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

March 2, 2017

MEMORANDUM FOR: Captain Mark Wetzler, NOAA
Commanding Officer, NOAA Ship *Okeanos Explorer*

FROM: Captain Scott M. Sirois, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for EX-17-03
Howland/Baker PRIMNM and PIPA (ROV/Mapping)

Attached is the final Project Instruction for EX-17-03, Howland/Baker PRIMNM and PIPA (ROV/Mapping), which is scheduled aboard NOAA Ship *Okeanos Explorer* during the period of March 7- March 29, 2017. Of the 23 DAS scheduled for this project, 11 DAS are funded by an OAR Line Office Allocation, and 7 DAS are funded by NOAA National Marine Fisheries Service. This project is estimated to exhibit a High Operational Tempo. Acknowledge receipt of these instructions via e-mail to Opsmgr.MOA@noaa.gov at Marine Operations Center-Atlantic.

Ocean Exploration and Research

FINAL Project Instructions

Date Submitted: March 1, 2017

Platform: NOAA Ship *Okeanos Explorer*

Project Number: EX-17-03

Project Title: Howland/Baker PRIMNM and PIPA (ROV/Mapping)

Project Dates: March 7 - March 29, 2017

Prepared by: *Brian RC Kennedy* **Dated:** 3/1/2017

Brian Kennedy, NOAA
Expedition Manager
Office of Ocean Exploration & Research

Approved by: **Dated:** 3/1/17

Craig Russell
Program Manager
Office of Ocean Exploration & Research

Approved by: **Dated:** 3/2/17

Captain Scott M. Sirois, NOAA
Commanding Officer
Marine Operations Center - Atlantic

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-17-03. Operations for this cruise will be conducted 24 hours/day and consist of daily remotely operated vehicle (ROV), overnight mapping, possible CTD casts and full shore-based participation via telepresence. Operations will be conducted within several marine protected areas. The expedition will commence on March 7th, 2017 in Apia, Samoa (13°51.03' S, 171°45.08'W) and conclude on March 29, 2017 in Apia, Samoa (13°51.03' S, 171°45.08'W). Operations will include the use of the ship's deep water mapping systems (Kongsberg EM302 multibeam sonar, EK60 split-beam fisheries sonars, Knudsen 3260 chirp sub-bottom profiler sonar, and Teledyne Acoustic Doppler Current Profilers), and XBT casts in support of multibeam sonar mapping operations, OER's 6000 m two-body ROV Deep Discoverer and Seirios, and the ship's high-bandwidth satellite connection for continuous real-time ship-to-shore communications. Operations are planned in Tokelau, Kiribati's Phoenix Islands Protected Area (PIPA), the Howland and Baker unit of the Pacific Remote Islands Maine National Monument (PRIMNM), National Marine Sanctuary of American Somoa, and Samoa.

NOAA Ship *Okeanos Explorer* systematically explores the ocean every day of every cruise to maximize public benefit from the ship's unique capabilities. With approximately 95% of the ocean unexplored, we pursue every opportunity to map, sample, explore, and survey at planned destinations as well as during transits; "Always Exploring" is a guiding principle. An integral element of *Okeanos Explorer*'s "Always Exploring" model is the ship's seafloor and water column mapping capabilities. The sonars, or a subset the sonars (EM 302, EK 60, Knudsen sub-bottom, ADCPs) on board will be operated at all times throughout the cruise when the ROV is not in the water or CTD rosette operations are not being allowing for continued exploration and seabed, water column, and/or sub-bottom data collection and selected processing.

This expedition is part of a three year Campaign to Address Pacific monument Science, Technology, and Ocean Needs (CAPSTONE) focused on systematically collecting baseline

information to support science and management needs within and around the Monuments and other protected places in the Pacific, and serves as an opportunity for NOAA and the Nation to highlight the uniqueness and importance of these national symbols of ocean conservation. NOAA will work with the scientific and management community to characterize unknown and poorly-known areas through telepresence-based exploration. Baseline information collected during this cruise will support and catalyze further exploration, research and management activities.

Understanding biogeographic patterns between and among the Pacific Monuments and Sanctuaries is a coordinating theme for CAPSTONE science priorities. Themes and objectives for the expedition series include:

- Acquire data to support priority Monument and Sanctuaries science and management needs, including habitat surveys in recently expanded boundary areas;
- Identify and characterize vulnerable marine habitats - particularly potential locations for high density deep sea coral and sponge communities;
- Characterize seamounts within the Prime Crust Zone (PCZ). The PCZ is the area of the Pacific with the highest expected concentration of deep sea minerals, including rare metals and rare earth elements;
- Collect information on the geologic history of Central Pacific Seamounts, including those that are or may be relevant to our understanding of plate tectonics and subduction zone biology and geology; and
- Provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities.

B. Days at Sea (DAS)

Of the 23 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 5 DAS are funded by an NOS Line Office Allocation, 11 DAS are funded OAR Allocation, and 7 DAS are funded by NOAA National Marine Fisheries Service. This project is estimated to exhibit a High Operational Tempo due to 24 hour operations consisting of daily ROV dives, possible CTD rosette casts, overnight mapping operations and continuous shore-side participation via telepresence.

C. Operating Area

EX-17-03 of the CAPSTONE Expeditions is a combined ROV and mapping cruise that will focus operations in PIPA and the Howland Baker unit of PRIMNM with some operations in Tokelau, American Samoa, and Samoa. Mapping, ROV and CTD rosette operations will focus in depths generally between 250 and 6,000 meters.

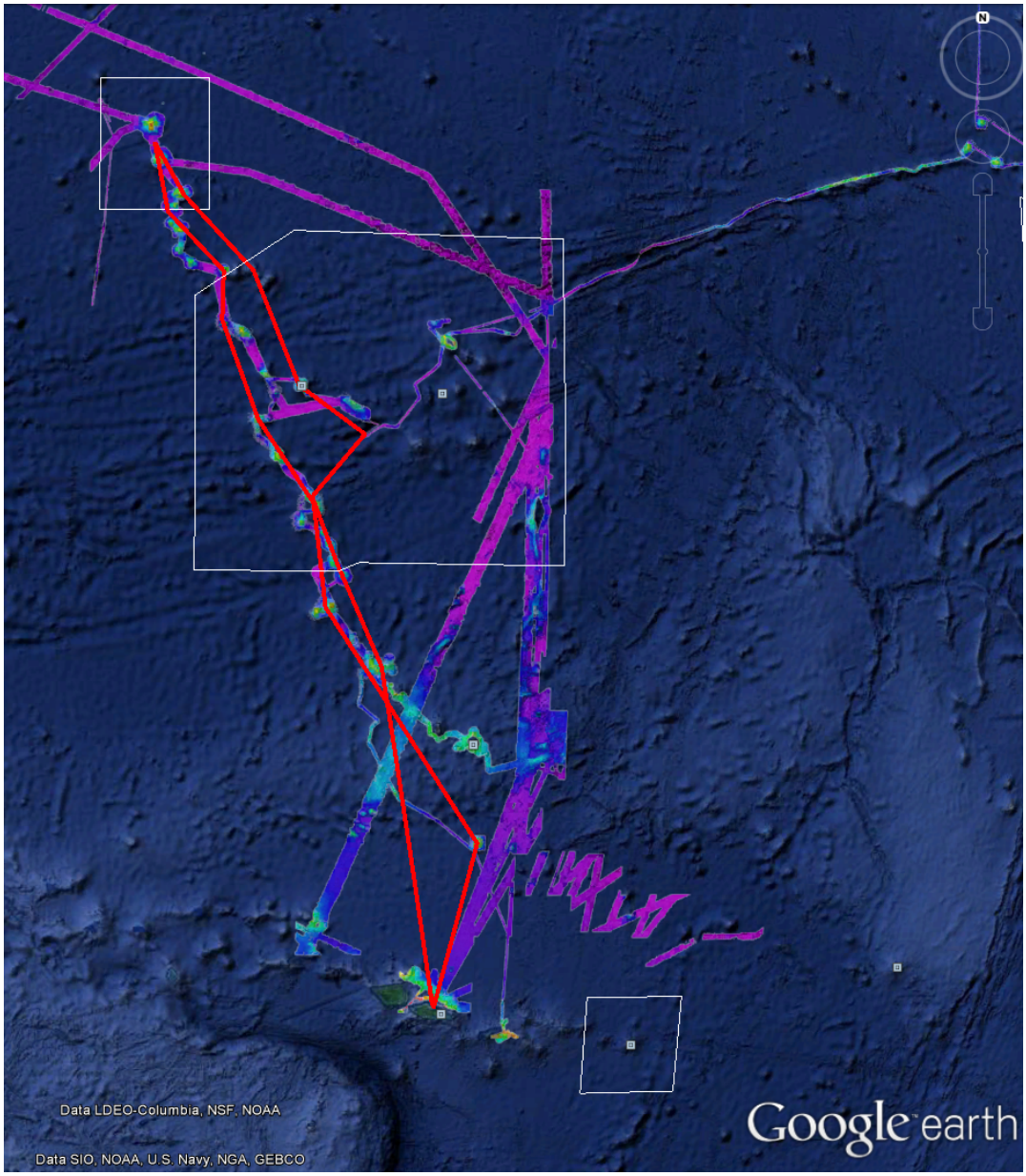

Figure 1: Map showing the general expedition operating area. The red line is the rough cruise track to and from PRIMNM during EX-17-03. The white boxes are marine protected areas. The multibeam is a combination of Okeanos Explorer data and data collected from NCEI.

Generalized operating area coordinates		
ID	**Latitude**	**Longitude**
SW corner	15° 12.824'S	177° 54.588'W
SE corner	15° 12.824'S	169° 5.460'W
NE corner	1° 33.793'N	169° 5.460'W
NW corner	1° 33.793'N	177° 54.588'W

Table 1: Bounding coordinates of the EX-17-03 operating area

D. Summary of Objectives

March 7-29, 2017 (Apia, Samoa to Apia, Samoa) Telepresence-enabled ROV, CTD rosette and mapping Operations.

EX-17-03 operations will occur in the waters of American Samoa, Samoan, Tokelau, Kiribati and the US EEZ around Howland and Baker Islands. This cruise will collect baseline data and information to support priority NOAA science and management needs including in multiple marine protected areas of the Pacific Ocean.

Mission objectives for EX-17-03 include a combination of mapping/operational, science, education, outreach, and data management objectives:

1. Science
    a. Acquire data to support priority Monument and Sanctuary science and management needs;
    b. Explore the diversity and distribution of benthic habitats – including bottom fish habitats, deep sea and precious coral communities and hydrothermal vents;
        i. Collect data on: habitat size and extent, animal diversity and density;
        ii. Focus close-up imaging operations on potential new, rare and poorly documented animals as well as dominant members of the communities;
        iii. Collect and preserve biological samples of potential new species, new records, dominant community members if not easily recognized, and other animals to aid in site characterization
    c. Collect biological and geological data at sites to aid the understanding of the geologic history of Pacific seamounts.
    d. Continue to refine specimen collection protocols and processing procedures;
    e. Ground-truth acoustic data using video imagery and characterize associated habitat;
    f. Engage a broad spectrum of the scientific community and public in telepresence-based exploration;

g. Successfully conduct operations in conjunction with shore-based Exploration Command Centers and remote science team participants;
h. Create and provide input into standard science products to provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities.

2. Remote Science/Exploration Command Centers
    a. Provide operational support and training to scientists and managers to enable remote participation in at-sea operations;
    b. Develop and test best practices for hosting internet-1 based live interactions;
    c. Facilitate outreach and engagement activities and events at the ECCs;
    d. Test and refine ship-to-shore communications procedures that engage multiple ECCs and other remote participants;
    e. Test and refine operating procedures and products.

3. ROV Engineering
    a. Daytime ROV dives on exploration targets;
    b. Ongoing training of pilots;
    c. Ongoing system familiarization, documentation, and training;
    d. Test and refine new ROV systems and pilot sampling protocol.

4. Video Engineering (VSAT ~15 mb/sec ship-to-shore; 2.5 mb/sec shore-to-ship)
    a. Test new terrestrial network connection;
    b. Support telepresence-enabled ROV operations;
    c. Collect/create all standard video products;
    d. Facilitate live outreach events between ship and shore;
    e. Continue to refine protocols for using YouTube live to host live video;
    f. Test and refine new video compression and editing hardware;
    g. Formalize / Finalize parallel processing of imagery and video compression routines;

5. Mapping
    a. Collect high resolution mapping data from sonars in priority areas as dictated by operational needs as well as science and management community needs;
    b. Support ROV operations with mapping products and expertise;
    c. Conduct mapping operations during transit, with possible further development of exploration targets;
    d. Collect XBT casts as data quality requires, during mapping operations;
    e. Create daily standard mapping products;
    f. Collect sun photometer measurements as part of survey of opportunity;

g. Continue refining the procedure for conducting XBT casts using the autolauncher system and applying the sound velocity profiles to the multibeam sonar.

6. Data Management
    a. Provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities;
    b. Provide daily products to shore for operational decision making purposes;
    c. Test protocols and procedures for handling the data from the Telestream video recording system;
    d. Refine protocols for digital data associated with physical samples
    e. Formalize Data Management SOPs;

7. Outreach
    a. Engage the general public in ocean exploration through live video and timely content (daily updates, topical essays and web logs, highlight videos, video clips, still imagery and mapping products) posted on the Ocean Explorer website;
    b. Host live events (TBD)
    c. Conduct ship tours for the public, students, teachers, managers and officials while in port in Apia.
    d. More TBD.

8. Ship
    a. Provide a high quality stable internet connection with the VSAT;
    b. Provide stable and reliable VoIP tele communications
    c. Continue training new deck department personnel in ROV launch and recovery.

E. Participating Institutions

- National Oceanic and Atmospheric Administration (NOAA), Office of Ocean Exploration and Research (OER)–1315 East-West Hwy, Silver Spring, MD 20910 USA
- NOAA, National Oceanographic Data Center, National Coastal Data Development Center, Stennis Space Center MS, 39529 USA
- University Corporation for Atmospheric Research Joint Office for Science Support (JOSS), PO Box 3000 Boulder, CO 80307 USA
- University of Hawai'i at Manoa- 2500 Campus Rd, Honolulu, HI 96822
- University of New Hampshire (UNH) Center for Coastal and Ocean Mapping (CCOM) Jere A. Chase Ocean Engineering Lab, 24 Colovos Rd, Durham, NH 03824 USA
- Global Foundation for Ocean Exploration, P.O. Box 417, Mystic, CT 06355

- NOAA National Marine Fisheries Service, Pacific Islands Regional Office, 1845 Wasp Blvd, Honolulu, HI 96818
- NOAA National Marine Fisheries Service, Marine National Monuments Program, 1845 Wasp Blvd, Honolulu, HI 96818
- NOAA National Marine Sanctuary of American Samoa, P.O. Box 4318, Pago Pago, American Samoa 96799
- NOAA National Marine Fisheries Service, Pacific Islands Fisheries Science Center, 1845 Wasp Blvd, Honolulu, HI 96818
- US Geological Survey, Wetland and Aquatic Research Center (WARC), 7920 NW 71 St, Gainesville, FL 32653
- U.S. Geological Survey - Wetland and Aquatic Research Center (WARC), Ad
- Temple University, 1801 N Broad St, Philadelphia, PA 19122

F. Personnel (Mission Party)

Table 2: Full list of shore based and sea going mission party members and their affiliations

#	Name (First, Last)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
1	Brian Kennedy	Expedition Coordinator	3/5	4/1	M	OER	USA
2	Amanda Demopoulos	Biology Science Lead	3/5	4/1	F	USGS	USA
3	Steven Auscavitch	Biology Science Lead	3/5	4/1	M	UCAR/Temple	USA
4	Katharine Weathers	Sample Data Manager	3/4	4/1	F	NCEI	USA
5	Derek Sowers	Mapping Lead	3/4	3/30	M	OER/ERT	USA
6	Jason Meyers	Mapping Watch Lead	3/5	4/1	M	UCAR	USA
7	Karl McLetchie	Engineering Team	2/13	4/1	M	GFOE	USA
8	Fernando Aragon	Engineering Team	2/13	4/1	M	GFOE	US Permanent Resident
9	Dave Casagrande	Engineering Team	2/13	4/1	M	GFOE	USA
10	Andy Lister	Engineering Team	2/13	4/1	M	GFOE	USA
11	Levi Unema	Engineering Team	2/13	4/1	M	GFOE	USA
12	Jeffrey Laning	Engineering Team	2/13	4/1	M	GFOE	USA

13	Andrew O'Brien	Engineering Team	2/13	4/1	M	GFOE	USA
14	Sean Kennison	Engineering Team	2/13	4/1	M	GFOE	USA
15	Don Liberatore	Engineering Team	2/13	4/1	M	GFOE	USA
16	Annie White	Engineering Team	2/13	4/1	F	GFOE	USA
17	Joe Biscotti	Engineering Team	3/4	4/1	M	GFOE	USA
18	Emily Narrow	Engineering Team	2/13	4/1	F	GFOE	USA
19	Chris Ritter	Engineering Team	3/5	4/1	M	GFOE	USA
20	Caitlin Bailey	Engineering Team	2/13	4/1	F	GFOE	USA
21	Roland Brian	Engineering Team	2/13	4/1	M	GFOE	USA
22	Adrienne Copeland	Web Cordinator	3/5	4/1	F	OER	USA
23	LTJG Nikolai Pawlenko	Expedition Coordinator Trainee	3/4	4/1	M	OER	USA

G. Administrative

1. Points of Contact:

Ship Operations

Marine Operations Center, Atlantic (MOA)
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Norfolk, VA 23510-1145
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Mission Operations

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Derek Sowers
Mapping Manager
NOAA Office of Ocean Exploration and Research (ERT)

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O: (603) 862-0369
C: (714) 321-6084
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Other Mission Contacts

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Alan Leonardi, Director
NOAA Ocean Exploration & Research
Phone: 301-734-1016/ Mobile: 202-631-1790
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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.

There are no plans for shipments to Apia. So all supplies need to be hand carried or special arrangement need to be made through the Expedition Coordinator and the Operations Officer.

2. Diplomatic Clearances

This project involves Marine Scientific Research in waters of Kiribati, Samoa, and the New Zealand Territory of Tokelau. Copies of the Diplomatic Notes approving exploration activities can be found in Appendicies A, B, J and K

3. Licenses and Permits

The expedition is being planned and conducted by NOAA as an agency of the U.S. Federal government, in partnership with NOAA NMFS Pacific Islands Regional Office Marine National Monument Program. We do not require a permit to work in the Pacific Remote Islands Marine National Monument.

A permit to conduct operations in the National Marine Sanctuary of American Samoa was requested and granted. The full text of the permit can be found in Appendix D

A request to conduct operations and collect samples in the territorial waters of American Samoa was submitted to the Division of Marine and Wildlife Resources on January 3.

A permit to conduct exploration activities inside PIPA has been requested and received. Please see Appendix L.

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. A categorical exclusion (CE) evaluation memorandum has been completed for this survey, in accordance with Section 4 of the Companion Manual. This evaluation document memorandum describes EX1703 and explains how it is consistent with one or more of the CE categories listed/described in Appendix E of the Companion Manual. The completed evaluation document also summarizes the review conducted to determine that no extraordinary circumstances exist that would preclude the use of a CE or require preparation of an environmental assessment or environmental impact statement. (appendix E).

Informal consultation was initiated under Section 7 of the Endangered Species Act (ESA), requesting NOAA Fisheries' Protected Resources Division concurrence with our biological evaluation determining that 2016 Marianas Expedition and all other planned *OkeanosExplorer* operations during the 2016-17 field season, may affect, but are not likely to adversely affect, ESA-listed marine species. The informal consultation was completed on February 3, 2016 when NOAA OER received a signed letter from the Regional Administrator of NMFS Pacific Islands Regional Office, stating that NMFS concurs with OER's determination that conducting proposed *Okeanos Explorer* cruises are not likely to adversely affect ESA-listed marine species (appendix F).

OER has completed consultation with NOAA's Habitat Conservation Division on potential impacts of our operations to Essential Fish Habit (EFH). They concurred that our operations would not adversely affect EFH provided adherence to our proposed procedures and their guidance stated in the letter (appendix G).

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)

Date	Activities
3/5	EX1703 Mission personnel arrive
3/6	Prepare to get underway
3/7	Depart Apia, Samoa
3/8	Dive 1: Swains
3/9	Transit day
3/10	Dive 2: Pao Pao area
3/11	Dive 3: Carondelet Reef Area
3/12	Dive 4: PIPA Unnamed Seamount (Athena)
3/13	Dive 5: PIPA Unnamed Seamount (Mercury)
3/14	Dive 6: Winslow reef
3/15	Dive 7: Howland/Baker PRIMNM general area
3/16	Dive 8: Howland/Baker PRIMNM general area
3/17	Dive 9: Howland/Baker PRIMNM general area
3/18	Dive 10: Howland/Baker PRIMNM general area
3/19	Dive 11: Howland/Baker PRIMNM general area
3/20	Dive 12: Howland/Baker PRIMNM general area
3/21	Dive 13: Howland/Baker PRIMNM general area
3/22	Dive 14: Winslow reef
3/23	Dive 15: Mckean Island
3/24	Dive 16: Hadal Hole
3/25	Dive 17: Carondelet Reef Area

3/26	Dive 18: Tokelau unnamed seamount (Ares)
3/27	Dive 19: Tokelau Atafu
3/28	Transit
3/29	Arrive Apia, Samoa
3/30	De- Mobilization
3/31	De- Mobilization
4/1	Mission personnel depart

Table 2: Detailed Cruise Itinerary. This is an approximate itinerary and is subject to change based on survey results, field conditions, and discretion of the CO.

B. Staging and Destaging

Minimal staging and destaging is expected as all mission equipment will be onboard already, and all mission equipment will remain on board in preparation for EX-17-05. Very limited crane support may be requested form the ship's crew to help stow items before EX-17-04

C. Operations to be Conducted

1. **Telepresence / Outreach Events**
    a. Three live video feeds will be used throughout the cruise to provide situational awareness for onshore personnel.
    b. At least two live interaction is planned during the cruise with OER Teacher professional development sessions
    c. Additional live events are likely but TBD

2. **In-Port Events**
    a. VIP tours may be schedule at the request of the US Embassy Apia March 30 and 31. Tours will be handled by mission personnel; no ship's crew should be required with the exception of the CO or XO to greet a cabinet level minister or the like, if they request a tour.

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.

E. Applicable Restrictions

Sonar Operations

EM 302, EK 60, ADCP, and sub-bottom profiler data acquisition is planned for this cruise. All data acquisition will be conducted in accordance with established standard operating procedures under the direction of the mapping team lead. 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 MultibeamEchosounder (MBES)
- Kongsberg Simrad EK60DeepwaterEchosounders and GPTs (18, 70, 120, 200 kHz)
- Knudsen Chirp 3260 Sub-bottom profiler (SBP)
- Teledyne RDI Workhorse Mariner (300 kHz) ADCP
- Teledyne RDI Ocean Surveyor (38 kHz) ADCP
- Teledyne UnderwayCTD
- LHM Sippican XBT Mark21 System(Deep Blue probes)
- AOML Automated XBT Launcher (Deep Blue probes)
- Seabird SBE 911Plus CTD
- Seabird SBE 32 Carousel and 24 2.5 L Niskin Bottles
- Light Scattering Sensor (LSS)
- Oxidation – Reduction Potential (ORP)
- Dissolved Oxygen (DO) sensor
- Altimeter Sensor and battery pack
- MarineStar GPS
- POS/MV
- Seabird SBE-45 (Micro TSG)
- Kongsberg Dynamic Positioning-1 System
- Netshares mapping storage system
- IVS Fledermaus Software suite
- SIS Software
- Hypack Software
- Scientific Computing System (SCS)

- ECDIS
- Met/Wx Sensor Package
- Telepresence System
- VSAT High-Speed link (15 Mbps ship to shore; 2.5 Mbps shore to ship)
- Cruise Information Management System (CIMS)
- Four 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 scientists

- 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

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

Item	Use	Approx. locations
95% Denatured Ethanol (35 gallons)	Sample preservation	Wetlab, under the chemical hood
10% Buffered Formalin (3 gallons)	Sample preservation	Wetlab, under the chemical hood
Chaos Buffer (0.5 gallons) (4 M guanidine thiocyanate, 0.5% N-laurosylsarcosine, 25 mMTris pH 8.0, 0.1 M beta-mercaptoethanol)	Sample preservation (genetics)	Wetlab, under the chemical hood
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	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	ROV Workshop Fire cabinet
Dow Corning Molykote 111	Valve Lubricant and Sealant	ROV Workshop Fire cabinet, Pit
WD40	Lubricant	ROV Workshop Fire cabinet
Loktite	Bolt adhesive	ROV Workshop Fire cabinet
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

C. Chemical safety and spill response procedures

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

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 Coordinator.

See Appendix H 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 I for detailed data management plans.

Deliverables

1. At sea
    a. Daily plans of the Day (POD)
    b. Daily situation reports (SITREPS)
    c. Daily summary bathymetry data files
    d. Raw sonar files (EM 302, EK 60, Subbottom, ADCP)
    e. Refined SOPs for all pertinent operational activities
    f. Assessments of all activities
2. 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

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 1330 in the forward lounge to review the current day, and define operations, associated requirements, and staffing needs for the following day. A Plan of the Day (POD) will be posted each evening for the next day in specified locations throughout the ship. Daily Situation Reports (SITREPS) will be posted as well and shared daily through e-mail.

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 hrs before or seven days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Expedition Coordinator, and members of the scientific party and is normally arranged by the Operations Officer and Expedition Coordinator.

4. Project Evaluation Report:

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Expedition Coordinator. The form is available at https://sites.google.com/a/noaa.gov/omao-intranet-dev/operations/marine/customer-satisfaction-survey and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least twenty-one days prior to the survey (e.g., Expedition Coordinator is allergic to fin fish).

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Expedition Coordinator. The Expedition Coordinator and Operations Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Expedition Coordinator is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Expedition Coordinator is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the cruise and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Expedition Coordinator will ensure that all non-NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Expedition Coordinator to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Expedition Coordinator or the NOAA website http://www.corporateservices.noaa.gov/noaaforms/eforms/nf57-10-01.pdf.

All NHSQs submitted after March 1, 2014 must be accompanied by NOAA Form (NF) 57-10-02 - 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
E-mail: MOA.Health.Services@noaa.gov

Please make sure the medical.explorer@noaa.govemail address is cc'd on all medical correspondence.

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

Emergency contact form is included as Appendix A.

C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Operational Risk Management: For every operation to be conducted aboard the ship (NOAA-wide initiative), risk management procedures will be followed. For each operation, risks will be identified and assessed for probability and severity. Risk mitigation strategies/measures will be investigated and implemented where possible. After mitigation, the residual risk will have to be assessed to make Go-No Go decisions for the operations. Particularly with new operations, risk assessment will be ongoing and updated as necessary. This does not only apply to over-the-side operations, but to everyday tasks aboard the vessel that pose risk to personnel and property.

- CTD, ROV (and other pertinent) ORM documents will be followed by all personnel working 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 e-mail 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 http://www.moc.noaa.gov/MOC/phone.html#EX

Important Telephone and Facsimile Numbers and E-mail Addresses

Ocean Exploration and Research (OER):

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

University of New Hampshire, Center for Coastal and Ocean Mapping

Phone: (603) 862-3438
Fax: (603) 862-0839

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

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

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

E-mail: 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

Fernando Aragon a US permanent resident and Columbian citizen will be sailing on EX-17-03

G . EMERGENCY CONTACT DATA SHEET–NOAA SHIP*OKEANOS EXPLORER*

Scientists sailing aboard *Okeanos Explorer* should fill out the form found at the following link location:
https://docs.google.com/a/noaa.gov/forms/d/1pcoSgPluUVxaY64CM1hJ75l1iIYirTk48G-lv37Am_k/viewform with their emergency contact information