Adjust the lines in order to do the calibration. Will require someone on each reel, with radios, to make this work well.

i) After the calibration is finished, pay out the line on port side until the stbd lines are vertical. Then reel in on one of the stbd poles while continuing to pay out on port (to avoid tangles with ship).

j) Recover sphere/weight, untie lines and reel in all monofilament. The above methodology is the recommended approach for giving us the best control.

Time estimates:

It could take a few hours to precisely place the sphere under the EK 60. Up to 12 hours on-site may be required to conduct calibration. If additional time is available, it is recommended to collect data from both the EM 302 and the Knudsen while conducting EK 60 calibration in which case it might take up to 24 hours to complete the calibration.

Risks:

1. Gear entanglement: The ship's motion during the calibration procedure should be minimal to avoid any gear entanglement. If gear entanglement is suspected, the calibration procedure will be halted and ship's divers will inspect the ship hull for any entanglement.

Appendix B:

**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 _____

Emergency Contact: _____
(Name and Relationship)

Address: _____

Phone (Home) _____
(Work) _____
(Cell) _____

Email: _____

Signature _____ Date _____

Appendix C: Data management plan

Document Purpose

This document is an addendum to the overarching Okeanos Explorer FY11 Data Management Plan (EX_FY11_DMP.doc) and is specific to the EX-11-05 mission entitled “Field Trials of EM302 Multibeam Sonar Water Column Backscatter” For more detailed information on the data management effort for the Okeanos Explorer in FY11, please refer to that document.

Data Management Overview

The fifth *Okeanos Explorer (EX)* mission of the FY11 field season will take the ship from Key West, Florida to Pascagoula, MS. During EX-11-05, the Okeanos will utilize its state-of-the-art Kongsberg EM302 multibeam survey system and its newly acquired EK60 echosounder to map several known water column targets (i.e. naturally occurring seeps) in the Gulf of Mexico. During a portion of the mission, the NOAA Ship *Pisces* will work collaboratively with the Okeanos with its ME70 fisheries multibeam sonar that was used during the Deepwater Horizon response but is known to produce narrower swath coverage. The resulting data from each vessel will be compared. The primary objective is to determine the EM302’s efficacy in detecting naturally occurring seeps.

Participating scientists have agreed to consider deploying a CTD equipped with dissolved oxygen and fluorometer sensors over a detected seep within 100 miles of the DWH wellhead. This data would provide scientists working on the DWH response with a valuable reference in working with the CTD data recorded in the Gulf of Mexico in response to the DWH Oil Spill event. The EX has a new Dissolved Oxygen sensor for its CTD. The loan of a fluorometer from AOML in Miami is being coordinated and the expedition coordinator is investigating the feasibility of adding the additional sensors to the EX CTD.

Assumptions

All data from the entire mission will be publicly releasable. No protected sites have been identified.

EX-11-05: Field Trials of EM302 Multibeam Sonar Water Column Backscatter (August 22 – September 10, 2011)

Data Management Objectives

The DMT’s objectives for this mission are:

- Develop ISO metadata for collection-level and dataset-level records (multibeam, singlebeam sonar, XBT, CTD, EX METOC, Pisces METOC, Pisces singlebeam sonar) for NOAA.
- Ensure the near real-time update of the *Okeanos Atlas* with
 - Data layers as contextual data to the display, including primary operating area, planned survey boundaries, and any other appropriate data layers found.
 - Ship track and hourly observations received via email.

- Daily logs pulled from URI through RSS feeds and links to related images on oceanexplorer.noaa.gov website.
 - Daily cumulative bathymetric image overlays received via URI SRS.
 - Ship track and METOC sensor data from the NOAA Ship Pisces. (TBD)
 - Daily processed sonar coverage from the Pisces ME70 (TBD)
- Post-Mission:
 - Execute multibeam and oceanographic data pipelines.

Expedition Principals for Data Management

Mashkooor Malik, OER Expedition Coordinator

LT Megan Nadeau, OMAO, Okeanos Explorer Operations Officer

Webb Pinner, OER Telepresence, EX Data and Information Lead

Sharon Mesick, NCDDC, Federal Program Manager, IPT Chair

Susan Gottfried, NCDDC, OER Data Management Coordinator

Andrew Navard, NCDDC, Okeanos Atlas Developer

David Fischman, NGDC, Geophysical Data Officer

Thomas Ryan, NODC, Oceanographic Data Officer

Anna Fiolek, NCL, Multimedia Librarian

Appendix D: Categorical exclusion letter for EX1105

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
EX1105

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 Projects

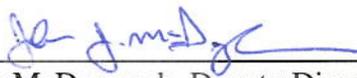
This project is part of the Office of Ocean Exploration's "Science Program." It will conduct multi-disciplinary ocean mapping and exploration activities designed to increase knowledge of the marine environment. This project is entitled "EX1105 Field trials EM 302 Multibeam Sonar Water Column Backscatter" and will be led by Mashkoor Malik, a physical scientist for the *Okeanos Explorer* program within OER. The work will be conducted between August 22 – September 10, 2011 in general area of Northern Gulf of Mexico. The Kongsberg EM 302 multibeam (30 kHz), Kongsberg EK 60 singlebeam (18 kHz), and possibly the Knudsen 3260 subbottom profiler (3.5 kHz chirp) will be operated during the project. Additionally, eXpendable BathyThermograph (XBT) and CTD operations will be conducted in conjunction with multibeam data collection.

Effects of the Projects

As ocean research with limited time 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 these projects.

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, these are research projects 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: 
John McDonough, Deputy Director

Date: 8/3/11