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

June 30, 2017

MEMORANDUM FOR: Commander Eric Johnson, 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-17-06
Johnston Atoll (ROV/Mapping)

Attached is the final Project Instruction for EX-17-06, Johnston Atoll (ROV /Mapping), which is scheduled aboard NOAA Ship Okeanos Explorer during the period of July 7 – August 2, 2017. Of the 27 DAS scheduled for this project, 5 DAS are funded by an OAR Line Office Allocation, and 22 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: June 29, 2017

Platform: NOAA Ship *Okeanos Explorer*

Project Number: EX-17-06

Project Title: Johnston Atoll (ROV/Mapping)

Project Dates: July 7 - August 2, 2017

Prepared by: Kelley P. Elliott **Dated:** June 28, 2017

Kelley Elliott, NOAA
Expedition Manager
Office of Ocean Exploration & Research

Approved by: **Dated:** 6/29/17

Craig Russell
Program Manager
Office of Ocean Exploration & Research

Approved by: LT/NOAA **Dated:** 7/3/17

for

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*

NOAA's Office of Ocean Exploration and Research (OER) is the only federal organization dedicated to exploring our unknown 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. The publicly available data and information gained from 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 federal vessel dedicated to exploring our largely unknown ocean for the purpose of discovery and the advancement of knowledge about the deep ocean. America's future depends on understanding the ocean. We explore the ocean to make valuable scientific, economic, and cultural discoveries, and 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 exploration 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 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.

A. Brief Summary and Project Period

This document contains project instructions for EX-17-06. Operations for this cruise will be conducted 24 hours/day and consist of daily remotely operated vehicle (ROV), overnight mapping, CTD casts and full shore-based participation via telepresence. Operations will be conducted in and around the Johnston Atoll Unit (JAU) of the Pacific Remote Islands Marine National Monument, the U.S. EEZ around Hawaii, and the high seas during transit to and from JAU. The expedition will commence on July 7 and end on August 2, 2017 in Honolulu, HI (21° 22' 2.7" N, 157° 57' 51.41" 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), XBT and Underway CTD 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.

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 of 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 conducted, 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 27 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 5 DAS are funded by an OAR Line Office Allocation, 0 DAS are Program Funded, and 22 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, occasional CTD rosette casts, overnight mapping operations and continuous shore-side participation via telepresence.

C. Operating Area

EX-17-06 of the CAPSTONE Expeditions is a combined ROV and mapping cruise that will focus operations in the Johnston Atoll Unit (JAU) of the Pacific Remote Islands Marine National Monument (PRIMNM). The first four days of operations will be planned in waters off the coast of Oahu while shakedown operations are conducted. Afterwards, mapping transit operations will be conducted to JAU. Daily ROV operations may be conducted in U.S. waters and the high seas en route to and from JAU and port in Honolulu, HI. Mapping, ROV and CTD rosette operations will focus in depths generally between 250 and 6,000 meters.

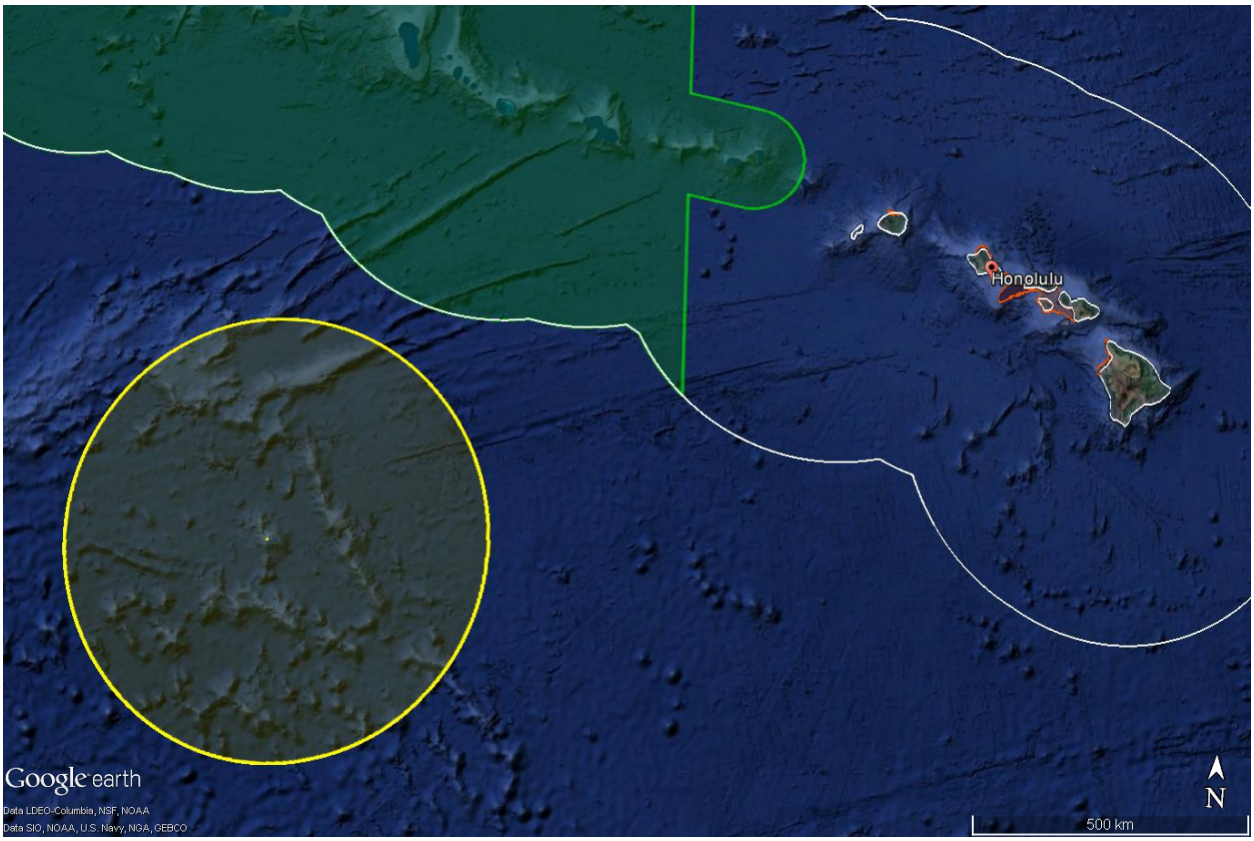

Figure 1. Map showing the overall operating area for the cruise. The cruise will start and end in Honolulu, HI. The white line (and yellow) are the boundaries of the U.S. Exclusive Economic Zone. The yellow line and area is JAU of PRIMNM. The green polygon is the boundary of the Papahanaumokuakea Marine National Monument, and the orange polygons near the islands are the boundaries of the Hawaiian Islands Humpback Whale National Marine Sanctuary.

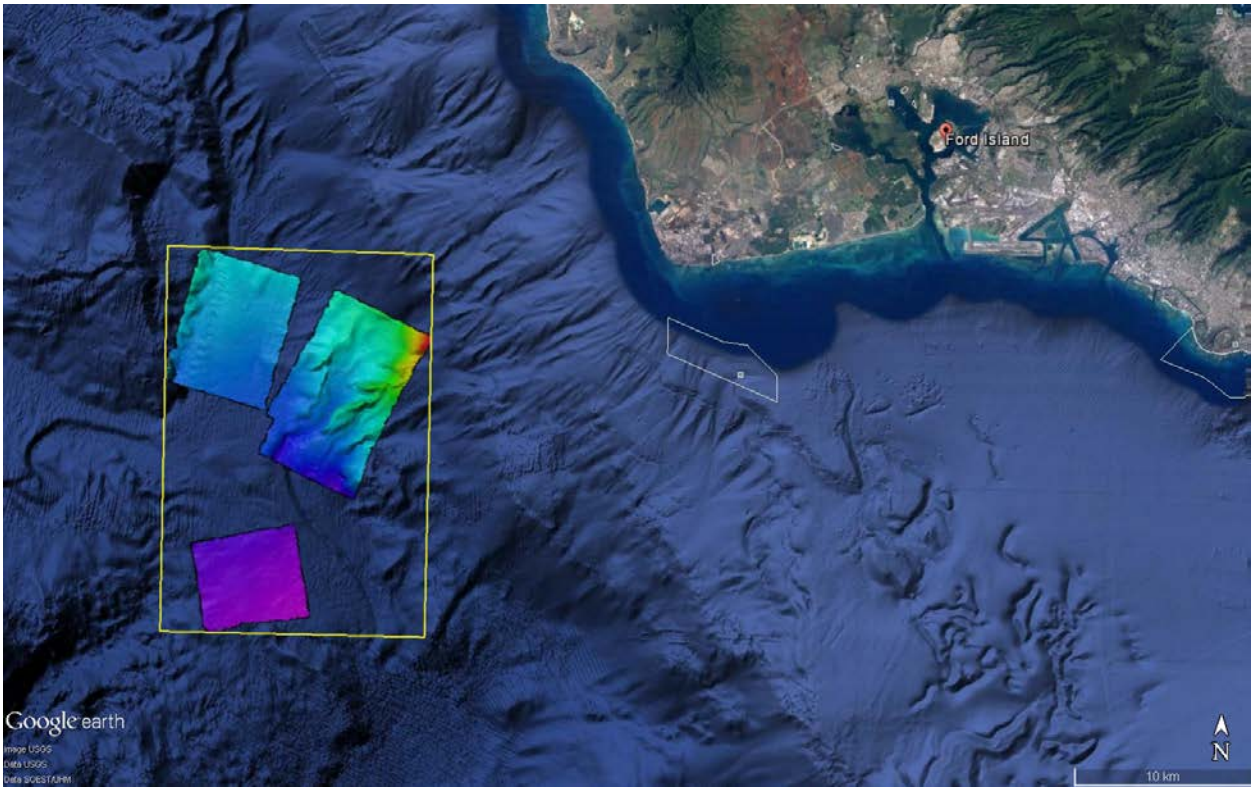

Figure 2. Map showing the multibeam patch test area for shakedown operations on July 7 and 8th. The yellow box is the patch test bounding area, and the existing bathymetry patches are where patch test operations are planned. Ford Island is shown, and the white polygons are MPAs.

Multibeam Patch Test Bounding Coordinates		
ID	**Latitude (N)**	**Longitude (W)**
SW corner	21.105	-158.383
SE corner	21.104	-158.24
NE corner	21.298	-158.239
NW corner	21.3	-158.384

Table 2: *Bounding coordinates of the JAU operating area shown in Figure 1.*

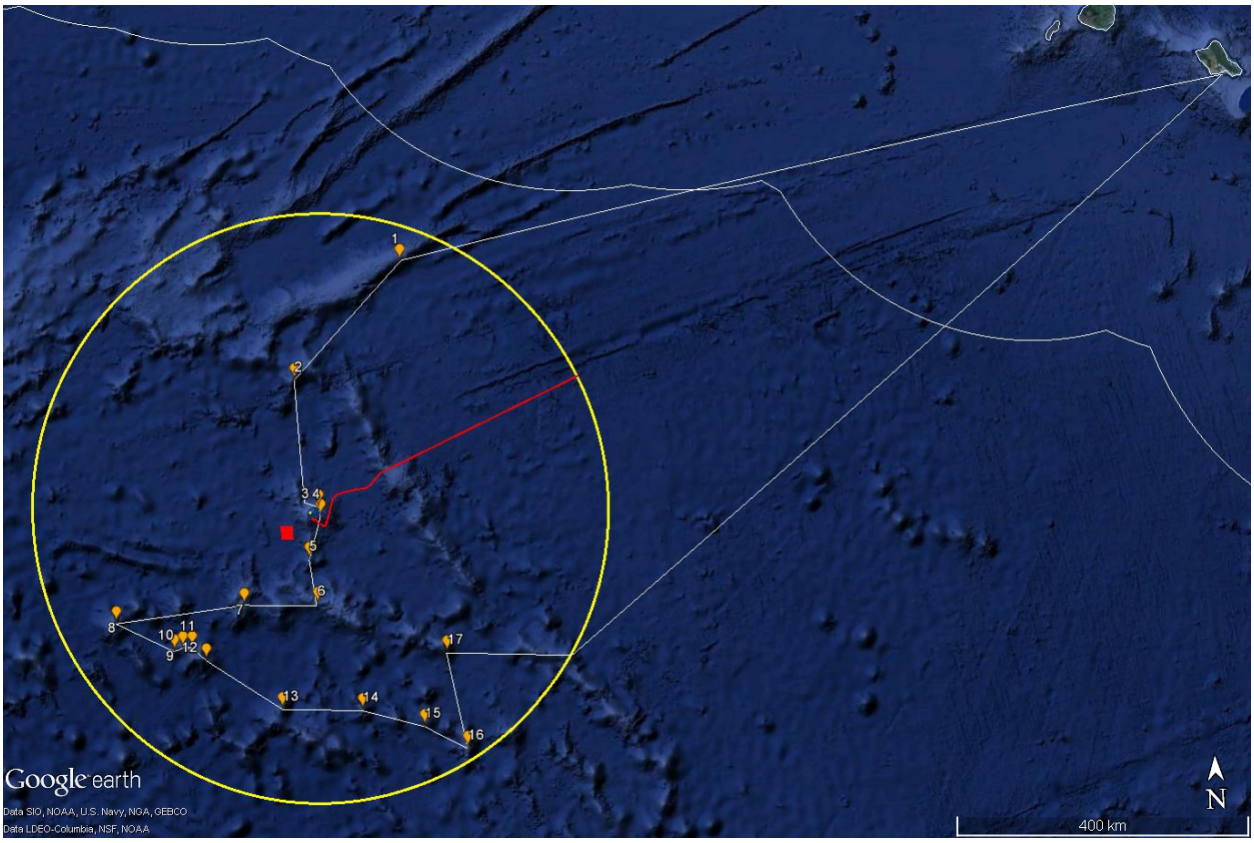

Figure 3. Map showing the generalized cruise track (white lines) for the JAU portion of the cruise. Following completion of 4 days of shakedown operations in the vicinity of Oahu, the ship will transit to dive site 1 (1 on the map) located in the northeast of JAU (the yellow circle). Draft dive sites are shown as orange dots and numbered in planned dive site order. The U.S. EEZ around Hawaii is also shown as a white polygon, and hazard areas are red (a dumping zone and cable).

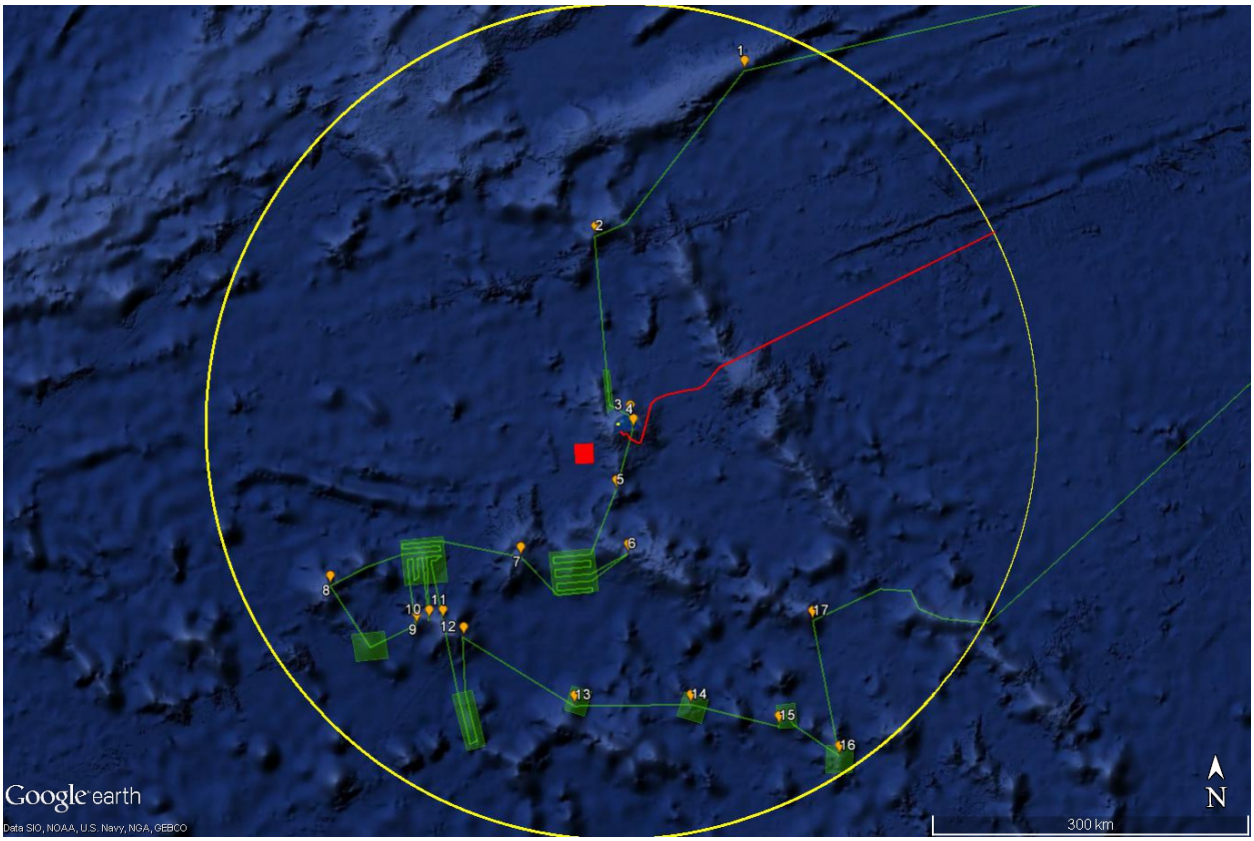

Figure 4. Map showing the draft cruise track (green lines) and focused overnight mapping boxes with generalized mapping lines (green) for the JAU portion of the cruise. Draft dive sites are shown as orange dots and numbered in planned dive site order. The red box to the southeast of Johnston Atoll is a past dumping area, and the red line is the location of a cable. No dives are planned in the vicinity.

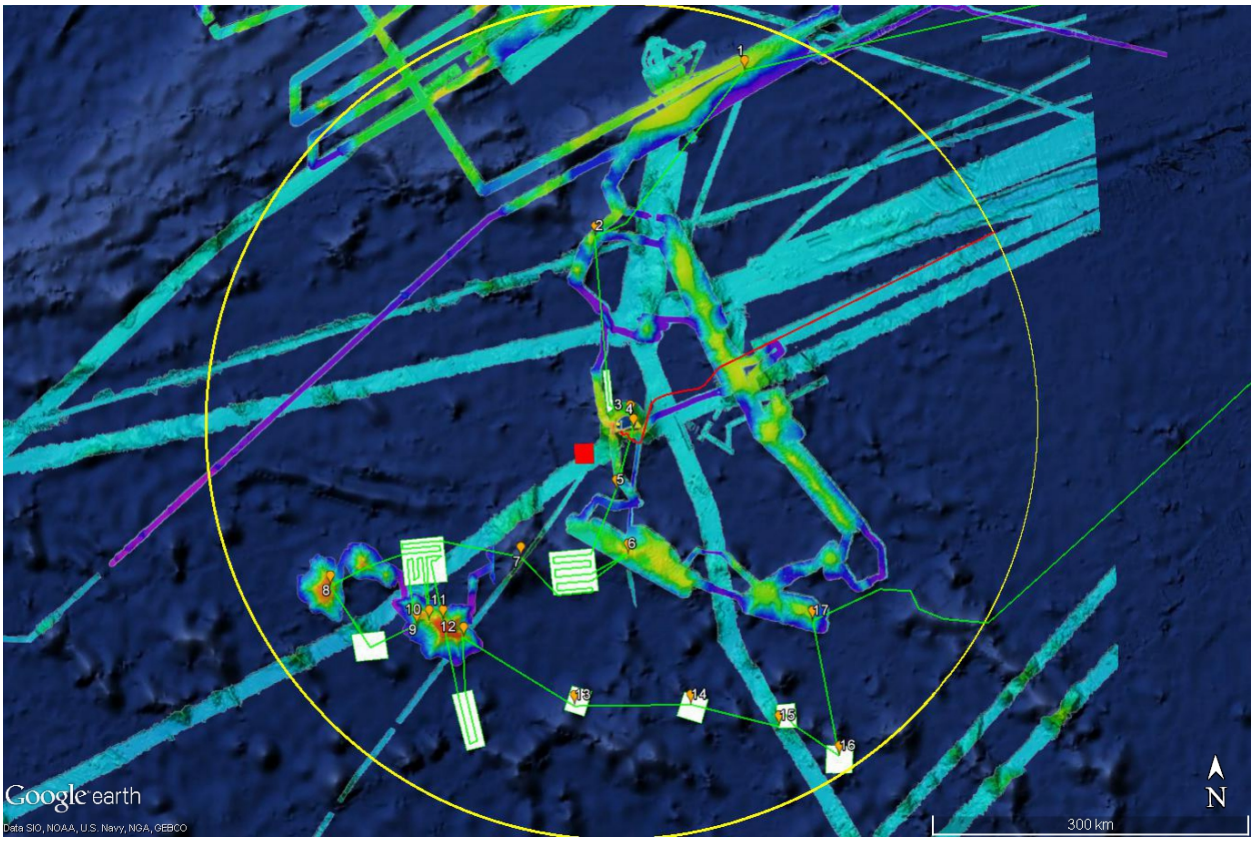

Figure 5. Map showing focused overnight mapping boxes (white boxes) and existing sonar bathymetry data (from NCEI, previous EX cruises and a 2017 Falkor cruise). Overnight mapping operations are planned to map and build coverage of seamounts in JAU. ROV dive sites (orange dots) and hazards (red) are also shown. Note that dive sites 5 and 7 have data, not shown here.

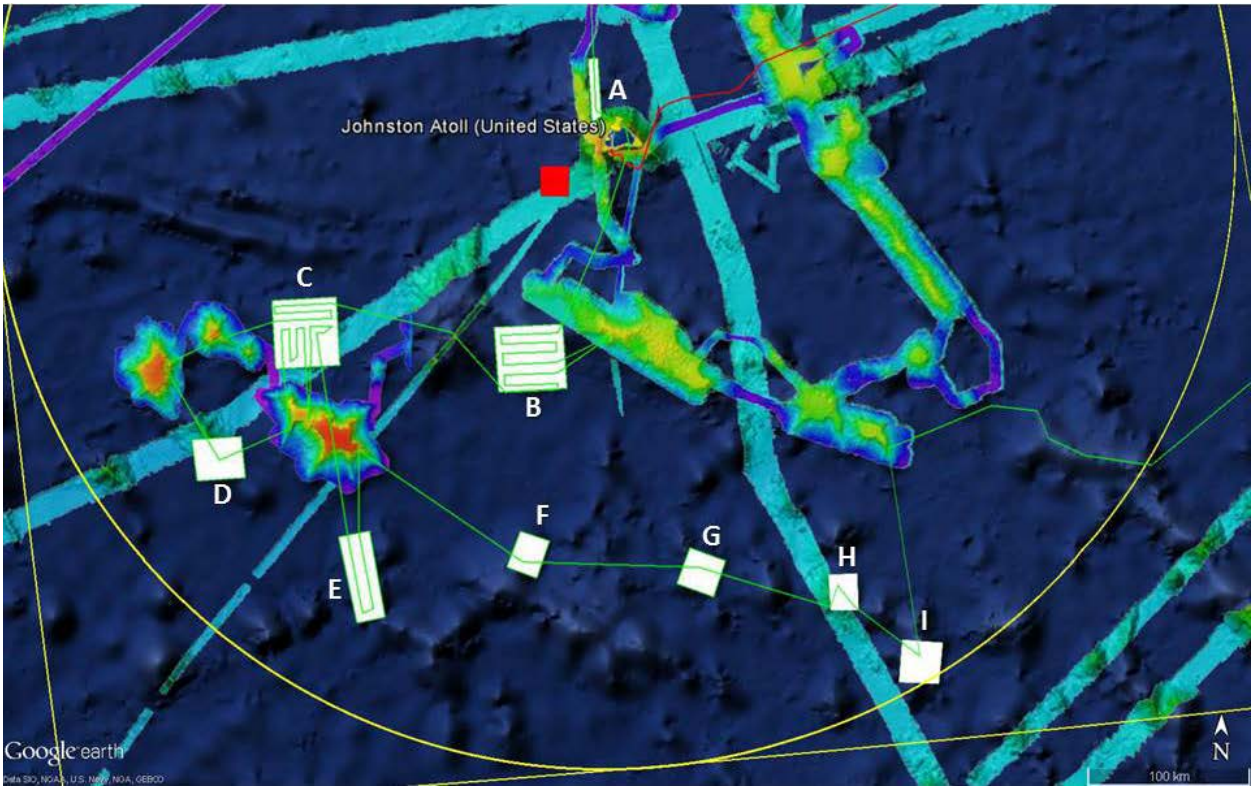

Figure 6. Close-up showing the focused overnight mapping boxes and existing sonar bathymetry data (from NCEI, previous EX cruises and a 2017 Falkor cruise). Overnight mapping operations are planned to map and build coverage of seamounts in JAU. ROV dive sites (orange dots) and hazards (red) are also shown. Note that dive sites 5 and 7 are mapped though data is not shown here.

Generalized operating area coordinates		
ID	**Latitude**	**Longitude**
SW corner	13.023	-172.487
SE corner	13.734	-165.452
NE corner	20.260	-166.512
NW corner	19.888	-173.596

__Table 2:__ Bounding coordinates of the JAU operating area shown in Figure 1.

D. Summary of Objectives

July 7 - August 2, 2017 (Honolulu, HI to Honolulu, HI) Telepresence-enabled ROV, CTD rosette and mapping Operations.

EX-17-06 operations will occur in the U.S. EEZ waters of Hawaii and Johnston Atoll, and the high seas areas during transit to and from JAU. This cruise follows a dry dock period, and seagoing operations are divided into two parts. The first part of the cruise is four days dedicated to shakedown and calibration operations in the vicinity of Oahu. The second part will focus on transiting to and from JAU to collect baseline data and information to support priority NOAA science and management needs in the JAU of PRIMNM. Below are the objectives for the seagoing part of the cruise. ***Please see section I. Staging and Destaging for additional mobilization efforts.***

July 7 - 10, 2017: Shakedown in Hawaii

1. ROV Engineering
    a. Calibrate USBL transducer
    b. Conduct shakedown ROV dive and work with Kraft manipulator. Continue training on new tools.
    c. Conduct "dry run" of emergency ROV recovery with deck crew

2. Video Engineering (VSAT ~15 mb/sec ship-to-shore; 2.5 mb/sec shore-to-ship)
    a. Test terrestrial and high-speed satellite links
    b. Ensure all systems are fully functional after the power off dry dock

3. Mapping
    a. Conduct GAMS calibration;
    b. Conduct multibeam patch test;
    c. Conduct 38 kHz and 300 kHz ADCP calibration lines during transit out of harbor;
    d. Conduct calibration of 38 kHz ADCP in deep water;
    e. Assess Reson SVP probe following cable repairs; if possible compare the SVP probe with the shipboard CTD cast;
    f. Assess XBT hand launcher confirm cabling not impacted by dry dock activities;

g. Test new, secondary sound velocity profiling computer (pending installation status)

4. Data Management
    a. Bring storage systems back online and confirm file systems are intact;
    b. Ensure time stamping systems are functional;
    c. Ensure "Warehouse" computers are functional; and
    d. Conduct normal pre-cruise checks.

5. Ship
    a. Conduct 4 days of Dynamic Positioning system testing and train personnel;
    b. Conduct emergency/safety drill within 24 hours of departure;
    c. Conduct CTD test cast;
    d. Conduct shipboard maneuvers and a full run of systems to evaluate readiness; and
    e. Fuel on day of departure.

July 11 - August 2, 2017: Exploration of the Johnston Atoll Unit of PRIMNM

Mission objectives for EX-17-06 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 commercially valuable bottom fish habitats, precious coral habitats, and high density deep sea coral and sponge communities;
        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. Characterize seamounts in and around the Prime Crust Zone (PCZ). The PCZ is the area of the Pacific with the highest concentration of commercially valuable deep-sea minerals;

d. Collect biological and geological data at sites to aid the understanding of the geologic history of Pacific seamounts;
e. Conduct ROV water column transects to acquire data on this largely unknown biome;
f. Continue to refine specimen collection protocols and processing procedures;
g. Ground-truth acoustic data using video imagery and characterize associated habitat (if relevant);
h. Engage a broad spectrum of the scientific community and public in telepresence-based exploration;
i. Successfully conduct operations in conjunction with shore-based Exploration Command Centers and remote science team participants; and
j. 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. Facilitate outreach and engagement activities and events at the ECCs;
    c. Test and refine ship-to-shore communications procedures that engage multiple ECCs and other remote participants;
    d. 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 terrestrial and high-speed satellite links
    b. Support telepresence-enabled ROV operations;
    c. Collect/create all standard video products;
    d. Continue to refine new highlight video SOPs;
    e. Facilitate live outreach events between ship and shore;
    f. Test and refine updated video product workflows;
    g. Monitor and improve video/data timestamp agreement.

h. Test new low latency protocols (WebRTC and PhenixP2P) for commodity internet users
i. Ensure all systems are fully functional after the power off dry dock
j. Work to repair ship to shore connectivity with the RTS

5. Mapping
    a. Collect high resolution mapping data from all sonars in priority areas as dictated by operational needs as well as science and management community needs;
    b. Support planning of ROV operations with mapping products and visualization;
    c. Conduct mapping operations during transit(s), 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 an ongoing Exploration Project of Opportunity (EPO) with NASA;
    g. Continue to test the integration of the new EK60 frequencies and the ADCPs; and
    h. Continue to train new Survey Technician on mapping operations and Standard Operating Procedures.
    i. Continue to integrate Qimera into standard multibeam bathymetric data processing routines.
    j. As necessary, conduct contingency mapping on days where ROVs dives are not possible due to weather or other delays.

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. Monitor and improve video/data timestamp agreement;
    d. Refine and formalize updated data management and video product workflow checklists and SOPs;
    e. Continue implementation of system and process monitoring software;
    f. Cross-train existing ROV dedicated personnel; and
    g. Ensure all systems are fully functional after the power off dry dock.

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. Conduct ship tours for the partners and officials while in port in Honolulu, HI (TBD);

c. Conduct Facebook Live event before commencing ROV operations to raise awareness of upcoming dives (June 12);
d. Host live event with the NOAA IRC Science Camp (July 14);
e. Possible live interaction with the Smithsonian the “Expert is in “ (July 20);
f. Live interaction with the Exploratorium (July 21, possibly also July 28);
g. Host live interactions with OER’s Professional Development Workshop (July 29th);
h. Possible live interaction with USFWS Monument partners at Silver Spring ECC (TBD);
i. Possible live interaction with NTSB at Silver Spring ECC; and
j. More TBD.

8. Ship
   a. Provide a high quality stable internet connection with the new VSAT;
   b. Provide stable and reliable VoIP telecommunications;
   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 Centers for Environmental Information, , Stennis Space Center MS, 39529 USA
- Global Foundation for Ocean Exploration, P.O. Box 417, Mystic, CT 06355
- 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
- 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 Fisheries Service, Pacific Islands Fisheries Science Center, 1845 Wasp Blvd, Honolulu, HI 96818
- Smithsonian Institution, National Museum of Natural History, P.O. Box 37012 Smithsonian Inst., Washington, DC 20560-0163

- NOAA Educational Partnership Program, 1315 East-West Highway, Silver Spring, MD 20910

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	Kelley Elliott	Expedition Coordinator	7/4	8/4	F	NOAA OER	USA
2	Christopher Kelley	Science Team Lead	7/6	8/2	M	UH	USA
3	Christopher Mah	Co-Science Team Lead	7/4	8/5	M	SI NMNH/UCAR	USA
4	Mashkoor Malik	Mapping Lead	7/4	8/4	M	NOAA OER	USA
5	Kevin Jerram	Mapping Watchstander	7/4	8/4	M	UCAR	USA
6	Daniel Rogers	ROV Dive Supervisor	7/4	8/4	M	GFOE	USA
7	Fernando Aragon	ROV Engineering Team/ Data Management	7/5	8/4	M	GFOE	USA/ Columbia (has Green card)
8	Josh Carlson	ROV Engineering Team/ Data Management	7/5	8/4	M	GFOE	USA
9	Andy Lister	ROV Engineering	7/5	8/4	M	GFOE	USA

		Team					
10	Levi Unema	ROV Engineering Team	7/5	8/4	M	GFOE	USA
11	Dave Casagrande	ROV Engineering Team	7/5	8/4	M	GFOE	USA
12	Sean Kennison	ROV Engineering Team	7/4	8/4	M	GFOE	USA
13	Chris Ritter	ROV Engineering Team	7/5	8/4	M	GFOE	USA
14	Don Liberatore	ROV Engineering Team	7/5	8/4	M	GFOE	USA
15	Dave Wright	ROV Engineering Team	7/5	8/4	M	GFOE	USA
16	Emily Narrow	Video Engineering Team	7/5	8/4	F	GFOE	USA
17	Tara Smithee	Video Engineering Team	7/5	8/4	F	GFOE	USA
18	Roland Brian	Video/Telepresence Engineering Team	TBD 7/3-7/5	8/4	M	GFOE	USA
19	Annie White	Video Engineering Team	7/5	8/4	F	GFOE	USA

20	Bob Knott	Video/Telepresence Engineering Team	7/5	8/4	M	GFOE	USA
21	Matthew Dornback	Sample Data Manager	7/10	8/4	M	NOAA NCEI	USA
22	Neah Beachler	Mapping Watchstander	7/5	8/4	F	UCAR	USA
23	Nikola Rodriguez	EPP Intern	7/4	8/4	F	NOAA EPP	USA/ Canada

G. Administrative

1. Points of Contact:

Ship Operations

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Mission Operations

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LT Aaron Colohan, NOAA
Operations Officer
NOAA Ship Okeanos Explorer
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E-mail: Ops.Explorer@noaa.gov

Other Mission Contacts

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

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Phone: (301) 734-1023
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Alan Leonardi, Director
NOAA Ocean Exploration & Research
Phone: 301-734-1016/ Mobile: 202-631-1790
E-mail: alan.leonardi@noaa.gov

Vessel Shipping Address

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

Items sent to Honolulu to be forwarded to the ship should arrive at the following address by June 30, and absolutely no later than July 5th.

NOAA Ship Okeanos Explorer
c/o LT JG Aaron Colohan
1897 Ranger Loop, Building 184, Honolulu, HI 96818

2. Diplomatic Clearances

Not applicable.

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.

In order to support or conduct Marine Scientific Research within the U.S. EEZ, work funded, authorized and/or conducted by NOAA must be compliant with the National Environmental Policy Act (NEPA). NOAA Administrative Order (NAO) 216-6 describes NOAA's specific

obligations with regard to NEPA compliance. Among these is the need to review all NOAA-supported projects with respect to their environmental consequences. In compliance with NAO 216-6 and NEPA, a memorandum describing the project's scientific sensors' possible effects on the environment has been submitted for the project. As expected with ocean research with limited time or presence in the marine environment, the project has been determined to not have the potential to result in any lasting changes to the environment. As defined in Sections 5.05 and 6.03.c.3 (a) of NAO 216-6, this is a research project of limited size or magnitude or with only short-term effects on the environment and for which any cumulative effects are negligible, and as such, the project is categorically excluded from the need to prepare a full-scale NEPA environmental assessment. The categorical exclusion met the requirements of NAO 216-6 and NEPA, and authorizes the Marine Scientific Research conducted for the project (appendix A).

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 2017 Johnston Atoll Expedition and all other planned *Okeanos Explorer* 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 B).

OER has completed consultation with NOAA's Habitat Conservation Division on potential impacts of our operations to Essential Fish Habitat (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 C).

A CITES application request was submitted to USFWS Division of Management Authority requesting permission to collect CITES listed specimens (i.e. black corals, stony corals) in the high seas. This request has been received and assigned the PRT identification number: US36207C/9. Permission is pending. The cruise plan does not currently include any ROV dives or sample collection plans in international waters however this permit is still desired for contingency purposes.

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.

H. Project Itinerary

(All times and dates are subject to prevailing conditions and the discretion of the Commanding Officer)

Date	Activities
July 4, 2017	Mission personnel arrive. Cruise mobilization.
July 5, 2017	Mission personnel arrive. Cruise mobilization. Move Seirios onto ship.
July 6, 2017	Cruise mobilization.
July 7-10, 2017	Fueling on July 7. Depart Honolulu, HI. Shakedown operations in vicinity of Honolulu, HI. See Table 3 for a detailed itinerary of activities.
July 10-12/13, 2017	Complete shakedown operations and commence transit mapping to JAU. Facebook live event on July 12.
~July 13/14-29, 2017	Conduct daily daytime ROV dive and overnight mapping operations in JAU. Live interactions planned on July 14, 20, 21 and 29th. Three more possible, dates TBD.
~July 30 - August 1, 2017	Depart JAU and conduct transit mapping to Honolulu, HI.

August 2, 2017	Arrive Honolulu, HI

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

EX-17-06 Johnston Atoll ROV/Mapping Cruise Shakedown Schedule				
Date	**July 7**	**July 8**	**July 9**	**July 10**
0000-0200	Pierside	Multibeam Patch Test	- Multibeam Patch Test; - 38 kHz ADCP Calibration Lines?	- Full run of ship systems; - Shipboard Maneuvers
0200-0400				
0400-0600				
0600-0800				
0800-0900	Prepare to get underway	- DP Testing/Training - CTD Test Cast (possibly at Patch test location)?; - Drills	- Set-up and Calibrate USBL Transducers - Crane needed to lift and drop the transducer	- DP Testing and Training - CTD Test Cast?
0900-1000	Fueling			
1000-1200				
1200-1300				
1300-1400				- ROV Shakedown Dive - DP Training
1400-1600			- DP Testing/Trainin	

1600-1800	- Get underway - ADCP 38 and 300 kHz bottom tracking calibration during transit out of harbor. - Transit to Patch Test Site		g	
1800-2000	GAMS Calibration	Transit to Patch Test Location?	- Full run of ship systems; - Shipboard Maneuvers	Personnel Transfer (Smal Boat)
2000-2200	Multibeam Patch Test	Multibeam Patch Test (or ADCP deep water calibration data gathering lines)		Commence Transit to Johnston
2200-0000				

Table 3. Itinerary for shakedown operations during the first four days of operations. This is an approximate itinerary and is subject to change based on survey results, field conditions, and discretion of the CO.

Cruise Schedule							
Date	**Activity**	**Science Theme**	**Lat (S)**	**Long (W)**	**Depth (m)**	**Notes**	**Overnight Mapping**
7/7	Shakedown						
7/8	Shakedown						
7/9	Shakedown						
7/10	Shakedown						
7/11	Transit Mapping to JAU						
7/12	Transit Mapping to JAU						
7/13	Dive 1	Seamounts in PCZ; Mid-Water Exploration	19° 33' 22.54"	168° 22' 27.85"	1900m	Already Mapped; Extended Dive Request	N/A

7/14	Dive 2	Seamounts in PCZ	18° 14' 18.38"	169° 41' 18.81"	2041m	Already Mapped	A
7/15	Dive 3	Fisheries: Precious Corals	16° 47' 39.06"	169° 25' 46.13"	350-600 m	Already Mapped	A?
7/16	Dive 4	Fisheries: Precious Corals 350-600 m	16° 41' 6.11"	169° 24' 23.32"	350-600 m	Already Mapped	TBD
7/17	Dive 5	Monument habitats; Deep Coral/Sponge Communities; Mid-Water Exploration	16° 11' 53.03"	169° 33' 42.12"	1900 - 1700m	Already Mapped; Extended Dive Request	B
7/18	Dive 6	Monument habitats; Deep Coral/Sponge Communities	15° 40' 58.78"	169° 28' 33.44"	1700 - 1400m	Already Mapped	B
7/19	Dive 7	Geologic History; Deep Coral/Sponge Communities	15° 40' 37.65"	170° 22' 25.39"	1119m	Already Mapped	C
7/20	Dive 8	Seamounts in PCZ; Mid-Water Exploration	15° 27' 53.71"	171° 58' 59.98"	1630m	Already Mapped; Extended Dive Request	D
7/21	Dive 9	Monument habitats; HD Deep Coral/Sponge Communities	15° 8' 28.28"	171° 15' 32.41"	2100 - 1800 m	Already Mapped	C
7/22	Dive 10	Monument habitats; HD Deep Coral/Sponge Communities	15° 10' 49.34"	171° 9' 12.66"	1600 - 1200 m	Already Mapped	C
7/23	Dive 11	Seamounts in PCZ; HD Deep Coral/Sponge Communities;	15° 10' 53.72"	171° 2' 14.91"	1545m	Already Mapped	E

		Geologic History					
7/24	Dive 12	Seamounts in PCZ; HD Deep Coral/Sponge Communities; Geologic History	15° 2' 16.84"	170° 52' 1"	2313m	Already Mapped	F
7/35	Dive 13	Monument Habitats; Seamounts in PCZ; Geologic History	14° 28' 16.4"	169° 57' 14.15"	2584m	Needs to be Mapped	G
7/26	Dive 14	Monument Habitats; Seamounts in PCZ; Geologic History	14° 27' 9.38"	168° 59' 3.79"	1846 m	Needs to be Mapped	H
7/27	Dive 15	Monument Habitats; HD Deep Coral/Sponge Habitats; Seamounts in PCZ; Geologic History	14° 15' 25.32"	168° 15' 7.49"	3264m	Needs to be Mapped	I
7/28	Dive 16	Monument Habitats; Seamounts in PCZ; Geologic History; Mid-Water Exploration	13° 59' 31.2 4"	167° 45' 4.22"	1632m	Needs to be Mapped; Extended Dive Request	Ridge Top
7/29	Dive 17	HD Deep Coral/Sponge Habitats; Seamounts in PCZ; Geologic History	15° 5' 57.31"	167° 56' 56.87"	2400m		Ridge Top & Vicinity
7/30	Transit to Honolulu, HI						

7/31	Transit to Honolulu, HI
8/1	Transit to Honolulu, HI
8/2	Pull into Port

Table 4. Cruise schedule with details on operations and science priorities for the JAU portion of the cruise. Overnight mapping areas are shown in Figure 6. This is an approximate itinerary and is subject to change based on survey results, field conditions, and discretion of the CO.

I. Staging and Destaging

This cruise follows a dry dock period and significant staging is planned from July 5 - 7. Requirements from the ship during this time include ET support, ensuring the ship's air conditioning is run for a full four days prior to July 5th, and crane and deck department support for loading Seirios back onto the ship on July 5th, and possibly offloading rock specimens following cruise completion.

1. ROV Engineering
    a. Move Seirios back onto ship
    b. Reconnect .68 cable
    c. Reconnect Seirios' tether
    d. Other pre-cruise systems checks (e.g. high voltage and hydraulics)
    e. Practice dry emergency ROV practice recovery with deck crew

2. Telepresence/Video Engineering (VSAT ~15 mb/sec ship-to-shore; 2.5 mb/sec shore-to-ship)
    a. Bring all equipment in the rack room online and test. ***Ship's air conditioning needs to be running for four full days prior if offline before this can be done.***;
    b. Bring telestream and macs in control room online and test;
    c. Power all video systems back online (KVM, Router, EVS, etc.)
    d. Test terrestrial and high-speed satellite links
        i. Test through to URI and with shore-side I1 and I2 location;
    e. Ensure all systems are fully functional after the power off dry dock

3. Mapping
    a. Reinstall sonar fairing drain plugs;
    b. Confirm POS antennas and IMU not impacted by dry dock activities (if not resolved previously);

c. Assess operability and data quality of all the mapping sonars, connectivity to ancillary equipment and data acquisition and processing computers (if not resolved previously).

4. Data Management
    a. Power all video systems back online (Router, EVS, etc.)
    b. Bring storage systems back online and confirm file systems are intact (include SANs & NAS);
    c. Ensure time stamping systems are functional;
    d. Ensure "Warehouse" computers are functional (including file sharing and web services);
    e. Ensure synology NAS systems (OER NAS and warehouse NAS) are functional
    f. Ensure pass of normal pre-cruise checks
        i. test standard data consolidation to warehouse;
        ii. test ship to shore transfer of near real-time data; and
    g. Turn on ONC servers and check communication with shore servers.

5. Ship
    a. Terminate the CTD rosette (if needed);
    b. Practice dry emergency ROV practice recovery with ROV team

6. Science
    a. Load all sampling equipment and materials. This will include crane operations to load on the rock box on July 5th.
    b. Unload and set up sampling equipment. Organize and secure for sea.
    c. Unload samples following completion of cruise. This will include crane operations to offload the rock box.

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 three and possibly six live interactions are planned during the cruise. See section D - Objectives - Outreach.
2. **In-Port Events**

a. None currently planned

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

- NOAA OER 6000 m *Deep Discoverer* ROV
- NOAA *Seirios* Camera Platform
- 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)
- Reson SVP 70 sound speed probe
- 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
- Two working small boats in seaworthy and reliable working condition for mission operations and SOLAS fast rescue
- 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 (Comtech 20 Mbps ship to shore; 2 Mbps shore to ship)
- Sampling Operations Database Application (SODA)
- Three VoIP telephone lines

B. Equipment and capabilities provided by the scientists

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

IV. HAZARDOUS MATERIALS

A. Policy and Compliance

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 (20-	Sample preservation	Wetlab, under the chemical

gallons total)		hood
10% Buffered Formalin (1 gallon)	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 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 Coordinator.

See Appendix D 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 E 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 ROV dive
    d. Database containing records for each sample collection
    e. Summary forms for each CTD rosette cast
    f. Daily summary bathymetry data files
    g. 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 E 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 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 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 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://www.omao.noaa.gov/connect/omao-website-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 eachship, 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.gov email address is cc'd on all medical correspondence.

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

Emergency contact form is included as Appendix F.

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

Not applicable.

Appendix A:

Categorical Exclusion (CE) Determination Worksheet

Project Title: EX-17-06, Johnston Atoll (ROV & Mapping)

Date Review Completed: June 29, 2017

Completed by: Craig Russell, NOAA Office of Ocean Exploration and Research

Signature:

Step 1. CE applicability

1. **What is the proposed federal action?**
   The proposed action is to collect baseline mapping data using the NOAA Ship *Okeanos Explorer*'s sonar systems and to conduct baseline characterizations of unexplored areas using NOAA's two-body remotely operated vehicle (ROV) and CTD rosette system on the NOAA Ship *Okeanos Explorer*.

   The expedition will commence on July 7 and end on August 2, 2017 in Honolulu, HI (21° 22' 2.7" N, 157° 57' 51.41" W), conducting operations in the vicinity of Oahu, the Pacific Remote Islands Maine National Monument's (PRIMNM) Johnston Atoll Unit (JAU) and high seas locations crossed during transit to and from JAU. See Project Instructions EX-17-06 for more details.

2. **Which class of CE in Appendix E of the NAO 216-6A Companion Manual is applicable to this action and why?**
   The topical scope of this action is consistent with CE number E4 in Appendix E of the Companion Manual to NOAA Administrative Order (NAO) 216-6A:

   Activities that remotely survey or observe living resources in the field using non-invasive techniques, which have little to no potential to adversely affect the environment or interfere with organisms or habitat.

Step 2. Extraordinary Circumstances Consideration

3. **Would the action result in adverse effects on human health or safety that are not negligible?**
   No. The NOAA Ship *Okeanos Explorer* will be operating in remote deep sea areas of the Pacific Ocean. Expedition EX-17-06, an expedition of the NOAA CAPSTONE campaign, will focus

operations in the Johnston Atoll Unit of PRIMNM with some operations in Hawaii and the high seas (see Figure 3 and Table 2 of EX-17-06 Project Instructions) and does not involve any procedures or outcomes known to result in impacts on human health and safety more than would be negligible.

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

This survey/expedition overlaps with the following area with unique environmental characteristics: the Pacific Remote Island Marine National Monument (PRIMNM). However, the survey effects will be negligible or less than negligible, based on determinations made by management authorities affiliated with these areas. The expedition is being planned and conducted in partnership with NOAA National Marine Fisheries Service (NMFS) Pacific Islands Regional Office (PIRO) Marine National Monument Program (MNMP) to ensure no more than negligible effects on these Pacific Island areas with unique environmental characteristics. Though NOAA research is exempted from standard permit requirements to work in the PRIMNM, OER made requests and received approvals to conduct operations in the abovementioned protected areas.

5. **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". In January 2016, a request from OER was submitted to the NMFS PIRO Protected Resources Division to initiate consultation under Section 7 of the ESA. Accompanying this request was a biological assessment that described the planned operations proposed for 2016-2017 expeditions in the Pacific and identified all ESA-listed species, including corals, in the vicinity of the operations. On February 7, 2016, OER received a letter that concurred with our determination that these 2016-2017 operations are not likely to adversely affect ESA-listed species. The ESA Section 7 concurrence letter is provided as Appendix B in the Project Instructions document for EX-17-06.

Given the offshore focus area of our work, it is highly improbable 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.

OER also initiated a request for a Magnuson-Stevens Essential Fish Habitat (EFH) consultation for this same series of cruises and subsequently received a determination that the proposed cruises would not will not reduce the quality and/or quantity of EFH adversely affect EFH, provided

there is adherence to the OER proposed procedures and the NMFS guidance conveyed via email from NMFS PIRO's Richard Hall, dated November 30, 2016.

6. **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. The 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.

7. **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?**

   During EX-17-06, we will not visit sites that fall under any of these categories.

8. **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 in remote deep sea areas of the Pacific Ocean (see Figure 3, EX 17-06 Cruise Plan Instructions). There are no minority communities or low-income 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.

9. **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-17-06 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 ROV dive or CTD cast, the ROVs will be thoroughly rinsed with fresh water and completely dried to prevent spreading organisms from one site to another. Also the Engineering Department aboard the NOAA Ship *Okeanos Explorer* attends yearly Ballast Management Training in accordance with NOAA Form

57-07-13 NPDES VGP Annual Inspection and Report to prevent the introduction of invasive species.

10. 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.

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

No. The exploration activities will be localized and of short duration in any particular area at any given time. Given this project's scope and breadth, no notable or lasting changes or highly controversial effects to the environment will result.

12. 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, mapping, and sampling the ocean, every cruise is independently useful and not connected to subsequent cruises.

13. 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.

14. 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.

Appendix B:

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax: (808) 725-5215

Mr. John McDonough
Deputy Director
NOAA Office of Ocean Exploration and Research

Dear Mr. McDonough:

This letter responds to your January 14, 2016 Request for Consultation by the Office of Exploration and Research (OER) regarding efforts aboard the NOAA vessel *Okeanos Explorer* with the proposed action consisting of activities to explore and improve understanding of the distribution and diversity of deep water habitats in the Pacific, and in particular in the Marine National Monuments. You have requested our concurrence under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §1531 et seq.), with your determination that the proposed action may affect but is not likely to adversely affect green, hawksbill, leatherback, olive ridley, and north Pacific loggerhead sea turtles; Main Hawaiian Islands false killer whale distinct population segment, humpback whales, blue whales, fin whales, sei whales, sperm whales, north Pacific right whales, the Indo-West Pacific and Central Pacific distinct population segment of the scalloped hammerhead shark, Hawaiian monk seals; and the coral species *Acropora globiceps,* A. *jacquelineae, A. retusa, A. speciosa, Euphyllia paradivisa, Isopora crateriformis,* and *Seriatopora aculeata.*

Proposed Action/Action Area: The proposed activity is more fully described in your request for consultation and the associated biological evaluation (CAPSTONE 2016). The proposed action (Okeanos Explorer cruises) includes the use of various ship and submersible-deployed electronic systems to collect data on the distribution and diversity of deep water habitats in the Marine National Monuments. The activity would occur during two years with up to 20 research cruises scheduled between February 2016 and December 2017. The expedition teams (26 crew and up to 20 rotating scientists and/or technicians on each cruise leg) would be authorized to conduct mapping and Remotely Operated Vehicle (ROV) surveys using the Okeanos Explorer's multibeam, split beam, subbottom profiler and acoustic Doppler current profiler (ADCP) sonar systems, utilizing the ship's conductivity-temperature-depth (CTD) sampling rosette for various water measurements and deploying an ROV. No activities are scheduled to occur on land.

The suite of sonars aboard the vessel includes a Kongsberg EM302 30 kHz multibeam system, which collect bathymetry and backscatter data; several Simrad EK 60 split-beam sonars that

range from 18 to 333 kHz which are designed to gather measurements of biological and gaseous targets in the water column; and a Knudsen 3.5 kHz chirp sub-bottom profiler. The 300 kHz and 38 kHz ADCPs provide information about current velocity and direction at various depths. Sonar mapping activities will be conducted throughout the proposed action area and during transits to and from sites where operations will be conducted in an effort to fill in gaps in data knowledge and to build on data already collected. The maps generated from these activities will improve understanding of the geology and important biological habitats in the project area.

Conductivity, temperature and depth data will be collected by both an Underway CTD and a CTD rosette instrument. The CTD rosette, which is deployed while the ship is stopped and holding dynamic position, is lowered by a winch and wire to a maximum depth of 6800 m to collect water samples through 24 2.5 L niskin bottles. The CTD rosette will be deployed at select sites where ROV operations are conducted to allow for an improved understanding of the environmental conditions at that particular site. The deployment and retrieval of the CTD rosette takes up to several hours (depending on depth), while the Underway CTD can be deployed while the ship is moving, saving hours of time and fuel. The instrument is mounted on the stern railing and outfitted with a re-useable probe that is deployed and retrieved through the use of motorized spool. The Underway CTD will be used to collect water column profiles to a maximum depth of 700 m.

ROV operations will be designed to provide interdisciplinary site characterization at priority targets in and around monuments, sanctuaries and protected areas, through visual observation of priority targets while acquiring environmental data with onboard sensors. Sampling will be focused on corals and sponges, but will target specimens believed to be new species or new records for an area. No ESA-listed corals would be sampled. As many as 200 deployments of the ROV may occur during the 2016 – 17 field season resulting in 1600 hours of total dive time. The dives will better enable scientists and managers to understand the diversity and distribution of deep water habitats.

The action area covered by the accompanying biological evaluation encompasses the marine environments of Papahānaumokuākea Marine National Monument (PMNM); Oahu and the big island of Hawai'i; the area south and west of Molokai, Lana'i, and Kaho'olawe, the Geologists Seamounts located about 100 nm south of Honolulu; the Musicians Seamounts located about 150 nm NNE of Nihoa Island; all of the Pacific Remote Island Areas composing the Pacific Remote Islands Marine National Monument (PRIMNM); the Commonwealth of the Northern Marianas Islands (CNMI) and the Marianas Trench Marine National Monument (MTMNM); the vicinity of American Samoa and the National Marine Sanctuary of American Samoa (NMSAS); the Rose Atoll Marine National Monument (RAMNM); and the vessel transit areas between Honolulu, Hawai'i, Guam, Saipan, Kwajalein, Pago Pago where ESA-listed marine species or their habitats may be impacted by the proposed activities.

Species That May Be Affected: OER determined that the proposed action may affect but is not likely to adversely affect green sea turtles (*Chelonia mydas*), hawksbill sea turtles (*Eretmochelys imbricata*), North Pacific distinct population segment of loggerhead sea turtles (*Caretta caretta*),

olive ridley sea turtles (*Lepidochelys olivacea*), leatherback sea turtles (*Dermochelys coriacea*), Main Hawaiian Islands false killer whale distinct population segment (*Pseudorca crassidens*), humpback whales (*Megaptera novaeangliae*), sperm whales (*Physeter macrocephalus*), fin whales (*Balaenoptera physalus*), blue whales (*Balaenoptera musculus*), sei whales (*Balaenoptera borealis*), north pacific right whales (*Eubalaena japonica)*, the Indo-West Pacific and Central Pacific distinct population segments of the scalloped hammerhead shark (*Sphryna lewini*), Hawaiian monk seals (*Neomonachus schauinslandi*), Hawaiian monk seal critical habitat and the coral species *Acropora globiceps, A. jacquelineae, A. retusa, A. speciosa, Euphyllia paradivisa, Isopora crateriformis,* and *Seriatopora aculeata.* Detailed information about the biology, habitat, and conservation status of sea turtles can be found in their recovery plans and other sources at http://www.nmfs.noaa.gov/pr/species/turtles/. The same can be found for Hawaiian monk seals and cetaceans at http://www.nmfs.noaa.gov/pr/species/mammals/; and more information on listed corals can be found at http://www.fpir.noaa.gov/PRD/prd_coral.html.

Critical Habitat: The proposed action would take place within designated monk seal critical habitat. Critical habitat was designated under the ESA for the Hawaiian monk seal on April 30, 1986 and revised on May 26, 1988 (53 FR 18988) and again on August 21, 2015 (80 FR 50926). Designated critical habitat includes all beach areas, lagoon waters, and ocean waters out to a depth of 200 m around Kure Atoll; Midway Islands (except Sand Island), Pearl and Hermes Reef, Lisianski Island, Laysan Island, Gardner Pinnacles, French Frigate Shoals, Necker Island, Maro Reef, and Nihoa Island, and includes the seafloor and all subsurface waters and habitat within 10 meters of the seafloor. Around the Main Hawaiian Islands, critical habitat extends in designated areas from the beach out to the 200 meter depth contour, and includes the seafloor and subsurface waters within 10 meters of the seafloor.

Analysis of Effects: In order to determine that a proposed action is not likely to adversely affect listed species, NMFS must find that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook: (1) insignificant effects relate to the size of the impact and should never reach the scale where take occurs; (2) discountable effects are those that are extremely unlikely to occur; and (3) beneficial effects are positive effects without any adverse effects (USFWS & NMFS 1998). This standard, as well as consideration of the probable duration, frequency, and severity of potential interactions, was applied during the analysis of effects of the proposed action on ESA-listed marine species, as is described in detail in the OER consultation request. The OER determined that the risk of collisions with vessels and the risk of entanglement would be discountable; and that the risk from exposure to elevated noise level, disturbance from human activity, as well as exposure to wastes and discharges would result in insignificant effects on ESA-listed sea turtles, marine mammals, sharks and corals; and that the potential effects of the proposed action to designated or proposed critical habitat would also be insignificant.

Considering the information and assessments presented in the OER consultation request, and in the best scientific information available about the biology and expected behaviors of the ESA-listed marine species considered in this consultation; NMFS agrees that: 1) the list of ESA-listed species and critical habitats potentially exposed to the effects of the action is correct, 2) the suite

of identified stressors is comprehensive, and 3) the assessment of exposure risk and significance of exposure to those stressors is accurate. Therefore, NMFS agrees that:

- the risk of collisions with vessels for marine mammals, turtles, sharks and the listed coral species in the action area is discountable;
- the risk of entanglement with marine mammals, sea turtles and sharks is discountable; and,
- ESA-listed species in the action area are unlikely to respond to anticipated elevated noise levels, disturbance from human activity, and exposure to wastes and discharges. Further, if any response were to occur, it would be temporary in nature and never reach the scale where it would affect the individual's health, and as such, have insignificant effects.

Conclusion: NMFS concurs with your determination that conducting the proposed Okeanos Explorer cruises are not likely to adversely affect ESA-listed marine species. This concludes your consultation responsibilities under the ESA for species under NMFS's jurisdiction. However, this consultation focused solely on compliance with the ESA. Additional compliance review that may be required of NMFS for this action (such as assessing impacts on Essential Fish Habitat) would be completed by NMFS Habitat Conservation Division in separate communication, if applicable.

ESA Consultation must be reinitiated if: 1) a take occurs; 2) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the identified action is subsequently modified in a manner causing effects to listed species or designated critical habitat not previously considered; or 4) a new species is listed or critical habitat designated that may be affected by the identified action.

If you have further questions please contact Richard Hall on my staff at (808) 725-5018. Thank you for working with NMFS to protect our nation's living marine resources.

Sincerely,

Michael D. Tosatto
Regional Administrator

cc: Justin Rivera, Papahanaumokuakea Marine National Monument
Aaron Nadig, ESA Section 7 Program, USFWS, Honolulu

NMFS File No.: PIR-2016-9774
PIRO Reference No.: I-PI-16-1347-AG

Literature Cited

Campaign to Address Pacific Monument Sciecne, Technology and ocean Needs (CAPSTONE) 2016. Request for Informal Consultation. Letter from John McDonough to Ann Garrett dated January 14, 2016 and attachments.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act.
http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf

Appendix C:

EFH Consultation Response for CAPSTONE cruises

Richard Hall - NOAA Federal <richard.hall@noaa.gov> Wed, Nov 30, 2016 at 4:21 PM
To: Kelley Elliott - NOAA Affiliate <kelley.elliott@noaa.gov>
Cc: Ian Lundgren - NOAA Affiliate <ian.lundgren@noaa.gov>, Samantha Brooke <samantha.brooke@noaa.gov>, Kasey Cantwell - NOAA Affiliate <kasey.cantwell@noaa.gov>

Kelley,

On November 14, 2016, the Office of Exploration and Research (OER), through personal communication, initiated a request for an Essential Fish Habitat consultation for a series of cruises by the NOAA Ship *Okeanos Explorer*. The cruises would run from early-December 2016 through late-September 2017, and include the waters around the Main Hawaiian Islands, the Musician Seamounts (north of Hawaii), the American Samoa Archipelago; Johnston, Howland, Baker, Jarvis, Kingman and Palmyra Atolls of the Pacific Remote Islands, and portions of the Cook Islands. The operational minimum depth during the cruises would be 250 m, with the majority of the cruise activities would be in water depths over 500 m.

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855 et seq.) requires review of federally permitted projects for potential impacts to EFH (§305(b)). Pursuant to this authority, I have reviewed and provided comments as necessary for the Habitat Conservation Division of NOAA's Pacific Islands Regional Office.

The proposed cruises are the final legs of the larger 2-year Campaign to Address Pacific Monuments Science, Technology and Ocean Needs (CAPSTONE Project), which is designed to improve the understanding of the distribution and diversity of deepwater habitats within the Pacific monuments and protected areas.

The primary activities to be conducted during this series of cruises would be: remotely operated vehicle (ROV) dives to conduct engineering trials and sonar calibration and testing during two shakedown cruises scheduled for the waters of the Main Hawaiian Islands (no biological or geological samples would be collected); and mapping and ROV dives in the waters of American Samoa, West Samoa, the Pacific Remote Islands, the Musician Seamounts, and portions of the Cook Islands. Five cruises would be dedicated mapping cruise, resulting in 92 days of constant mapping, while six cruises would be combined ROV and mapping cruises which would result in approximately 96 ROV dives and 110 days of overnight mapping. Other activities to be performed during the cruises would include: deployment and recovery of a conductivity-temperature-depth (CTD) sampling rosette and underway CTDs, and possible deployment of Argo floats to acquire ocean chemistry data. During ROV dives various biological and geological samples would be collected.

In order to avoid/minimize impacts to EFH, the OER and the *Okeanos Explorer* have proposed to institute the following procedures:

- The vessel would employ the use of dynamic positioning during ROV dives (no anchoring);
- ROVs would be operated in a manner to avoid seafloor disturbance, and setting the ROV on the seafloor will be held to a minimum. For those situations when the ROV does make contact with the seafloor, visual observations will confirm that the area is sand, mud, or hard-bottom;
- Sample collections would be limited (typically 4 - 6 total rocks and primary biological specimens per dive) that represent new species, new records, or the dominant morphotype animal in a community. Clonal biological specimens (corals, sponges) would be subsampled; and
- Instruments deployed to collect water samples and current data (except for expendable instruments) would not be allowed to contact the seafloor;

In addition to the management practices proposed by OER and the *Okeanos Explorer*, NMFS provides the following guidance to further avoid/minimize impacts to EFH from the proposed cruise activities and vessel operations:
1. Except in an emergency, the vessel should not anchor while at sea;
2. The vessel should adhere to MARPOL discharge regulations at all times during the proposed cruises;
3. The ROV should be thoroughly rinsed between dives, allowed to dry, and checked for the presence of biological

organisms to prevent the spread of invasive or non-endemic species from one location to another.
4. The use detergents and other pollutants which may be washed into the marine environment should be avoided or held to a minimum;

Based on my review of the documents provided, and through our personal communications, NOAA Fisheries has determined that the proposed cruises of the NOAA Ship *Okeanos Explorer* would not adversely affect EFH provided adherence to OER proposed procedures and the NMFS guidance made above. Thank you for the opportunity to review the plans for the upcoming field season of the *Okeanos Explorer*, and to provide our comments. This completes your obligation to consult with our office with regards to EFH for this series of actions. If you have any questions or comments feel free to contact me at your convenience.

--
Richard Hall
Fishery Policy Analyst
Pacific Islands Regional Office
NOAA Inouye Regional Center
1845 Wasp Blvd., Building 176
Honolulu, HI 96818
808-725-5018

Appendix D: NASA Maritime Aerosols Network Survey of Opportunity

Survey or Project Name

Maritime Aerosol Network

Lead POC or Principle Investigator (PI & Affiliation)

POC: Dr. Alexander Smirnov

Supporting Team Members Ashore

Supporting Team Members Aboard (if required)

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

The Maritime Aerosol Network (MAN) component of AERONET provides ship-borne aerosol optical depth measurements from the Microtops II sun photometers. These data provide an alternative to observations from islands as well as establish validation points for satellite and aerosol transport models. Since 2004, these instruments have been deployed periodically on ships of opportunity and research vessels to monitor aerosol properties over the World Oceans.

Appendix E: Data Management Plan

Data Management Plan
Okeanos Explorer (EX1706): Johnson Atoll (ROV/Mapping)

OER Data Management Objectives

Standard operating procedures for onboard sampling operations procedures and stewardship responsibilities will be followed by the data management team.

1. General Description of Data to be Managed

1.1 Name and Purpose of the Data Collection Project

Okeanos Explorer (EX1706): Johnson Atoll (ROV/Mapping)

1.2 Summary description of the data to be collected.

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), XBT and Underway CTD 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.

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

biogeographic patterns, monuments, sanctuaries, habitat characterization, prime crust zone, PCZ, deep sea minerals, plate techtonics, subduction zone biology, subduction zone geology, rare metals, rare earth elements, expedition, exploration, explorer, marine education, noaa, ocean, ocean discovery, ocean education, ocean exploration, ocean exploration and research, ocean literacy, ocean research, OER, science, scientific mission, scientific research, sea, stewardship, systematic exploration, technology, transformational research, undersea, underwater, Davisville, mapping survey, multibeam, multibeam backscatter, multibeam sonar, multi-beam sonar, noaa fleet, okeanos, okeanos explorer, R337, Rhode Island, scientific computing system, SCS, single beam sonar, singlebeam sonar, single-beam sonar, sub-bottom profile, water column backscatter, oceans, Pacific Remote Islands Marine National Monument, PRIMNM, Johnson Atoll Unit, JAU, Oahu, Honolulu, deepwater mapping, CAPSTONE, ocean conservation, telepresence

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

Okeanos ROV Cruises

1.5 Planned or actual temporal coverage of the data.

Dates: 7/7/2017 to 8/2/2017

1.6 Planned or actual geographic coverage of the data.

Latitude Boundaries:	13	to	20.3
Longitude Boundaries:	-173.6	to	-165.4

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, ADCP, Bottom Backscatter, CTD (processed), CTD (product), CTD (raw), Dive Summaries, EK60 Singlebeam Data, Expedition

Cruise Report, Highlight Video, Images, Multibeam (image), Multibeam (processed), Multibeam (product), Multibeam (raw), NetCDF, Raw Video (digital), Sample Analysis Reports, Sample Logs, SCS Output (compressed), SCS Output (native), Selected Raw Video, Side Scan Sonar (raw), Sub-Bottom Profile data, Temperature data, Water Column Backscatter, XBT (raw)

1.8 What platforms will be employed during this mission?

NOAA Ship Okeanos Explorer, Deep Discoverer ROV, SEIRIOS Camera Sled

2. Point of Contact for this Data Producing Project

Overall POC:	Kelley Elliott, NOAA Office of Ocean Exploration and Research, kelley.elliott@noaa.gov
Title:	Expedition Manager
Affiliation/Dept:	NOAA Office of Ocean Exploration and Research
E-Mail:	kelley.elliott@noaa.gov
Phone:	301-734-1024

3. Point of Contact for Managing the Data

Data POC Name:	Fernando Aragon, Matt Dornback, Susan Gottfried
Title:	Onboard Data Management, Sampling Operations Data Management, Stewardship Data Management
E-Mail:	aragonfernando55@gmail.com, matt.dornback@noaa.gov, susan.gottfried@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 the Okeanos Atlas (explore.noaa.gov/okeanosatlas).

6. Data Documentation

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 an OER catalog and Web Accessible Folder (WAF) hosted at NCEI-MS for public discovery and access. The record will be harvested by data.gov.

URL: https://www.ncddc.noaa.gov/oer-waf/ISO/Resolved/2017/

Meta Std: ISO 19115-2 Geographic Information with Extensions for Imagery and Gridded Data will be the metadata standard employed; a NetCDF3 standard for oceanographic data will be employed for the SCS data; the Library of Congress standard, MAchine Readable Catalog (MARC), will be employed for NOAA Central Library records.

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: National Centers for Environmental Information

URL: https://data.nodc.noaa.gov/geoportal/catalog/search/search.page

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 FY17 Data Management Plan at NOAA's EDMC DMP Repository (EX_FY17_DMP_Final.pdf) 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 F:

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