Ocean Exploration and Research

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Project Instructions: EX-19-03-Leg 1, Windows to the Deep 2019 (Mapping)

Date Submitted: May 30, 2019

Platform: NOAA Ship *Okeanos Explorer*

Project Number: EX-19-03 Leg 1

Project Title: Southeastern US Atlantic Continental Margin Mapping

Project Dates: May 29 - June 14, 2019

Prepared by:_____ **Dated:** _____

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I. Overview

> "America's future depends on understanding the ocean. We explore the ocean because its health and resilience are vital to our economy and to our lives. We depend on the ocean to regulate weather and climate; sustain a diversity of life; for maritime shipping and national defense; and for food, energy, medicine, and other essential services to humankind."
>
> *- NOAA Office of Ocean Exploration and Research Strategic Plan*

A. Brief Summary and Project Period

This document contains project instructions for EX-19-03 Leg 1. This cruise will be conducted 24 hours/day to perform exploratory deep sea mapping operations. The expedition will commence on May 29, 2019 in Key West, Florida (24° 33.168' N, 81° 48.458'W) and conclude on June 14, 2019 in Port Canaveral, Florida (28° 658'N, 80° 36.502'W). Mapping operations will focus on the U.S. South Atlantic Bight and Plateau areas, east of Florida, Georgia, South Carolina and North Carolina all within the U.S. Exclusive Economic Zone (EEZ).

NOAA's Office of Ocean Exploration and Research (OER) is the only federal organization dedicated to exploring the global ocean. OER works with partners to identify priority areas for exploration; support innovations in exploration tools and capabilities; and encourage the next generation of ocean explorers, scientists, and engineers to pursue careers in ocean exploration and related fields. The data and information collected during our expeditions and the research we fund gives resource managers, the academic community, and the private sector the information they need to identify, understand, and manage ocean resources for this and future generations of Americans.

NOAA Ship *Okeanos Explorer* is the only U.S. federal vessel dedicated to exploring our largely unknown ocean for the purpose of discovery and the advancement of knowledge. America's future depends on understanding the ocean. We explore the ocean to make valuable scientific, economic, and cultural discoveries; we explore because ocean health and resilience are vital to our economy and to our lives. Exploration supports NOAA mission priorities and national objectives by providing high-quality scientific information about the deep ocean to anyone who needs it.

In close collaboration with government agencies, academic institutions, and other partners, OER conducts deep-ocean expeditions using advanced technologies on the *Okeanos Explorer*. From mapping and characterizing previously unseen seafloor to collecting and

disseminating information about ocean depths, this work helps to establish a foundation of information and to fill data gaps. Data collected on the ship follow federal open-access data standards and are publicly available shortly after an expedition ends. This ensures the delivery of reliable scientific data needed to identify, understand, and manage key elements of the ocean environment.

Over the course of this cruise, science teams will focus on exploring poorly known deep-sea areas in the South Atlantic Bight and Blake Plateau. This cruise will be part of the Atlantic Seafloor Partnership for Integrated Research and Exploration (ASPIRE) campaign, a major multi-year, multi-national collaborative field program focused on increasing our collective knowledge of the North Atlantic Ocean in support of the Galway Statement on Atlantic Ocean Cooperation , an initiative between the United States, Canada, and the European Union to advance knowledge of the Atlantic leading to improved ocean stewardship and understanding.

B. Days at Sea (DAS)

Of the 17 DAS scheduled for this project, 17 DAS are funded by OAR allocation. This project is estimated to exhibit a Medium Operational Tempo due to 24-hour-per-day exploratory mapping operations.

C. Operating Area

EX-19-03 Leg 1 is a 24-hour a day mapping cruise that will focus operations in the U.S. South Atlantic Bight. In addition to the partners and regional stakeholders listed below, these areas are a result of the inputs from the OER ASPIRE 2019 workshop and the respective white papers.

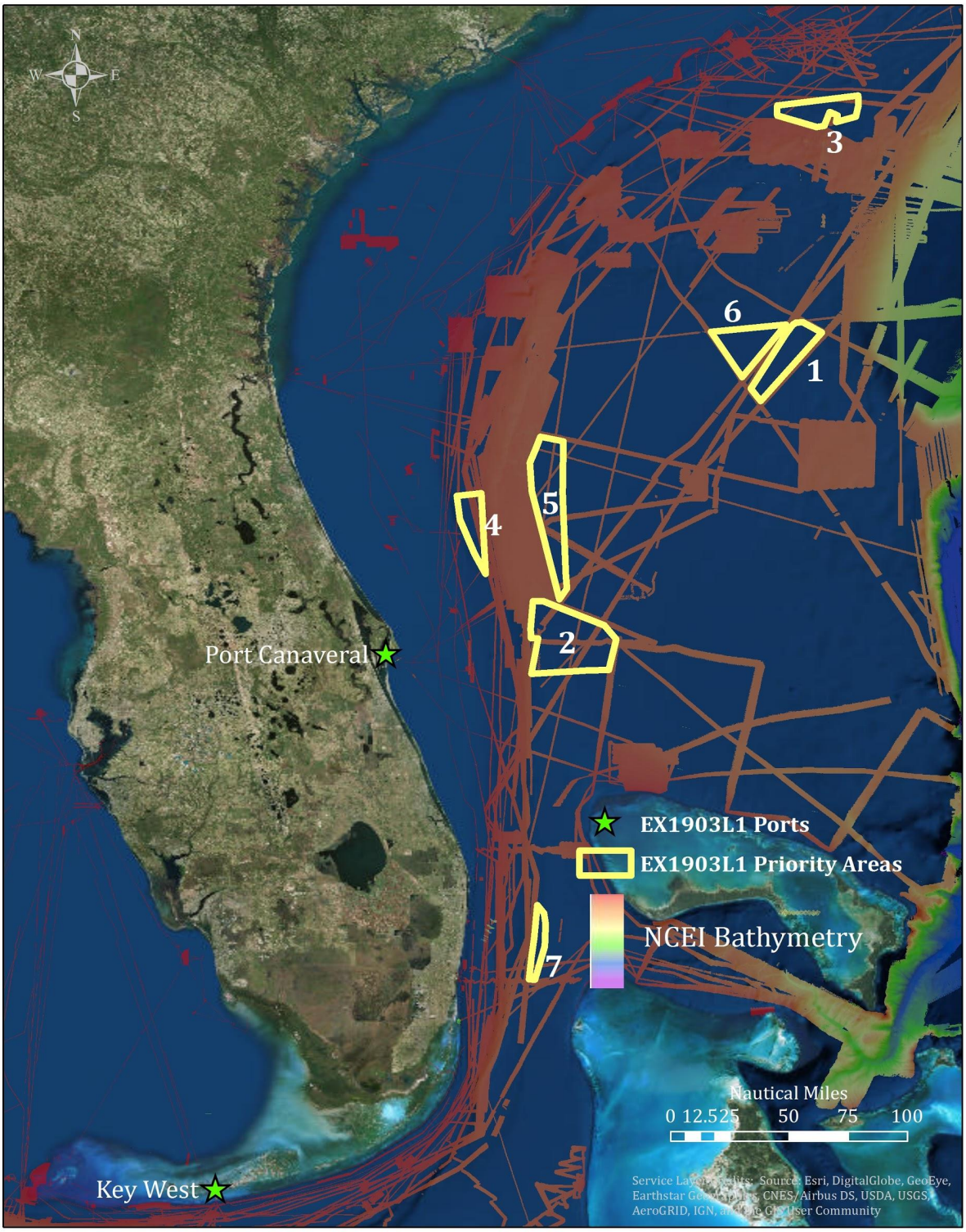

Figure 1: Map showing the general expedition operating area. The yellow polygon indicate priority mapping areas where the cruise will focus exploration mapping operations.

Table 1: Latitude and Longitude vertice for Priority Area 0, Central Plateau 02. This area was identified as a priority by the Bureau of Ocean Energy Management (BOEM), Southeast Deep Sea Coral Initiative (SEDCI), NOAA Office of Coast Survey (OCS) and Seabed 2030 efforts.

Priority Area 1, Central Plateau 02		
ID	**Latitude**	**Longitude**
0	30° 47.039' N	77° 45.330' W
1	30° 47.799' N	77° 44.068' W
2	30° 47.929' N	77° 41.120' W
3	30° 43.476' N	77° 33.204' W
4	30° 13.834' N	78° 3.096' W
5	30° 19.139' N	78° 3.096' W
6	30° 42.731' N	77° 48.448' W
7	30° 47.039' N	77° 45.330' W

Table 2: Latitude and Longitude vertice for Priority Area 1, SAFMC 03. This area was identified as a priority by the SAFMC.

Priority Area 2, South Atlantic Fisheries Management Council (SAFMC) 03		
ID	**Latitude**	**Longitude**
0	28° 15.807' N	79° 35.557' W
1	28° 31.166' N	79° 32.704' W
2	28° 31.362' N	79° 35.695' W

3	28° 35.471' N	79° 35.836' W
4	28° 47.315' N	79° 34.844' W
5	28° 47.352' N	79° 30.628' W
6	28° 43.790' N	79° 22.084' W
7	28° 36.805' N	79° 4.731' W
8	28° 30.767' N	78° 59.885' W
9	28° 17.552' N	79° 2.934' W
10	28° 17.366' N	79° 11.388' W
11	28° 15.807' N	79° 35.557' W

Table 3: Latitude and Longitude vertice for Priority Area 2, North Richardson Hills. This area was identified as a priority by DEEP SEARCH, South Atlantic Fisheries Management Council, BOEM, OCS and Seabed 2030 efforts.

Priority Area 3, Central Plateau 01		
ID	**Latitude**	**Longitude**
0	32° 12.419' N	77° 35.288' W
1	32° 17.360' N	77° 51.947' W
2	32° 21.680' N	77° 52.026' W
3	32° 26.083' N	77° 17.969' W
4	32° 21.979' N	77° 17.661' W

5	32° 16.878' N	77° 18.987' W
6	32° 14.594' N	77° 27.214' W
7	32° 17.425' N	77° 26.486' W
8	32° 18.942' N	77° 29.809' W
9	32° 12.951' N	77° 32.200' W
10	32° 12.419' N	77° 35.288' W

Table 4: Latitude and Longitude vertice for Priority Area 3,SAFMC 01. This area was identified as a priority by SAFMC.

Priority Area 4, SAFMC 01		
ID	**Latitude**	**Longitude**
0	29° 32.757' N	80° 6.962' W
1	29° 33.969' N	79° 56.652' W
2	28° 59.008' N	79° 54.868' W
3	29° 7.749' N	79° 59.437' W
4	29° 22.492' N	80° 5.586' W
5	29° 32.757' N	80° 6.962' W

Table 5: Latitude and Longitude vertice for Priority Area 4, Million Mounds - Western Extent. This area was identified as a priority by SAFMC, SEDCI and the 2018 Call for inputs.

Priority Area 5, Million Mounds - Western Extent		
ID	**Latitude**	**Longitude**
0	28° 48.170' N	79° 23.739' W
1	29° 34.893' N	79° 35.422' W
2	29° 47.051' N	79° 36.282' W
3	29° 52.825' N	79° 33.933' W
4	29° 58.495' N	79° 31.726' W
5	29° 56.382' N	79° 22.087' W
6	29° 33.928' N	79° 22.476' W
7	28° 59.178' N	79° 21.090' W
8	28° 52.700' N	79° 20.621' W
9	28° 48.170' N	79° 23.739' W

Table 6: Latitude and Longitude vertice for Priority Area 5, Central Plateau 01. This area was identified as a priority by DEEP SEARCH, South Atlantic Fisheries Management Council, BOEM, OCS and Seabed 2030 efforts.

Priority Area 6, Central Plateau 01		
ID	**Latitude**	**Longitude**
0	30° 24.175' N	78° 6.714' W
1	30° 43.849' N	78° 19.836' W
2	30° 47.050' N	77° 48.276' W
3	30° 24.175' N	78° 6.714' W

Table 7: Latitude and Longitude vertice for Priority Area 6, South Florida HAPC. This area will not be targeted for focused mapping but will be targeted for transit mapping.

Priority Area 7, South Florida Habitat Areaof Particular Concern		
ID	**Latitude**	**Longitude**
0	26° 3.697' N	79° 36.492' W
1	26° 13.080' N	79° 35.561' W
2	26° 21.540' N	79° 34.470' W
3	26° 35.794' N	79° 33.049' W
4	26° 32.284' N	79° 30.234' W
5	26° 27.769' N	79° 29.489' W

6	26° 17.944' N	79° 29.947' W
7	26° 3.562' N	79° 34.007' W
8	26° 3.697' N	79° 36.492' W

D. Summary of Objectives

May 29 - June 14, (Key West, FL. - Port Canaveral, FL.) EX-19-03 Leg 1, South Atlantic Bight and Blake Plateau Mapping

EX-19-03 Leg 1 operations will occur in the US EEZ in the South Atlantic Bight and Blake Plateau. This cruise will conduct 24 hour/day exploratory mapping operations to support regional partner and stakeholder needs, as well as provide operational data for EX-19-03 Leg 2 ROV dives.

1. Ship
    a. Small boat deployment (weather permitting); Develop and maintain proficiency with small boat operations for new and long term crew;
    b. Conduct CTD operations as requested and able;
    c. Man overboard / ship handling training
    d. Additional safety training.

2. Onboard Mapping
    a. Execute mapping line plans as defined by onboard personnel, with adjustments made to obtain complete coverage as necessary.
    b. Collect high-resolution mapping data from sonars in priority areas as dictated by operational needs as well as science and management community needs.
    c. Conduct 24 hr/day mapping operations for the entirety of the cruise.
    d. Create daily standard bathymetry mapping products.
    e. Collect sun photometer measurements as part of Exploration Project of Opportunity (EPO).
    f. Average survey speeds of 8.5-9 kts will be utilized.
    g. Transit speeds of 10-11 kts are requested to maximize survey time during this short cruise.

3. Science
    a. Acquire data to support priority science and management needs.
    b. Build capacity in the scientific community and public in telepresence-based mapping exploration.
    c. Successfully conduct operations in conjunction with shore-based Exploration Command Centers and remote science team participants.

d. Identify and map vulnerable marine habitats
e. Acquire a foundation of sonar and oceanographic data to better understand the characteristics of the water column and the fauna that live there.
f. Collect high-resolution bathymetry in areas with no (or low quality) sonar data.

4. Mapping Sound Velocity Profiling Objectives
    a. Collect XBT casts as data quality requires, during mapping operations using handheld and AOML automatic XBT launcher. Maintain CTD capabilities as back up sound velocity profiling method for mapping data requirements.

5. Video Engineering (VSAT ~15 mb/sec ship-to-shore; 5 mb/sec shore-to-ship)
    a. Provide onboard support for 24 hour mapping and telepresence mapping objectives.
    b. Test terrestrial and high-speed satellite links;
    c. Verify Global Foundation for Ocean Exploration (GFOE)-managed telepresence systems perform as expected

6. Data Management
    a. Provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities;
    b. Verify GFOE-managed data systems perform as expected
    c. Update SOPs to reflect GFOE-managed network changes
    d. Confirm mapping data file throughput to shoreside FTP.
        i. EM 302 .all, .wcd
        ii. EK 60 .raw, .idx
        iii. SBP .segy, .keb, .kea

7. Training of Onboard Explorers-in-Training/Education Partnership Program
    a. Conduct training in the acquisition and processing of sonar data
    b. Conduct detailed bathymetric data processing
    c. Generate tracklines of all sonar data types
    d. Generate cruise map
    e. Generate cruise statistics
    f. Process subbottom, EK60, multibeam bottom backscatter and water column backscatter data according to SOPs
    g. Plan and execute cruise mini-projects

8. Teacher At Sea
    a. Inform TAS about life at sea and general research at sea.
    b. Familiarize TAS with acquisition and processing of acoustic data

9. Host Knauss Fellow
    a. Train Knauss Fellow in the acquisition and processing of sonar data
    b. Familiarize Fellow with OER EX Operations

E. Participating Institutions

- National Oceanic and Atmospheric Administration (NOAA), Office of Ocean Exploration and Research (OER)–1315 East-West Hwy, Silver Spring, MD 20910 USA
- NOAA, National Centers for Environmental Information (NCEI), Stennis Space Center MS, 39529 USA
- University Corporation for Atmospheric Research (UCAR) Cooperative Programs for the Advancement of Earth System Science (CPAESS), 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 Rd, Durham, NH 03824 USA
- Global Foundation for Ocean Exploration (GFOE), P.O. Box 417, Mystic, CT 06355

F. Personnel (Mission Party)

Table 8: Full list of seagoing mission party members and their affiliations May 29 - June 14

#	Name (First, Last)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
1	Michael White	Expedition Coordinator/ Mapping Lead	5/26	6/17	M	OER (CNSP)	USA
2	Katharine Egan	Knauss Fellow	5/27	6/15	F	OER	USA
3	Neah Baechler	Watch Lead	5/27	6/15	F	UCAR	USA
4	Jason Meyer	Watch Lead	5/27	6/15	M	UCAR	USA
5	Allisa Dalpe	Explorer in Training	5/27	6/15	F	UCAR	USA
6	Marcel Peliks	Explorer in Training	5/27	6/15	M	UCAR	USA
7	Pacifica (Kitrea) Takata-Glushkoff	Explorer in Training	5/27	6/15	F	UCAR	USA
8	Andy O'Brien	Engineer	5/27	6/15	M	GFOE	USA
9	Mark Durbin	Engineer	5/27	6/15	M	GFOE	USA

10	Mike Durbin	Engineer	5/27	6/15	M	GFOE	USA
11	Chris Wright	Engineer	5/27	6/15	M	GFOE	USA
12	Bob Knott	Engineer	5/27	6/15	M	GFOE	USA
13	Jahnelle Howe	Explorer in Training	5/27	6/15	F	EPP	USA
14	Teacher at Sea						

G. Administrative

1. Points of Contact:

Ship Operations

Chief, Operations Division, Atlantic (MOA)
LCDR Fionna Matheson, NOAA
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Mission Operations

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Operations Officer
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Other Mission Contacts

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Rachel Medley
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Phone: (301) 789-3075
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Alan Leonardi, Director
NOAA Ocean Exploration & Research
Phone: 301-734-1016
Mobile: 202-631-1790
Email: alan.leonardi@noaa.gov

Vessel Shipping Address

1. Shipments

Send an email to the *Okeanos Explorer* Operations Officer at OPS.Explorer@noaa.gov indicating the size and number of items being shipped.

NOAA Ship Okeanos Explorer
ATT: Name/Dept.
33 E. Quay road
Key West, FL 33040

2. Diplomatic Clearances

None required

3. Licenses and Permit

Pursuant to the National Environmental Policy Act (NEPA), NOAA OER is required to include in its planning and decision-making processes appropriate and careful consideration of the potential environmental consequences of actions it proposes to fund, authorize and/or conduct. NOAA's Administrative Order (NAO) 216-6A Companion Manual describes the agency's specific procedures for NEPA compliance. Among these is the need to review all proposed NOAA-supported field projects for their environmental effects. An Environmental Review Memorandum has been completed for this survey, in accordance with Section 4 of the Companion Manual. (Appendix C).

II. Operations

The Expedition Coordinator is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives, priorities and environmental compliance procedures. 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. Locations are approximate.

Table 9: Cruise Itinerary. This is an approximate itinerary and is subject to change based on objective completion.

Date	Activities
5/28	Staging in Key West
5/29	Depart Key West
5/30	Transit to Priority Areas, being focused mapping operations
6/13	Depart Priority Areas, begin transit to Port Canaveral
6/14	Arrive in Port Canaveral

B. Staging and Destaging

Minimal staging and de-staging are anticipated.

C. Operations to be conducted

1. **Telepresence / Outreach Events**
    a. Live events will be scheduled as requested.

2. **In-Port Events**
    a. No port events are expected.

D. SCUBA Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program and require the approval of the ship's Commanding Officer. No science dives are planned during EX-19-03 Leg 1, but the ship may plan training, safety drills, or maintenance dives.

E. Applicable Restrictions

Sonar Operations

EM 302, EK 60/ EK 80, ADCP, and sub-bottom profiler data acquisition are 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. These operating procedures will include protection measures when operating in the vicinity of marine mammals, sea turtles or Endangered Species Act-listed species as described in appendices of this document. The final decision to operate and collect 24-hour sub-bottom profiler data will be at the discretion of the Commanding Officer.

III. Equipment

A. Equipment and capabilities provided by the ship

- Kongsberg Simrad EM302 Multibeam Echosounder (MBES)
- Kongsberg Simrad EK60 Deepwater Echosounders and GPTs (18,120, 200 kHz) and WBTs (38, 70 kHz)
- Knudsen Chirp 3260 Sub-bottom profiler and GPTs(SBP)
- Teledyne RDI Workhorse Mariner (300 kHz) ADCP
- Teledyne RDI Ocean Surveyor (38 kHz) ADCP
- LHM Sippican XBT Mark21 System(Deep Blue probes)
- AOML Automated XBT Launcher (Deep Blue probes)
- Seabird SBE 911Plus CTD and deck box
- 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
- MarineStar GPS with satellite corrections serial data feeds provided for GFOE network
- POS/MV with serial data feeds provided for the GFOE network
- Seabird SBE-45 (Micro TSG) data feeds provided for GFOE network

- Kongsberg Dynamic Positioning-1 System
- ECDIS
- Met/Wx Sensor Package with serial data feeds provided for GFOE network
- Three VoIP telephone lines
- 1 functioning and seaworthy SOLAS approved fast rescue boat
- 1 functioning and seaworthy work boat to support ROV operations and personnel transfers

B. Equipment and capabilities provided by the OER and partners

- Microtops II Ozone Monitor Sun photometer and handheld GPS required for NASA Marine Aerosols Network supplementary project.
- NOAA OER 6000 m *Deep Discoverer* ROV NOAA *Seirios* Camera Platform
- Teledyne Underway CTD
- IVS Fledermaus Software suite
- SIS Software and Kongsberg acquisition computer
- EK 60 acquisition computer
- EK 80 Wide Band Transceivers
- Sub bottom profiler acquisition computer
- CTD acquisition computer
- Hypack Software
- Sound Speed Manager
- GFOE provided VSAT High-Speed link (15 Mbps ship to shore; 5 Mbps shore to ship)
- Backscatter Mosaic computer
- GFOE exploration operations networking infrastructure
- Scientific Computing System (SCS)
- Telepresence System
- NCEI Cruise Information Management System (CIMS)
- GFOE VOIP system
- GFOE provided data storage
- CIOERT Midwater Profiler
- NUWC Instrumented tow cable

IV. Hazardous Materials

A. Policy and Compliance

The Expedition Coordinator is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the

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

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

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

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

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

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

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

B. Inventory

Table 10: Full itemized inventory of hazardous materials aboard the vessel, including each item's use and approximate location onboard.

Item	Use	Approx. locations
Aqua Shield	Underwater Lubricant	ROV Workshop Fire Cabinet, Pit
Dow Corning 4	Electrical insulating compound	ROV Workshop Fire Cabinet, Pit
Fluid Film Spray	Silicone Lubricant	ROV Workshop Fire Cabinet
Isopropanol Alcohol (35 gallons)	Solvent	ROV Workshop Fire cabinet
Scotchkote	Electrical insulating compound	ROV Workshop Fire cabinet
3M Silicone Spray	Silicone Lubricant	ROV Workshop Fire cabinet
Synthetic AW Hydraulic Oil, ISO-22	Amsoil (AWG-05)	Hanger, Pit, Vehicles
Tap Magic Cutting Fluid	Cutting/Machining Lubricant	ROV Workshop Fire cabinet
Tap Magic Heavyweight Cutting Fluid	Cutting/Machining Lubricant	ROV Workshop Fire cabinet
Tuff Coat M	Marine Lubricant	Winch room
Dow Corning Molykote 111	Valve Lubricant and Sealant	ROV Workshop Fire cabinet, Pit
WD40	Lubricant	ROV Workshop Fire cabinet
Loktite	Bolt adhesive	ROV Workshop Fire cabinet
Mineral Oil	Vitrea	Hanger, Vehicles
Por-15	Paint Kit	ROV Workshop Fire cabinet
Univis HVI 13	Hydraulic Fluid	Hanger, ROV *D2*
Ultratane	Butane fuel	ROV Workshop fire cabinet
Rust-oleum	Protective Enamel	ROV Workshop fire cabinet

Flux-Off	Soldering Flux remover	ROV Workshop fire cabinet
Propane	Torch Fuel	ROV Workshop fire cabinet
Adhesive Pliobond 25	General adhesive	Tool room
AP 120 Metal Prep	Degreaser/cleaner for metal surfaces	Pit
Butane Fuel	Torch refill	Tool Room
PVC cement	Adhesive for PFV plastic piping	Tool Room
Phosphoric Acid	Ferrous metal rust removal	Tool room
Pipetite Paste	Plumbing sealant	Tool room/pit
Spindle Oil 10, ROS PT	Lubricant/compensation oil	Tool room
DC557	Silicon grease	Tool room/pit
Tether Potting Catalyst	Two part epoxy catalyst	Pit
Tether Potting Compound	Two part epoxy ingrediant	Pit
ThermaPlex Bearing Grease	Lubricant	Pit
Tritech Seaking	Compensator oil for sonar head	Pit
Li-ion batteries (14lbs)	Power CIOERT midwater profilers	CTD deck

C. Chemical safety and spill response procedures

All safety and spill response procedures will be handled according to OMAO guidelines and following the manufacturer's MSDS which has been provided to the ship's ECO.

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 (as time allows) 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 the Expedition Coordinators.

See Appendix G for full Survey of Opportunity Form.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

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

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. See Appendix B for detailed data management plans.

Deliverables

1. At sea
   a. Daily plans of the Day (POD)
   b. Daily situation reports (SITREPS)
   c. Summary forms for each CTD rosette cast
   d. Daily summary bathymetry data files
   e. Raw sonar files (EM 302, EK 60, Subbottom, ADCP)
2. Post cruise
   a. Refined SOPs for all pertinent operational activities
   b. Assessments of all activities
3. Science
   a. Multibeam raw and processed data (see appendix B for the formal cruise data management plan)
   b. XBT raw and processed data
   c. EK 60 raw data
   d. Knudsen 3260 sub-bottom profiler raw data
   e. ADCP raw data
   f. Mapping data report
   g. Cruise report

Archive

OER 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. Shipboard Meetings

A safety brief and overview of POD will occur on the Bridge each morning at 0800. Daily Operations Briefing meetings will be held at a time and location determined by Operations Officer based on watch schedule, to review the current day, and define operations,

associated requirements, and staffing needs for the following day. A Plan of the Day (POD) will be posted each evening for the next day in specified locations throughout the ship. Daily Situation Reports (SITREPS) will be posted as well and shared daily through email.

1. Pre-Project Meeting:

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

2. Vessel Familiarization Meeting:

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

3. Post-Project Meeting:

The Commanding Officer is responsible for conducting a meeting no earlier than 24 hours before or seven days after the completion of a project to discuss the overall success, challenges, and shortcomings 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 applicable ship's officers, applicable crew, the Expedition Coordinator, and members of the scientific party and is normally arranged by the Operations Officer and Expedition Coordinator.

4. Project Evaluation Report:

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Expedition Coordinator. The form is available at https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J_FXqbJp9g/viewform and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ship, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least 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 Coordinators. 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 makeup of the ship's complement. The Expedition Coordinators are 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 Coordinators are 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, NF 57-10-01 (3-14)) must be completed 30 days in advance by each participating scientist. The NHSQ can be obtained from the Expedition Coordinator or the NOAA website https://www.omao.noaa.gov/find/media/documents/noaa-health-services-questionnaire.

All NHSQs submitted must be accompanied by https://www.omao.noaa.gov/find/media/documents/tuberculosis-screening-document in compliance with OMAO Policy 1008 (Tuberculosis Protection Program).

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

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

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

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
Email: 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 Coordinators 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 onboard *Okeanos Explorer*.
- All personnel onboard 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 email and the Very Small Aperture Terminal (VSAT) link. VSAT bandwidth at 15Mbps will be paid by OER and provided by OMAO.

Specific information on how to contact NOAA Ship *Okeanos Explorer* and all other fleet vessels can be found at https://www.omao.noaa.gov/learn/marine-operations/ships/okeanos-explorer/contact

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
Email: 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:
(541) 867-8932
(541) 867-8933
(541) 867-8934

Email: Ops.Explorer@noaa.gov- (mention the person's name in SUBJECT field)

Email: expeditioncoordinator.explorer@noaa.gov for dissemination of all hands emails by Expedition Coordinator while onboard. See ET for password.

E. IT Security

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

F. Foreign National Guests Access to OMAO Facilities and Platforms

There will be no Foreign National Guests on this cruise.

Appendix A

EMERGENCY CONTACT DATA SHEET–NOAA SHIP *OKEANOS EXPLORER*

Scientists sailing aboard *Okeanos Explorer* shall fill out the form found at the following link location: https://docs.google.com/a/noaa.gov/forms/d/17WwNYHySRhmhDY4-EZnm8y7uKnLWfXuIOSI-Hka1JBM/edit?usp=drive_open with their emergency contact information

Appendix B: Data Management Plan

Data Management Plan

Okeanos Explorer (EX1903L1): Southeastern US Atlantic Continental Margin Mapping

OER Data Management Objectives

To ensure the stewardship, discovery and access to data generated through this mission.

Page 1

1. General Description of Data to be Managed

1.1 Name and Purpose of the Data Collection Project

Okeanos Explorer (EX1903L1): Southeastern US Atlantic Continental Margin Mapping

1.2 Summary description of the data to be collected.

Acoustic sonar and oceanographic data from the oceanographic and acoustic sensors aboard - multibeam bathymetry, single beam sonar, XBT, CTD, Scientific Computing System, sub-bottom profiler.

1.3 Keywords or phrases that could be used to enable users to find the data.

expedition, exploration, explorer, marine education, noaa, ocean, ocean discovery, ocean education, ocean exploration, ocean exploration and research, ocean literacy, 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, oceans

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

Okeanos Mapping Cruises

1.5 Planned or actual temporal coverage of the data.

Dates: 5/29/2019 to 6/14/2019

1.6 Planned or actual geographic coverage of the data

Latitude Boundaries: 26.05 to 32.44

Longitude Boundaries: -80.12 to -77.12

1.7 What data types will you be creating or capturing and submitting for archive?

Cruise Plan, Cruise Summary, Data Management Plan, Highlight Images, Quick Look Report, Bottom Backscatter, CTD (processed), CTD (product), CTD (raw), EK60 Singlebeam Data, Mapping Summary, Multibeam (image), Multibeam (processed), Multibeam (product), Multibeam (raw), SCS Output (compressed), SCS Output (native)

1.8 What platforms will be employed during this mission?

NOAA Ship Okeanos Explorer

2. Point of Contact for this Data Producing Project

Overall POC: Michael White, Physical Scientist, OER, michael.white@noaa.gov

Title: Physical Scientist

Affiliation/Dept: NOAA Office of Ocean Exploration and Research

E-Mail: michael.white@noaa.gov

Phone: 301-938-8460

3. Point of Contact for Managing the Data

Data POC Name: Megan Cromwell

Title: Okeanos Explorer Data Management Coordinator

E-Mail: megan.cromwell@noaa.gov

4. Resources

4.1 Have resources for management of these data been identified? True

4.2 Approximate percentage of the budget devoted to data management. (specify % or "unknown")

unknown

5. Data Lineage and Quality

5.1 What is the processing workflow from collection to public release?

SCS data shall be delivered in its native format as well as an archive-ready, documented, and compressed NetCDF3 format to NCEI-MD; multibeam data and metadata will be compressed and delivered in a bagit format to NCEI-CO

5.2 What quality control procedures will be employed?

Quality control procedures for the data from the Kongsberg EM302 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 CTD casts and XBT firings are archived in their native format. CTDs are post-processed by the data management team as a quality control measure and customized CTD profiles are generated for display on

6. Data Documentation

the Okeanos Atlas.Does the metadata comply with the Data Documentation Directive?

6.1 Does the metadata comply with the Data Documentation Directive?

True

6.1.1 If metadata are non-existent or non-compliant, please explain:

not applicable

6.2 Where will the metadata be hosted?

Organization: An ISO format collection-level metadata record will be generated during pre-cruise planning and published in the NOAA OneStop catalog and an OER Web Accessible Folder (WAF) hosted at NCEI-MS for public discovery and access.

URL: https://www.ncddc.noaa.gov/oer-waf/ISO/Resolved/2019/

Meta Std: ISO 19115-2 Geographic Information with Extensions for Imagery and Gridded Data will be the metadata standard employed.

6.3 Process for producing and maintaining metadata:

Metadata will be generated via xml editors or metadata generation tools.

7. Data Access

7.1 Do the data comply with the Data Access Directive?

True

7.1.1 If the data will not be available to the public, or with limitations, provide a valid reason.

Not Applicable

7.1.2 If there are limitations, describe how data are protected from unauthorized access.

Account access to mission systems are maintained and controlled by the Program. Data access prior to public accessibility is documented through the use of Data Request forms and standard operating procedures.

7.2 Name and URL of organization or facility providing data access.

Org: NOAA National Centers for Environmental Information

URL: https://www.ncei.noaa.gov/

7.3 Approximate delay between data collection and dissemination. By what authority?

Hold Time: no
Authority: not applicable

7.4 Prepare a Data Access Statement

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

8. Data Preservation and Protection

8.1 Actual or planned long-term data archive location:

Data from this mission will be preserved and stewarded through the NOAA National Centers for Environmental Information. Refer to the Okeanos Explorer Data Management Plan at NOAA's EDMC DMP Repository for detailed descriptions of the processes, procedures, and partners involved in this collaborative effort.

8.2 If no archive planned, why?

8.3 If any delay between data collection and submission to an archive facility, please explain.

8.4 How will data be protected from accidental or malicious modification or deletion?

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

8.5 Prepare a Data Use Statement

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

Appendix C: Categorical Exclusion

Categorical Exclusion (CE) Evaluation Worksheet

Project Identifier: EX1903L01 Date Review Completed: 5/2/2019 Completed by: Michael P. White, Physical Scientist OAR Functional Area: OER Worksheet File Name: 2019-05-OER-EX1903L1 Step 1. CE applicability 1. Is this federal financial assistance, including via grants, cooperative agreements, loans, loan guarantees, interest subsidies, insurance, food commodities, direct appropriations, and transfers of property in place of money? yes 2. What is the proposed federal action? The proposed federal action is to conduct seafloor and water column sonar mapping operations during a dedicated mapping ocean exploration expedition on NOAA Ship Okeanos Explorer. The sonar data collected will provide critical baseline information about poorly mapped deep water areas about 110 miles east of Jacksonville, Florida. Transit and planned mapping operations will all occur with the U.S. EEZ.

3. Which class of CE in Appendix E of the NAO 216-6A Companion Manual is applicable to this action and why? a. G3: Topographic, bathymetric, land use and land cover, geological, hydrologic mapping, charting, and surveying services that do not involve major surface or subsurface land disturbance and involve no permanent physical, chemical, or biological change to the environment. b. The main cruise objectives are to collect seafloor and water column sonar data, the acquisition of which cause no permanent physical, chemical or biological change to the environment

Step 2. Extraordinary Circumstances Consideration

4. Would the action result in adverse effects on human health or safety that are not negligible?

Data collection will primarily occur offshore, greater than 100 nautical miles, and deep, greater than 250 meters. The effects will be negligible or less than negligible, as acoustic mapping operations will not cause any permanent impact on the seabed or water column.

5. Would the action result in adverse effects on an area with unique environmental characteristics that are not negligible?

Data collection will primarily occur offshore, greater than 100 nautical miles, and deep, greater than 250 meters. The effects will be negligible or less than negligible, as acoustic mapping operations will not cause any permanent impact on the seabed or water column.

6. Would the action result in adverse effects on species or habitats protected by the ESA, MMPA, MSA, NMSA, or MBTA that are not negligible?

OER has taken measures to ensure that any effects on species or habitats protected by the ESA, MMPA, MSA, or NMSA meet the definition of 'negligible.' An ESA letter of concurrence dated August 1, 2017 is provided in Appendix D of the EX-19-03L1 project instructions demonstrating no anticipated impacts on Okeanos field work through FY19 as currently planned. Given the offshore focus area of our work, it is highly improbably that we will encounter marine mammals protected under the MMPA or sea birds protected under the MBTA. If we did encounter any marine mammals or seabirds, our effect would be negligible because of the best management practices to which we adhere to avoid or minimize environmental impacts. An Essential Fish Habitat (EFH) consultation for this same time period has resulted in the determination that the proposed cruises will not reduce the quality and/or quantity of EFH, provided there is adherence to the OER proposed procedures. The EFH consultation is provided in the project instructions of EX-19-03L1 in Appendix E. Operations will not occur in any sanctuaries and therefore NMSA does not apply.

7. Would the action result in the potential to generate, use, store, transport, or dispose of hazardous or toxic substances, in a manner that may have a significant effect on the environment?

No. There are chemical stores on board used for ROV maintenance and preservation of biological samples, but these operations will not occur during this cruise. Additionally, cruise operations will be in compliance with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or superseding OMAO procedures) to ensure generation, use, storage, transport and disposal of such substances will not result in significant impacts

8. Would the action result in adverse effects on properties listed or eligible for listing on the National Register of Historic Places authorized by the National Historic Preservation Act of 1966, National Historic Landmarks designated by the Secretary of the Interior, or National Monuments designated through the Antiquities Act of 1906; Federally recognized Tribal and Native Alaskan lands, cultural or natural resources, or religious or cultural sites that cannot be resolved through applicable regulatory processes?

There are no operations planned for this cruise that involve underwater cultural heritage sites.

9. Would the action result in a disproportionately high and adverse effect on the health or the environment of minority or low-income communities, compared to the impacts on other communities (EO 12898)?

No. The NOAA Ship Okeanos Explorer will be operating remote areas in the mid-Atlantic Ocean (see figure 1, EX-19-03L1 cruise Project Instructions). There are no communities within or near

the geographic scope of the cruise and the cruise does not involve actions known or likely to result in adverse impacts on human health.

10.Would the action contribute to the introduction, continued existence, or spread of noxious weeds or nonnative invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of the species?

No. During EX-19-03L1, the ship will not make landfall in areas other than commercial ports. The ship and OER Mission team will comply with all applicable local and federal regulations regarding the prevention or spread of invasive species. At the completion of every CTD cast, the CTXD will be thoroughly rinsed with fresh water and completely dried to prevent spreading organisms from one site to another. Additionally, the Engineering Department aboard the NOAA Ship Okeanos Explorer attends yearly Ballast Management Training in accordance with the NOAA Form 57-07-13NPDES VGP Annual Inspection and Report to prevent the introduction of invasive species.

11.Would the action result in a potential violation of Federal, State, or local law or requirements imposed for protection of the environment?

The proposed action will not result in any violations of Federal, State, or local law or requirements imposed for protection of the environment. The survey coordinators obtained (or are in the process of obtaining) authorizations and/or consultations pursuant to applicable laws. See responses to questions #4, 5, and 6 for details.

12.Would the action result in highly controversial environmental effects?

No. The acoustic mapping activities are ephemeral and localized in any particular area at any particular time. Given this project's scope and breadth, no notable of lasting changes or highly controversial effects to the environment will result.

13.Does the action have the potential to establish a precedent for future action or an action that represents a decision in principle about future actions with potentially significant environmental effects?

No. While each cruise contributes to the overarching goal of exploring and mapping the ocean, this cruise is independently useful and not connected to any subsequent cruises.

14.Would the action result in environmental effects that are uncertain, unique, or unknown?

No. The techniques and equipment used are standard for this type of field activity.

15.Does the action have the potential for significant cumulative impacts when the proposed action is combined with other past, present and reasonably foreseeable future actions, even though the impacts of the proposed action may not be significant by themselves?

By definition, actions that a federal agency classifies as a categorical exclusion have no potential, individually or cumulatively, to significantly affect the environment. This cruise is consistent with a class of CE established by NOAA and there are no extraordinary circumstances for this action that may otherwise result in potentially significant impacts.

CE Determination ☐I have determined that a Categorical Exclusion is the appropriate level of NEPA analysis for this action and that no extraordinary circumstances exist that would require preparation of an environmental assessment or environmental impact statement. ☐I have determined that an environmental assessment or environmental impact statement is required for this action. Signature: Signed by: Date Signed:

Frank Cantelas, Acting Deputy Director

Appendix D: ESA Section 7 Concurrence Letter