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

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

FEB 19 2016

FROM: Captain Anne K. Lynch, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for EX-16-03
Hohonu Moana 2016: Exploring the Deep Waters off Hawai'i

Attached is the final Project Instruction for EX-16-03, Hohonu Moana 2016: Exploring the Deep Waters off Hawai'i, which is scheduled aboard NOAA Ship *Okeanos Explorer* during the period of February 23 – March 18, 2016. Of the 24 DAS scheduled for this project, 2 days are funded by an OAR Line Office allocation and 22 DAS are funded by an NOS Line Office Allocation. This project is estimated to exhibit a High Operational Tempo. Acknowledge receipt of these instructions via e-mail to ChiefOps.MOA@noaa.gov at Marine Operations Center-Atlantic.

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OCEAN EXPLORATION & RESEARCH

Final Project Instructions

Date Submitted:	February 10, 2016
Platform:	NOAA Ship *Okeanos Explorer*
Project Number:	EX-16-03
Project Title:	Hohonu Moana 2016: Exploring the Deep Waters off Hawai'i expedition (part of the CAPSTONE project)
Project Dates:	February 23 – March 18, 2015

Prepared by: Brian RC Kennedy
Expedition Manager
Office of Ocean Exploration & Research &
The Global Foundation for Ocean Exploration

Approved by: RUSSELL.CRAIG.W.JR.1380652656 Digitally signed by RUSSELL.CRAIG.W.JR.1380652656 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=RUSSELL.CRAIG.W.JR.1380652656 Date: 2016.02.11 10:12:06 -08'00' Dated: _____
Craig Russell
Program Manager
Office of Ocean Exploration & Research

Approved by: _____ CAPT NOAA Dated: 2/19/2016
Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. OVERVIEW

A. Brief Summary and Project Period

From February through March, 2016, NOAA Ship *Okeanos Explorer* will conduct a telepresence-enabled ocean exploration cruises "Hohonu Moana 2016: Exploring the Deep Waters off Hawai'i" Expedition. This cruise will collect critical baseline information to meet NOAA science and management needs within the Hawaiian Archipelago. Geographic priorities for 2016 operations include Papahānaumokuākea Marine National Monument (PMNM) including areas inside and outside the monument as well as operations in international waters and inside the Marshall Islands.

This document contains project instructions for EX-16-03. Operations for this cruise will include ROV, mapping, telepresence-based remote participation, and possible CTD rosette operations. The expedition will be commence in Pearl Harbor, HI with operations beginning on February 23 and conclude in Kwajalein in the Marshall Islands on March 18th. Operations will use the ship's deep water mapping systems (Kongsberg EM302 multibeam sonar, EK60 split-beam fisheries sonars, ADCPs, and Knudsen 3260 chirp sub-bottom profiler sonar), NOAA's two-body 6000 m remotely operated vehicle (ROVs *Deep Discoverer* and *Seirios*), CTD rosette, and the ship's high-bandwidth satellite connection for real-time ship to shore communications. Daytime ROV dives are planned most days from February 24 – March 15. ROV dives will include high-resolution visual surveys and limited rock and biologic specimen sampling. Mapping operations will be conducted overnight and when the ROV is on deck. CTD casts are not currently planned but may be requested during the cruise to collect more environmental information at sites of interest. Exploration operations for this cruise will focus on deep-water areas around the North West Hawaiian Islands. This expedition will help establish a baseline of information in the region to catalyze further exploration, research and management activities.

NOAA Ship *Okeanos Explorer* systematically explores the ocean every day of every cruise to maximize public benefit from the ship's unique capabilities. With 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. A subset or all of the sonars (EM 302, EK 60, Knudsen sub-bottom, ADCPs) on board will be operated on all transits during this expedition for 24-hour seabed, water column, and/or sub-bottom data collection and selected processing.

As a telepresence-enabled ROV cruise, EX-16-03 is anticipated to have a robust complement of shore-based science experts participating from their home institutions and Exploration Command Centers around the country. This shore-based science team will actively engage with the at-sea team in real-time using *Okeanos Explorer*'s state-of-the art telepresence technology, including during ROV dives and daily ship-to-shore science planning meetings. In general, operations will focus in the areas highlighted in Figures 1 and 2.

B. Days at Sea (DAS)

Of the 24 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 2 DAS are funded by an OAR Line Office Allocation, and 22 DAS are funded by an NOS Line Office Allocation,

0 DAS are Program Funded, and 0 DAS are other agency funded. This project is estimated to exhibit a High Operational Tempo due to daily ROV operations, nighttime mapping, and possible evening CTD work.

C. Operating Area

EX-16-03 of the CAPSTONE Expeditions is a telepresence-enabled ROV cruise that will focus on sites within and just outside of PMNM, and along the transit from Midway to Kwajalein Marshall Islands. The ship will depart Pearl Harbor, Oahu and head to Middle Bank on the southern border of PMNM to conduct an ROV dive, and then enter PMNM where the majority of ROV dives will be conducted, reaching past Midway. Ridges and other types of abrupt topography will be targeted due to their likelihood of hosting extensive communities of deepwater corals and sponges, as well as likely manganese crust habitats from 1,000-2,500m. The deepest extent of important coral and sponge groups will also be explored during dives to depths of 3,000-5,000 m. Dive(s) will also be devoted to surveying the area around the Battle of Midway. The ship will then depart the Midway area and head to Kwajalein in the Marshall Islands. The transit will be a mix of dedicated transit mapping days as well as a few ROV dives in international waters along the way.

The ship will conduct 24 hour operations consisting of daytime ROV dives and evening/nighttime mapping operations including during transit. During this cruise we will conduct primarily 8 hour ROV dives with occasional 10 or 12 hour dives on particularly interesting or deep water dive sites, as staffing allows. ROV operations will focus in depths between 250 and 6,000 meters and will include high-resolution visual surveys and limited sample collection. Mapping operations will be conducted in 250m of water and deeper, and include transit and overnight multibeam, water column backscatter, and sub-bottom data collection. Opportunistic CTD rosette operations may be requested to collect more information about the environmental parameters at ROV dives sites, or opportunistically at selected sites where collecting the data is considered important to understanding the physical or chemical properties of the overlying water column. ROV and mapping operations will not be conducted in state waters.

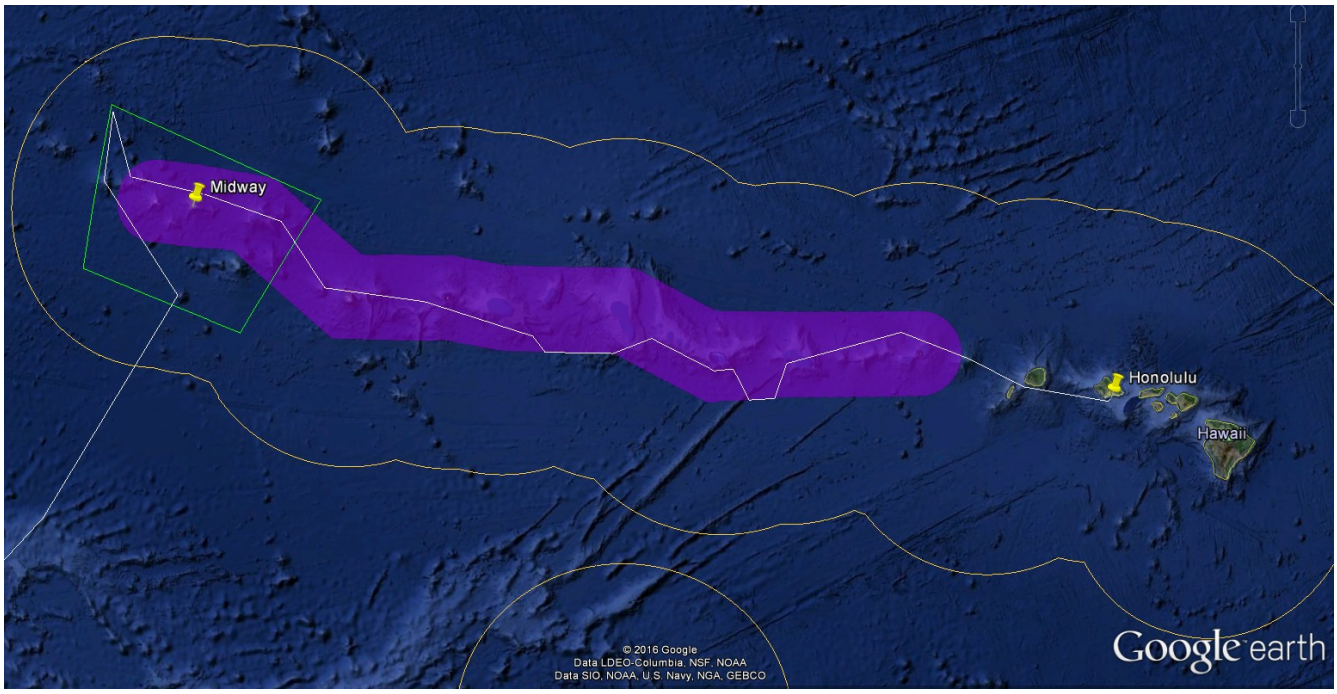

Figure 1: This figure shows the planned primary operating area of the *Okeanos Explorer* for EX-16-03. The white lines show the draft cruise tracks, and the purple shaded area is PMNM. The Green box is the Midway area OP area. Operations are planned to extend from Oahu to the northwest and beyond Midway.

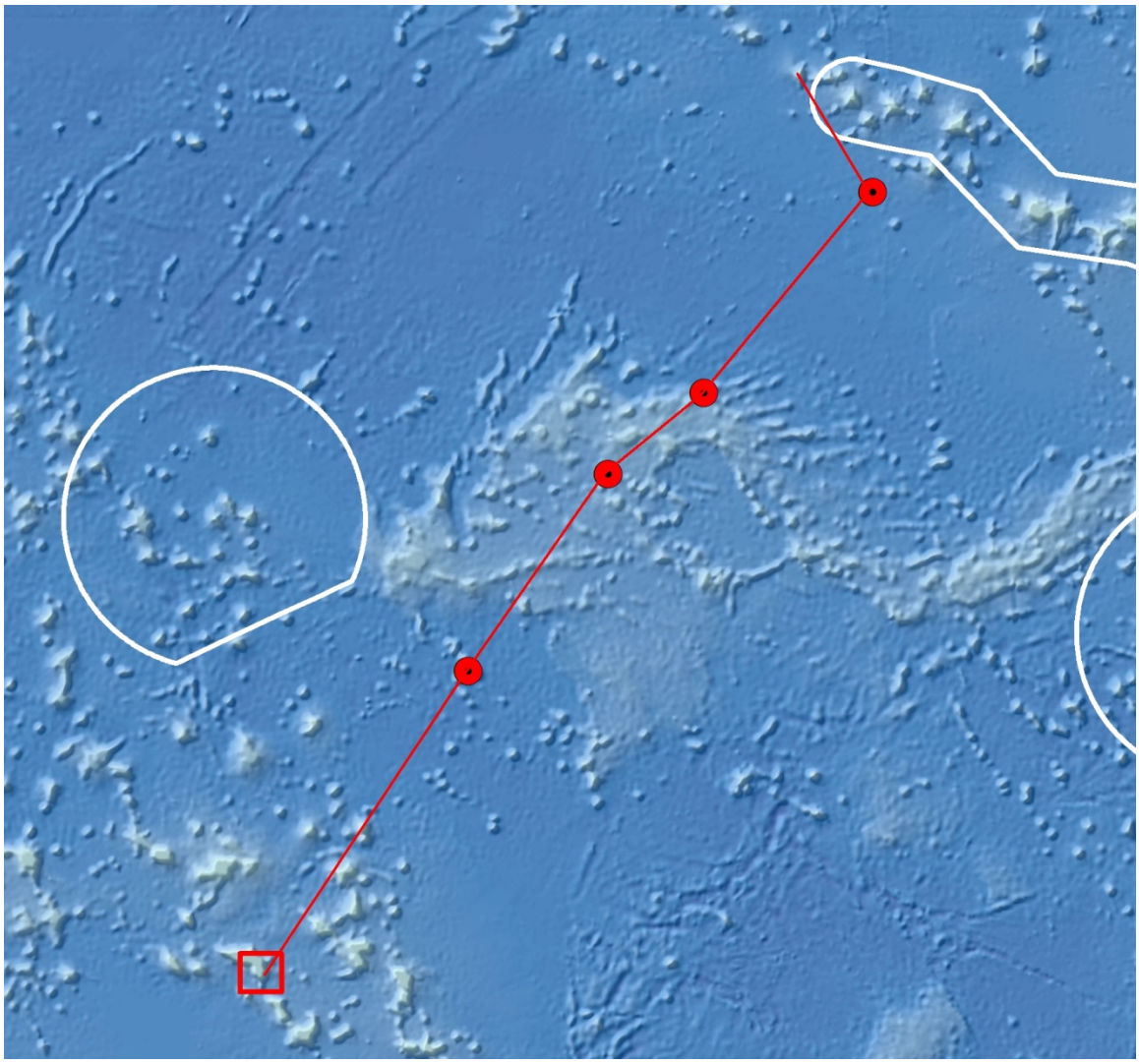

Figure 2: This figure shows the planned transit to Kwajalein; the red dots denote possible ROV dive locations.

D. Summary of Objectives

February 23- March 18 (Honolulu, HI to Kwajalein, Marshall Islands) Telepresence-enabled ROV cruise with mapping and possible CTD operations

EX-16-03 operations will cover a wide area of the US EEZ around the Hawaiian Island Chain, focusing primarily in and around Papahānaumokuākea Marine National Monument (PMNM) and with dives in international waters and mapping operation inside the Marshall Islands EEZ. The primary goal for this cruise is to collect baseline data and information to support priority NOAA science and management needs.

Mission objectives for EX-16-03 include a combination of operational, science, education, outreach, and data management objectives:

1. Science
    a. Acquire data to support priority Monument and Sanctuaries science and management needs;
    b. Discover and characterize vulnerable marine habitats - particularly 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;
        iii. Collect biological samples of potential new species and/or potential range extensions
        iv. Explore Ridge Top features
    c. Collect data and geologic samples to characterize seamounts within the Prime Crust Zone;
    d. 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 spreading centers;
    e. Survey and dive possible targets associated with the WWII Battle of Midway;
    f. Continue to refine specimen collection protocols and processing procedures;
    g. Ground-truth acoustic data using video imagery and characterize associated habitat;
    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;
    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. Test and refine new highlight video SOPs;

e. Facilitate live outreach events between ship and shore;
f. Continue to refine protocols for the new WOWZA servers at the Inner Space Center;
g. Continue to refine protocols for using YouTube live to host live video;
h. Test and refine new video compression and editing hardware;
i. Formalize / Finalize parallel processing of imagery and video compression routines;
j. Work develop protocols and procedure for using the Telestream video recording suite.

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 ROV operations with mapping products and expertise;
   c. Conduct mapping operations during transit, with possible further development of exploration targets;
   d. Collect XBT/ underway CTD casts at regular intervals no longer than 3-4 hours, as data quality requires, during mapping operations;
   e. Create daily standard mapping products;
   f. Collection of sun photometer measurements as part of survey of opportunity;
   g. Continue to test the integration of the new EK60 frequencies and the ADCPs. Overnight mapping operations will focus on refining protocols for the new sonars.

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. Continue to test the ability to record high definition video footage of a full dive onboard the ship;
   d. Test new Vessel Data Management software;
   e. Develop and test protocols and procedures for handling the data from the Telestream video recording system;
   f. Develop and test protocols and procedures for handling data from pilot sampling efforts
   g. Train new data engineers;
   h. Cross train existing ROV dedicated personnel;
   i. Formalize Data Management SOP;
   j. Formalize / Finalize parallel processing of imagery and video compression routines;
   k. Continue development on real time data visualization of ROV geospatial and environmental parameters;
   l. Complete engineering test objectives on first ROV dive;
   m. Test real-time ROV data being pushed to shore;
   n. Ensure Marine Archology data protection protocols are followed.

7. Outreach
   a. Engage the general public in ocean exploration through live video and timely content (daily updates, topical essays and web logs, highlight videos, video clips, still imagery and mapping products) posted on the Ocean Explorer website;
   b. Host live events with VIPs;

8. Ship
    a. Test and refine SOPs for the New VSAT;
    b. Provide high a high quality stable internet connection with the new VSAT;
    c. Train new deck department personnel in ROV launch and recovery.

E. Participating Institutions

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

NOAA, National Oceanographic Data Center, National Coastal Data Development Center, Stennis Space Center MS, 39529 USA

NOAA, Office of Coast Survey, Hydrographic Surveys Division, Atlantic Hydrographic Branch, 439 W. York St., Bldg 2, Norfolk, VA 23510 USA

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

University of Hawai'i Manoa- 2500 Campus Rd, Honolulu, HI 96822

NOAA, National Ocean Service, Office of National Marine Sanctuaries, Papahānaumokuākea Marine National Monument - 1845 Wasp Blvd., Building 176, Honolulu, HI 96818

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 Ocean Service, Office of National Marine Sanctuaries, Papahānaumokuākea Marine National Monument, 1845 Wasp Blvd., Building 176, Honolulu, HI 96818

Nauticos LLC. PO Box 7689, Cape Porpoise, ME 04014

F. Personnel (Mission Party)

Table 1: Leg II—Full list of sea going mission party members and their affiliations

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Kennedy, Brian	Expedition Coordinator	2/20	3/21	M	NOAA/UCAR	USA
Malik, Mashkoor	Mapping Lead	2/19	3/21	M	NOAA	USA
Meyers, Jason	Mapping Watch Lead	TBD	3/21	M	UCAR	USA
Wagner, Daniel	Science Team Lead	2/23	3/21	M	NOAA NOS	US permanent Resident
Tree, Jonathon	Science Co-Lead	2/23	3/21	M	University of Hawaii	USA
McLetchie, Karl	ROV Dive Supervisor	Already aboard	3/21	M	UCAR/GFOE	USA

Carlson, Joshua	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Ritter, Chris	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Kennison, Sean	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Newman, Jim	ROV Engineer	2/20	3/21	M	UCAR/GFOE	USA
Lister, Andy	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Mohr, Bobby	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Unema, Levi	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Lanning, Jeff	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Rogers, Dan	ROV Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Brian, Roland	Video Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Smithee, Tara	Video Engineer	Already aboard	3/21	F	UCAR/GFOE	USA
McNichol, ED	Video Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
Howard, Art	Video Engineer	Already aboard	3/21	M	UCAR/GFOE	USA
O'Brien, Andrew	Data Manager	Already aboard	3/21	M	UCAR/GFOE	USA
Woodard, Katherine	Sample Data Manager	TBD	3/21	F	GDIT	USA

Table 2: Leg II—Shore-based Operations Team

Last Name	First Name	Organization	Area of interest or expertise.	Location
Pawlenko	Nick	NOAA	Shore-side Ops and Web Coordinator	Hawaii and Rhode Island
Cantwell	Kasey	NOAA OER (Colabralink)	Shore-side Ops	Silver Spring
Martinez	Catalina	NOAA	Shore-side Ops	Rhode Island
Crum	Emily	NOAA OER	Web Master	Key West, FL
Wagner	Katie	NOAA OER (Colabralink)	Communications Coordinator	Silver Spring, MD

Table 3: Leg II -- Shore Based Science Team

Last	First	Organization	Expertise
Morgan	Nicole	Florida State University	benthic biology
Lisa	Levin	Scripps Institution of Oceanography	benthic biology
Baco-Taylor	Amy	Florida State university	Benthic ecology, deep-sea corals and sponges
Brooke	Samantha	NOAA	
Rodriguez	Christine	CGR Strategic Communications	
Sautter	Leslie	College of Charleston	geomorphology, geology
Herrera	Santiago	U Toronto; WHOI	Benthic biology
Gerringer	Mackenzie	University of Hawaii	Fish biology, science communication
Veazey	Lindsay	University of Hawaii	Benthic species distribution, backscattee acquisition
Hourigan	Thomas	NOAA Deep Sea Coral Research & Technology Program	deep-sea coral ecosystems
Bruce	Mundy	NOAA NMFS PIFSC	ichthyology (fish identification and biogeography)
King	Spencer	Nauticos LLC	marine archaeology
Kevin	Jerram	UNH CCOM	gas seeps!
Vecchione	Michael	NMFS Systematics Lab	cephalopods, nekton, water column, pteropods
Amon	Diva	University of Hawaii	benthic biology
Rogers	Richard	M.A.S.	Maritime Cultural Deposits

Hirsh	Heidi	NOAA NMFS	geomorphology, benthic, biology, hydrothermal vents, geology, submarine volcanoes, ocean literacy, education and outreach
Parras	Toni	NOAA-Papahanaumokuakea Marine National Monument	Outreach & Communications
Andrews	Allen	NOAA Fisheries	DS fishes and corals, age and growth, radiochemical age validation
Mooi	Rich	California Academy of Sciences	echinoid systematics
Sarsfield	Bruce	Conidae Marine Inc	
France	Scott	University of Louisiana at Lafayette	Deep-sea corals, benthic invertebrates
Matthews	Russ	Edward E and Marie L Matthews Foundation	Maritime (and aviation) archaeology
Molodtsova	Tina	P.P. Shirshov Institute of Oceanology RAS	deep-sea corals, seamount fauna, black corals, associated fauna
Crosby	Jennifer	ccom	
Singer	Randy	Florida Museum of Natural History	ichthyology
Cordes	Erik	Temple University	benthic ecology, deep-sea corals
Smith	Sallie	Nauticos	marine archeology, STEM Education
Vinson	Thomas	Nauticos Corp	Comm's
Damour	Melanie	Bureau of Ocean Energy Management	marine archaeology
Parshall	Jonathan	Nauticos	Japanese naval history

Estabrook	Norman	SEAWORD	
Blocksome	Roderick	Nauticos LLC	WWII Battle of Midway
Matsumoto	Asako	Chiba Institute of Technology	deep sea biology, deep water coral
Jourdan	David	Nauticos	Remote sensing, navigation
Ostermiller	Jerry	Ore. Heritage Commission	Historic Archaeology
Cairns	Stephen	Smithsonian	coral taxonomy
Smith	John	University of Hawaii	Geomorphology, volcanics, landslides
Warren	Daniel	Oceaneering	Archaeology, geology, geomorphology
Mello	Kristen	The Center for Coastal and Ocean Mapping	Benthic biology
Wicksten	Mary	TexasA&M University	invertebrate zoology
Dornback	Matt	NOAA	Benthic Biology
Fan	Tsao	NOAA	
Deborah	Glickson	FAU-HBOI	geology and geomprhology
Morin	Holly	URI/GSO/ISC	marine biology (background with marine mammals)
Miller	Mary	Exploratorium	Education/Outreach
DeCiccio	Alex	Inner Space Center	
Oram	Risa	NOAA PIFSC	
Zykov	Victor	Schmidt Ocean Institute	technology
Mah	Christopher	National Museum of Natural HIstory (Smithsonian)	Starfish & other echinoderms
No one	Jim	International Midway Memorial Foundation	Military history
Parke	Michael	PIFSC	Benthos
Irion	Jack	BOEM	archaeology

Brooke	Samantha	NOAA	marine protected areas
Auscavitch	Steve	Temple University	Deep-sea corals
Tree	Jonathan	University of Hawaii Geology and Geophysics Department	Geology
Frable	Benjamin	Scripps Institute of Oceanography	ichthyology, fish systematics
McKinnon	Jennifer	East Carolina University Program in Maritime Studies	archaeology
Parrish	Frank	PIFSC	Biology, deep corals
Boston	Brian	University of Hawaii	geology & geophysics
Ziegler	Amanda	University of Hawaii at Manoa	Benthic ecology
Hourigan	Tom	NOAA Fisheries, Deep Sea Coral Research & Technology Program	Benthic ecology, deep-sea corals & sponges
D'Angelo	James	International Midway Memorial Foundation	Midway History
Fryer	Patricia	Univ. Hawai'i at Mānoa (UHM)	geology/petrology
Lickliter-Mundon	Megan	Texas A&M University/NOAA	Aviation archaeology, deep water archaeology, photomodeling
Parras	Toni	NOAA-Papahanaumokuakea Marine National Monument	
Soule	Adam	WHOI	volcanology, geomorphology

Burke	Tamara	Tami Kennedy & Associates	Public Relations
Grenchik	Maria	NAUTICOS	Education
Allshouse	Robert	UUV Project Engineer	Unmanned Technology
Sutton	Evan	Nauticos LLC (volunteer)	Benthic biology/general marine ecology
Austin	James	University of Texas/Austin	marine geology
Schorer	Lonnie	TIGHAR	research
Etnoyer	Peter	NOAA/NCCOS	Benthic biology
Shank	Timothy	WHOI	benthic biology
Veazey	Lindsay	Hawaii Institute of Marine Biology	Spatial ecology, scleractinians, general mapping
Humphreys	Robert	NOAA Fisheries	seamounts, fish biology
Loricchio	Susan	Nauticos	
Rubin	Kenneth	SOEST/Univ. Hawaii	geology (basalt, fossil coral)
McGuinn	Robert	NOAA	spatial ecology; deep sea coral and sponges; data management
James	Jennifer	Nauticos/SeaWord	outreach
Rodriguez	Christine	CGR Strategic Communications	
Sarsfield	Bruce	Consider Marine	
Moustahfid	Hassan	NOAA/ US IOOS	Cephalopods, hydroacoutics
Roark	Brendan	Texas A&M University	deep-sea corals
Smith	Jennifer	Scripps	benthic biology, algae
Lindsay	Dhugal	JAMSTEC	midwater biology, gelatinous macroplankton
Drazen	Jeffrey	University of Hawaii	deep sea fishes
Dwight	Coleman	URI GSO ISC	geology/archaeology

King	Matthew	OER	web design
Jim	Masterson	FAU Harbor Branch Oceanographic	Benthic Ecology, Education
Keogh	Kelly	NOAA Papahanaumokuakea Marine National Monument	Marine Archaeology
Leitner	Astrid	University of Hawaii Manoa	deep sea fish ecology; seamounts

G. Administrative

1. Points of Contact:

Ship Operations

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Engineering Group Lead
The Global Foundation for Ocean Exploration
Phone : (203)2465-5531
E-mail :david.lovalvo@tgfoe.org

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 should arrive at the below address prior to **COB February 19, 2016**.

OPS Officer
NOAA Ship Okeanos Explorer
1897 Ranger Loop
Ford Island Bldg. 184
Honolulu, HI 96818

2. Diplomatic Clearances

This project involves Marine Scientific Research in waters under the jurisdiction of Marshall Islands. Diplomatic clearance has been approved under US Diplomatic Note 15-105 (Appendix G).

3. Licenses and Permits

This project will be conducted under the Scientific Research Permit PMNM-2015-018 issued to Ms. Kelley Elliott to conduct work in the Papahanoumokuakea Marine National Monument (PMNM). The permit was issued by the Co-Trustees of the PMNM Board effective July 1, 2015 and expiring June 30, 2016. Additionally two amendments covering the use of our new sonars and the UnderwayCTD can be found in Appendix D.

OER has also completed an informal consultation with NOAA's National Marine Fisheries Service (NMFS) under section 7 of the Endangered Species Act of 1973 that address the potential impacts of project activities to ESA-listed species and critical habitat within the project operating area. A Letter of Concurrence was received from NMFS February 4, 2016 , concurring with OER's determination that the

activities of the 2016 Okeanos Explorer field season are not likely to adversely affect ESA-listed marine species, and would have insignificant effects on designated or proposed critical habitat (Appendix E).

II. OPERATIONS

The Expedition Coordinator is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives, priorities and environmental compliance procedures. The Commanding Officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

A. **Project Itinerary** *(All times and dates are subject to prevailing conditions and the discretion of the Commanding Officer)*

We will conduct primarily 8 hour ROV dives with a few longer dives and staffing allows. CTD casts are expected and requested, but will be TBD based on the availability of ship personnel and operational constraints.

Table 3: EX1603 Detailed Itinerary
This is an approximate itinerary and is subject to change

Date	Activity	Notes and Requirements
2/22/2016	Media Day and limited tours	Media open house on the ship, a couple targeted tours for NOAA staff and partners, Train new mission personnel and final preparations to get underway
2/23/2016	Depart Honolulu	Get underway
2/24/2016	Dive 1 Middle Bank	Normal Dive
2/25/2016	Dive 2 Deep Ridge	Normal Dive followed by long transit
2/26/2016	Dive 3 East of Necker	Normal Dive. Outside the monument over night
2/27/2016	Dive 4 SE of FFS	Normal Dive
2/28/2016	Dive 5 W of St Rogatien Bank	Normal Dive followed by long transit. Outside the Monument overnight
2/29/2016	Dive 6 Maro Rift arm	Normal Dive followed by long transit
3/1/2016	Dive 7 W of Laysan	Normal Dive
3/2/2016	Dive 8 W of Neva Shoal	Normal Dive. Outside the monument over night
3/3/2016	Dive 9 Midway OPS BOX	Normal Dive with Engineering Reddit AMA

3/4/2016	Dive 10 Midway OPS BOX	Normal Dive
3/5/2016	Dive 11	Battle of Midway possible long Dive
3/6/2016	Dive 12	Battle of Midway possible long Dive
3/7/2016	Dive 13 Midway OPS BOX	Normal Dive
3/8/2016	Dive 14 Midway OPS BOX	Normal dive
3/9/2016	Dive 15 Castellano Seamount	Normal Dive followed by long transit
3/10/2016	Mapping Transit	Mapping transit day **Cross the date line**
3/12/2016	Dive 16	Normal Dive followed by long transit
3/13/2016	Dive 17	Normal Dive followed by long transit
3/14/2016	Mapping transit	Mapping transit day
3/15/2016	Dive 18	Normal Dive followed by long transit
3/16/2016	Mapping transit	Mapping transit day
3/17/2016	Mapping transit	Mapping transit day
3/18/2016	Arrive Kwajalein	
3/19/2016	Secure for Transit	

B. Staging and Destaging

A. Minimal mobilization will be required because the most of the ROV personnel and equipment will already be onboard from the previous cruise.
B. Minimal demobilization will be required because nearly all equipment and samples will remain on board.

C. **Operations to be Conducted**

Telepresence Events

A. March 3rd GFOE will be hosting a Reddit AMA focused on the vehicle engineering
B. Dates TBD- there will be additional live events that come up as the cruise progresses. These events will have little to no effect on the ship's operations and will be raised during daily operations briefings.

In-Port Events

C. February 22- Media tour with 10-15 people
D. February 22- USAF personel ship tour (less than 10 people)
E. February 22- Targeted tours for Monument co-managers.

D. SCUBA Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (http://www.ndc.noaa.gov/dr.html) and require the approval of the ship's Commanding Officer. No SCUBA dives are currently planned for this cruise.

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 D and E. The final decision to operate and collect 24-hour sub-bottom profiler data will be at the discretion of the Commanding Officer.

III. EQUIPMENT

A. Equipment and capabilities provided by the ship

- Kongsberg Simrad EM302 MultibeamEchosounder (MBES)
- Kongsberg Simrad EK60DeepwaterEchosounder
- Knudsen Chirp 3260 Sub-bottom profiler (SBP)
- LHM Sippican XBT (Deep Blue probes)
- Seabird SBE 911Plus CTD
- Seabird SBE 32 Carousel and 24 2.5 L Niskin Bottles
- Light Scattering Sensor (LSS)
- Oxidation – Reduction Potential (ORP)
- Dissolved Oxygen (DO) sensor
- Altimeter Sensor and battery pack
- CNAV GPS
- POS/MV
- Seabird SBE-45 (Micro TSG)
- Kongsberg Dynamic Positioning-1 System
- NetApps mapping storage system
- CARIS HIPS Software
- IVS Fledermaus Software
- SIS Software
- Hypack Software

- Scientific Computing System (SCS)
- ECDIS
- Met/Wx Sensor Package
- Telepresence System
- VSAT High-Speed link (Comtech 20 Mbps ship to shore; 2 Mbps shore to ship)
- Cruise Information Management System (CIMS)
- Three VoIP telephone lines
- NOAA OER 6000 m *Deep Discoverer* ROV
- NOAA *Seirios* Camera Platform

B. Equipment and capabilities provided by the scientists

- Microtops II Ozone Monitor Sunphotometer and handheld GPS required for NASA Marine Aerosols Network supplementary project.
- Equipment associated with new sampling protocol

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 (10 gallons)	Sample preservation	Wetlab, under the chemical hood
10% Buffered Formalin (3 gallons)	Sample preservation	Wetlab, under the chemical hood
Chaos Buffer (0.5 gallons) (4 M guanidine thiocyanate, 0.5% N-laurosyl sarcosine, 25 mM Tris 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
   A. All safety and spill response procedures will be handled according to OMAO guidelines and following the manufacturers MSDS which has been provided to the ship's ECO.

D. Radioactive Materials

NOT APPLICABLE TO THIS CRUISE

V. ADDITIONAL PROJECTS

A. Supplementary Projects

NASA Maritime Aerosol Network

During the cruise the marine aerosol layer observations will be collected for the NASA Maritime Aerosol Network (MAN). Observations will be made by mission personnel (as time allows) with a sun photometer instrument provided by the NASA MAN program. Resulting data will be delivered to the NASA MAN primary investigator Alexander Smirnov by the expedition coordinator. All collected data will be archived and publically available at:
http://aeronet.gsfc.nasa.gov/new_web/maritime_aerosol_network.html

Equipment resides on the ship and is stewarded by the Expedition Coordinator.

See Appendix F 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 [http://www.corporateservices.noaa.gov/ames/administrative_orders/chapter_212/212-15.html].

Ship Responsibilities

The Commanding Officer is responsible for all data collected for missions until those data have been transferred to mission party designees. Data transfers will be documented on NOAA Form 61-29. Reporting and sending copies of project data to NESDIS (ROSCOP form) is the responsibility of OER.

NOAA OER Responsibilities

The Expedition Coordinator will work with the *Okeanos Explorer* Operations Officer to ensure data pipeline protocols are followed for final archive of all data acquired on *Okeanos Explorer* without proprietary rights. See Appendix B for detailed data management plans.

Deliverables

a. At sea
   - Daily plans of the Day (POD)
   - Daily situation reports (SITREPS)
   - Daily summary bathymetry data files
   - Summary forms for each ROV dive
   - Summary files for each sample collection
   - Summary forms for each CTD rosette cast

b. Post cruise
   - Refined SOPs for all pertinent operational activities
   - Assessments of all activities

c. Science
   - Multibeam and XBT raw and processed data (see appendix B for the formal cruise data management plan)
   - EK 60 raw data
   - Knudsen 3260 sub-bottom profiler raw data
   - Summary file with all sample data

- Mapping data report
- 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

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.

A. 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.

B. 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.

C. Post-Project Meeting: The Commanding Officer is responsible for conducting a meeting no earlier than 24 hrs before or seven days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Expedition Coordinator, and members of the scientific party and is normally arranged by the Operations Officer and Expedition Coordinator.

D. 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 http://www.omao.noaa.gov/fleeteval.html and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to

analyze the information. Though the complete form is not shared with the ships, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. MISCELLANEOUS

A. Meals and Berthing

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

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

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

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

B. Medical Forms and Emergency Contacts

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

All NHSQs submitted after March 1, 2014 must be accompanied by NOAA Form (NF) 57-10-02 - Tuberculosis Screening Document in compliance with OMAO Policy 1008 (Tuberculosis Protection Program).

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

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

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

Contact information:

Regional Director of Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone (757) 441.6320
Fax (757) 441.3760
E-mail: MOA.Health.Services@noaa.gov

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

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

Emergency contact form is included as Appendix A.

C. Shipboard Safety

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 20Mbps 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
Okeanos Explorer Iridium:(808) 659-9179
OER Mission Iridium (dry lab): (808) 851-3827

EX INMARSAT B
Line 1: 011-870-764-852-328
Line 2: 011-870-764-852-329

Voice Over IP (VoIP) Phone:
(541) 867-8932
(541) 867-8933
(541) 867-8934

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

expeditioncoordinator.explorer@noaa.gov For dissemination of all hands emails by Expedition Coordinator while 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

No Foreign National Guests are requested at this time. There will be one US permanent resident.

Appendix A

EMERGENCY CONTACT DATA SHEET

NOAA OKEANOS EXPLORER

Scientists sailing aboard the *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/viewformwith their emergency contact information

Appendix B: Data Management Plan

Data Management Plan
Okeanos Explorer (EX1603): Hohonu Moana: Exploring the Deep Waters off Hawai`I

OER Data Management Objectives
Continue integration and testing of telestream pipeline capture system; work with Telestream developers to resolve abortive captures; integrate audio into telestream video capture; transfer functionality from the old data warehouse to the new one; ensure successful transfer of data warehouse functionality (public hosting, dashboard, data consolidation, data processing) from legacy dell system to new replacement.

1. General Description of Data to be Managed

1.1 Name and Purpose of the Data Collection Project

Okeanos Explorer (EX1603): Hohonu Moana: Exploring the Deep Waters off Hawai`I

1.2 Summary description of the data to be collected.

The ship will conduct 24 hour operations consisting of daytime ROV dives and evening/nighttime mapping operations including during transit. During this cruise we will conduct primarily 8 hour ROV dives with occasional 10 or 12 hour dives on particularly interesting or deep water dive sites, as staffing allows. ROV operations will focus in depths between 250 and 6,000 meters and will include high-resolution visual surveys and limited sample collection. Mapping operations will be conducted in 250m of water and deeper, and include transit and overnight multibeam, water column backscatter, and sub-bottom data collection. Opportunistic CTD rosette operations may be requested to collect more information about the environmental parameters at ROV dives sites, or opportunistically at selected sites where collecting the data is considered important to understanding the physical or chemical properties of the overlying water column. ROV and mapping operations will not be conducted in state waters.

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

expedition, exploration, explorer, marine education, noaa, ocean, ocean discovery, ocean education, ocean exploration, ocean exploration and research, ocean literacy, 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, archaeological, archaeology, conservation, conserve, crm, cultural resource management, historic, marine archaeology, maritime, maritime archaeology, nautical, nautical archaeology, preserve, protect, protection, submerged cultural heritage, submerged cultural resource, uch, underwater cultural heritage, oceans, Battle of Midway, World War II, Japanese Aircraft Carrier Kaga, Kwajelein, Marshall Islands, Midway Islands, Papahanaumokuakea Marine National Monument, PMNM, Hawaiian Archipelago, Northwest Hawaiian Islands, CAPSTONE, Middle Bank, deepwater corals, deepwater sponges, manganese crust habitats

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: 2/23/2016 to 3/18/2016

1.6 Planned or actual geographic coverage of the data.

Latitude Boundaries: 8.26 to 30.83

Longitude Boundaries: 167.4 to -157.9

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

Sub-Bottom Profile data, Water Column Backscatter, XBT (raw), Cruise Plan, Cruise Summary, Data Management Plan, Highlight Images, Quick Look Report, Bottom Backscatter, Dive Summaries, EK60 Singlebeam Data, ADCP, Expedition Cruise Report, Highlight Video, Images, Multibeam (image), Multibeam (processed), Multibeam (product), Multibeam (raw), NetCDF, Raw Video (digital), Sample Logs, SCS Output (compressed), SCS Output (native)

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:	Brian Kennedy
Title:	Expedition Coordinator
Affiliation/Dept:	NOAA Office of Ocean Exploration and Research
E-Mail:	brian.kennedy@noaa.gov
Phone:	401-874-6150

3. Point of Contact for Managing the Data

Data POC Name:	Susan Gottfried
Title:	OER Data Management Coordinator
E-Mail:	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 and are not quality controlled. CTDs are processed into profiles for display only on the Okeanos Atlas.

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:

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:	www.ncddc.noaa.gov/oer-waf/ISO/Resolved/2016/
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:	explore.noaa.gov/digitalatlas

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

Hold Time: data are made available as soon as possible after the mission end

Authority:

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 FY16 Data Management Plan at NOAA's EDMC DMP Repository (EX_FY16_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 C: Categorical Exclusion

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OCEANIC AND ATMOSPHERIC RESEARCH
Office of Ocean Exploration and Research
Silver Spring, MD 20910

February 10, 2016

MEMORANDUM FOR: The Record

MCDONOUGH.JOHN.III.1365836678 Digitally signed by MCDONOUGH.JOHN.III.1365836678 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=MCDONOUGH.JOHN.III.1365836678 Date: 2016.02.10 11:06:09 -0500'

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

SUBJECT: Categorical Exclusion for NOAA Ship *Okeanos Explorer* Cruise EX-16-03

NAO 216-6, Environmental Review Procedures, requires all proposed projects to be reviewed with respect to environmental consequences on the human environment. This memorandum provides an assessment of the possible effects of a NOAA Ship *Okeanos Explorer* ocean mapping survey on the human environment.

Description of the Project
This project is part of the NOAA Office of Ocean Exploration and Research's "Science Program" and entails ocean mapping activities, Remotely Operated Vehicle (ROV) Operations, and water column profiling using CTD casts designed to increase knowledge of the marine environment. This expedition is entitled "EX-16-03 CAPSTONE: Hohonu Moana 2016." This cruise will be led by Brian Kennedy, Expedition Manager. This expedition serves as an opportunity for NOAA and the Nation to highlight the uniqueness and importance of the Pacific Monuments and Sanctuaries, which are national symbols of ocean conservation. Operations conducted during this campaign support NOAA missions to understand and predict changes in climate, weather, oceans and coasts, and share that knowledge and information with others. Much of this year's work will contribute to and complement Deep Sea Coral Research and Technology Program's three-year Pacific Islands Regional Initiative.

EX-16-03 is a telepresence-enabled ROV cruise that will focus on sites within and just outside of PMNM, as well as a few site in international waters as we transit to the Marshall Islands. The ship will depart Pearl Harbor, Oahu on February 23, 2016 and head to Middle Bank on the southern border of PMNM to conduct an ROV dive, and then enter PMNM where the majority of ROV dives will be conducted. Rift zone ridges and other types of abrupt topography will be

targeted due to their likelihood of hosting extensive communities of deepwater corals and sponges, as well as likely manganese crust habitats from 1,000-2,500m. The deepest extent of important coral and sponge groups will also be explored during dives to depths of 3,000-5,000 m. The ship may also explore areas and dive targets associated with the WWII Battle of Midway. The ship will then depart PMNM and head to Kwajalein, Marshall Islands arriving on March 18, 2016 to complete the cruise.

Operating Area

The operating area of the EX-16-03 effort will encompasses the marine environment of the Papahānaumokuākea Marine National Monument and surrounding areas as well as the marine environments from the area around Midway atoll to Kwajalein, Marshall Islands.

ROV Operations on *Okeanos Explorer*

The purpose of conducting ROV operations is to conduct interdisciplinary site characterization at priority targets in the Monument. Interdisciplinary site characterization would be achieved by visually surveying priority targets while simultaneously acquiring environmental data with in situ sensors mounted on the ROVs (CTD and DO). ROV targets include seamount summits and flanks, rift zone ridges, drowned reef terraces, guyots (i.e., flat topped tablemounts), a submerged crater, submarine canyons, and other types of topography where high density deep water coral and sponge communities are likely to occur as well as possible dives on submerged cultural heritage sites. The combined dives will enable scientists and managers to have a better understanding of the diversity and distribution of deep water habitats in the Monument, and should contribute to enhanced protection of these resources. The ROVs 6000m depth capability puts areas of the Monument within reach that have never been seen before.

The *Okeanos Explorer* is equipped with OER's dedicated, fully integrated, two-body ROV system. ROV operations are conducted primarily during daylight hours while the vessel is stopped and hold station using dynamic positioning. ROV operations will typically take place within several meters of the seafloor, and are conducted in a way to minimize seafloor disturbances. On occasion, the ROV is set down on the seafloor in order to acquire very close imagery of habitats or features of interest. Common procedure includes visually scanning the seafloor to ensure the area the ROV is set on does not include corals or other animals; however some animals may reside beneath the sediment or may be too small to see. The ROV also has a temperature probe that may be shallowly inserted into the seafloor sediment to measure the depth or temperature of features of interest. Finally, though every effort is made to prevent any unnecessary seafloor disturbance, it is likely that at some point the ROV will inadvertently touch some benthic fauna (e.g., sea whip) or that water moving through the ROV thrusters will stir up small amounts of seafloor sediment. Any disturbance would likely be similar to that seen during normal near bottom SCUBA dives. During this cruise, up to 18 deployments of the ROV would occur during the expedition, resulting in 150 hours total dive time (~8 hours for each dive).

During this cruise the Okeanos Explorer will continue a pilot sampling program to collect very selective specimens with the ROV that have the potential to contribute significant scientific discoveries. Biological specimen collections will focus on, but are not limited to, corals and sponges (and their incidentally collected commensals). Only biological specimens suspected of being new species or new records for Hawaiian waters will be targeted. When possible, only a

subsample will be taken of biological specimens (e.g., only a piece or branch of corals and sponges will be collected, not the entire organism). Selective rock specimens that have the potential to contribute significant scientific discoveries as outlined in the expedition goals will also be targeted. These are expected to include rocks from seamounts; manganese-coated rocks; and rock samples to support the United States Extended Continental Shelf effort. When possible, rock samples will be selected in a way to minimize the amount of attached organisms. Any sample collection activity within PMNM would meet PMNM's policy for voucher specimen collections.

Mapping Operations on *Okeanos Explorer*

The acquisition of high-resolution seafloor mapping data is an essential precursor to making significant biological, geological, archaeological and oceanographic discoveries in the monument. The Okeanos Explorer cruises will collect seafloor mapping data to supplement previous work. These maps form the basis for selecting ROV dive targets. ROV cruises would take the next major step in baseline habitat characterization by using the ROV system to visually investigate unknown and little known deep water habitats within the monument identified as priority by scientists and managers. CTD casts may be conducted to collect additional information about the physical and chemical properties of the water column, including at sites of interest identified from mapping and ROV investigation.

As is standard procedure on exploration cruises with this vessel, the ship will conduct sonar mapping operations at during non-ROV operations throughout the cruise. Acoustic instruments that will be operational during the project are a 30 kHz multibeam echosounder (Kongsberg EM 302), a Kongsberg EK60 singlebeam echosounders (18, 38, 70, 120, 200, and 333 kHz), Teledyne Acoustic Doppler Current Profilers (38 and 300 kHz), and a 3.5 kHz sub-bottom profiler (Knudsen Chirp 3260). Additionally, expendable bathythermographs (XBTs) and the ship's underway CTD will be deployed at regular intervals in association with multibeam data collection. All of these systems are routinely used by this exploration vessel and have provided invaluable scientific data for marine researchers and managers, including numerous National Marine Sanctuaries, the Bureau of Ocean Energy Management and the U.S. Geological Survey.

Bridge Officers and Watch Standers will be on watch during all hours and will to look for marine mammals and other observable species potentially sensitive to the sound of the sonars. If cetacean species are present within 400 m of the ship, the vessel will stop until the animals depart the area. In addition to a dedicated observer monitoring for the presence of protected species during daylight hours, standard practice during all *Okeanos Explorer* cruises. If a cetacean is observed, the Mapping Watch Lead and Expedition Coordinator are notified, and if appropriate, the ship will slow down or stop until the animal has departed the area. When marine mammals are able to be identified by Bridge Officers or Watch Standers, these observations are noted in the NOAA fleet marine mammal observation log as part of standard practice.

CTD Operations

The CTD rosette instrument does not emit anything and is used to obtain conductivity, temperature, depth and other sensor data (dissolved oxygen, light scattering, oxygen reduction potential). The instrument would be attached to an open cylindrical steel frame approximately 1.15 m in diameter and 1.4 m high with a 24-position rosette carousel containing 24 2.5 L niskin bottles for collecting water samples. The system would be lowered to a maximum depth of 6800

m by an embedded scientific winch and wire while the vessel would be stopped and hold station using dynamic positioning (DP). The average time to conduct a CTD casts varies from one to several hours depending on water depth (the CTD is lowered through the water column at 60m/min). CTD casts would be conducted at selected sites including locations where ROV dives are conducted to allow for an improved understanding of the environmental conditions by measuring the physical or chemical properties of the water column overlying or hosting a particular habitat. The CTD would not touch the seafloor.

Permits
This project will be conducted under the Scientific Research Permit [PMNM-2015-018] for work in the Papahanoumokuakea Marine National Monument (PMNM) issued by NOAA on [July 1, 2015].

OER has also conducted a Biological Evaluation for all operations to be conducted as part of CAPSTONE expeditions. On February 7, 2016 OER received concurrence from National Marine Fisheries Service Protected Resources Division that under Section 7 of the Endangered Species Act (ESA), the activities slated to occur during the 2016 CAPSTONE expeditions are not likely to adversely impact ESA-listed marine species, and would have insignificant effects on designated or proposed critical habitat.

Effects of the Project
As expected for ocean research with limited duration or presence in the marine environment, this project will not have the potential for significant impacts. Knowledgeable experts who are aware of the sensitivities of the marine environment will conduct the at-sea portions of this project. The potential gains or beneficial effects of the project seem to outweigh any potential adverse effects. This expedition will provide baseline characterization of poorly understood deep water habitats contained within marine protected areas inside the U.S. exclusive economic zone. This work will provide essential information for further research, exploration, and conservation of marine habitat within the Monument(s).

This project will not result in any changes to the human environment. As defined in Sections 5.05 and 6.03.c.3 (a) of NAO 216-6, this is a research project of limited size or magnitude and will not result in individually or cumulatively significant impacts on the quality of the human environment. Specifically, this research cruise would have only short-term effects with the principle goals of natural resource inventories and environmental monitoring over a wide geographic area. Furthermore, this action would not be subject to the exceptions for categorical exclusion provided at NAO 216-6 section 5.05c. As such, this project is categorically excluded from the need to prepare a NEPA environmental assessment.

Appendix D: Permit to conduct research activities in Papahanaumokuakea Marine National Monument and amendments

PAPAHĀNAUMOKUĀKEA
Marine National Monument

Ms. Kelley Elliott
NOAA Office of Ocean Exploration and Research
1315 East-West HWY, SSMC3 Room 10236
Silver Spring, MD 20910

JUL 0 1 2015

Dear Ms. Elliott:

The National Oceanic and Atmospheric Administration (NOAA), the U.S. Fish and Wildlife Service (FWS), and the State of Hawaii (collectively, the Co-Trustees) have approved the issuance of permit number PMNM-2015-018 to conduct activities within Papahānaumokuākea Marine National Monument ("Monument") for research purposes. Activities are to be conducted in accordance with the permit application and all supporting materials submitted to the Monument, and the terms and conditions of permit number PMNM-2015-018 attached.

Enclosed for your signature is a permit signed by all Co-Trustees. This permit is not valid until your signature page is received at this office. The original copy should be signed and returned to the Monument office at the following address within 30 days of issuance:

NOAA/Daniel K. Inouye Regional Center
NOS/ONMS/PMNM/ATTN: Permit Coordinator
1845 Wasp Blvd., Building 176
Honolulu, HI 96818

You are required to carry a signed copy of the permit with you while conducting the permitted activities. Your permit contains specific special conditions and reporting requirements. Please review them closely and fully comply with them while undertaking permitted activities.

The Point of Contact for questions concerning this permit and all associated reporting requirements is Permits and Policy Specialist, Justin Rivera at 808-725-5831 or Justin.Rivera@noaa.gov. Thank you for your continued cooperation with NOAA, FWS, and the State of Hawaii.

Suzanne Case — Date 6/29/15
Chairperson
Board of Land and Natural Resources
Department of Land and Natural Resources
State of Hawaii

7/1/15

Barry Stieglitz Date
Refuge and Monument Supervisor
Hawaiian and Pacific Islands National Wildlife Refuge Complex
Department of the Interior
U.S. Fish and Wildlife Service

for 6-30-2015

Athline Clark Date
Superintendent
Papahānaumokuākea Marine National Monument
Department of Commerce
National Oceanic and Atmospheric Administration

PAPAHĀNAUMOKUĀKEA
Marine National Monument

JUL 0 1 2015

RESEARCH PERMIT

Permittee:
Ms. Kelley Elliott
NOAA Office of Ocean Exploration and Research
1315 East-West HWY, SSMC3 Room 10236
Silver Spring, MD 20910

Permit Number: PMNM-2015-018
Effective Date: July 1, 2015
Expiration Date: June 30, 2016

Project Title: Bathymetric Mapping in Papahānaumokuākea Marine National Monument

This permit is issued for activities in accordance with Proclamation 8031 ("Proclamation") establishing Papahānaumokuākea Marine National Monument ("Monument") under the Antiquities Act of 1906, 16 USC §§ 431-433 ("Antiquities Act") and implementing regulations (50 CFR Part 404). All activities must be conducted in accordance with the Proclamation and the regulations (attached). No activity prohibited by the Proclamation or 50 CFR Part 404 is allowed except as specified below. Chapter 13-60.5, Hawaii Administrative Rules remains in effect for proposed activities in State waters.

Subject to the terms and conditions of this permit, the National Oceanic and Atmospheric Administration (NOAA), the State of Hawaii, and the U.S. Fish and Wildlife Service (collectively, the Co-Trustees) hereby authorize the permittee listed above to conduct research activities within the Monument. All activities are to be conducted in accordance with this permit. The permit application is incorporated into this permit and made a part hereof; provided, however, that if there are any conflicts between the permit application and the terms and conditions of this permit, the terms and conditions of this permit shall be controlling.

PERMITTED ACTIVITY DESCRIPTIONS:

The following activities are authorized by this permit:

1. The permittee and sixty-one (61) individuals from the following list are authorized to enter Papahānaumokuākea Marine National Monument ("PMNM" or "Monument") and conduct activities under this permit: one (1) Field Principal Investigator, Christopher Kelley; and sixty (60) research technicians: Brian Kennedy, John McDonough, Jeremy Potter, Elizabeth Lobecker, Derek Sowers, Lindsay McKenna, David Lovalvo, Brian Bringham, Brendan Reser, Jared Drewniak, Daniel Wagner, Michael Parke, Frank Parrish, and 47 TBDs. Permittee shall provide an updated Compliance Information Sheet prior to each entry into the Monument.

2. Conducting mapping and deep sea characterization activities using the following instruments aboard NOAA Ship OKEANOS EXPLORER (vessel entrance and support operations permitted under permit no. PMNM-2015-025):

    a. Multi-beam echo sounder (Kongsberg EM 302) for the purpose of obtaining sea floor topography data.

    b. Split-beam sonar (Kongsberg EK 60) for the purpose of detecting biological and gaseous targets in the water column.

    c. Sub-bottom profiler sonar (Knudsen Chirp 3260) for the purpose of interpreting sub-seafloor geology.

    d. Ultra-short baseline acoustic system (Tracklink TL 10000 MA) for navigating the Deep Discoverer Remote Operated Vehicle (ROV).

    e. Conductivity-Temperature-Depth (CTD) instrument.

3. Deploying and operating the Deep Discoverer ROV for the purpose of characterizing deep (> 250 meters depth) underwater sites.

4. Touching coral, living or dead while operating the ROV in Activity # 3.

5. Photographing and recording video of marine resources through the operation of the ROV in Activity # 3.

6. Conducting deployments of up to 218 Deep Blue expendable bathythermographs (XBTs) for the purpose of calibrating mapping instruments, and depositing XBTs on the sea floor upon deployment completion.

7. Removing, moving, taking, harvesting, possessing, or attempting to move, take, harvest, or possess two (2) rock samples per ROV dive site (up to 40 sites).

8. Removing, moving, taking, harvesting, possessing, or attempting to move, take, harvest, or possess a set number of any visually observable marine organism morphotype, which cannot be visually identified or may represent a new geographic record or new species, from each of the Permitted Activity Location areas defined, based upon the abundance criteria below:
    a. One (1) specimen can be taken, removed, or possessed if an abundance assessment cannot be ascertained, or fewer than ten (10) such specimens are present, cumulative during the course of the collection event per location;
    b. Up to three (3) specimens can be taken, removed, or possessed if an abundance assessment of ten (10) or more of such specimens is ascertained, cumulative during the course of the collection event per location;

c. For clonal organisms that cannot be visually identified or may represent a new geographic record or new species, take shall be limited to no more than half the clonal organism visually observed. Up to three (3) clonal specimens of similar morphology can be taken, removed, or possessed if an abundance assessment of ten (10) or more of such specimens is ascertained, cumulative during the course of the collection event per location.

9. Sharing rock samples collected under Permitted Activity # 8, with the following researchers:

    i. Michael Garcia (mogarcia@hawaii.edu), University of Hawai'i, Post 617D, Honolulu, HI 96822

    ii. David Clague (clague@mbari.org), Monterey Bay Aquarium Research Institute, 7700 Sandholdt Road, Moss Landing, CA 95039

    iii. James Hein (jhein@usgs.org), U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025

    iv. Christopher Kelley (ckelley@hawaii.edu), University of Hawai'i, 1000 Pope Rd., MSB 229, Honolulu, HI 96822

10. Sharing of biological specimens collected under Permitted Activity # 9, with the following researchers:

    i. Christopher Kelley (ckelley@hawaii.edu), University of Hawai'i, 1000 Pope Rd., MSB 229, Honolulu, HI 96822

    ii. Steve Cairns (cairns@si.edu), National Musueum of Natural History, Smithsonian Institution, P.O. Box 37012, MRC 163, Washington, DC 20013-7012

    iii. Holly Bollick (holly@bishopmuseum.org), Bernice Pauahi Bishop Museum, 1525 Bernice Street, Honolulu, HI 96817

    iv. Henry Reiswig (hmreiswig@shaw.ca), University of Victoria, 3800 Finnerty Road, Victoria BC V8P 5C2 Canada

    v. Christopher Mah (brisinga@gmail.com), National Musueum of Natural History, Smithsonian Institution, P.O. Box 37012, MRC 163, Washington, DC 20013-7012

11. The Monument Management Board (MMB) may monitor activities under the permit. Any member of the MMB or their designee may, for a period not to exceed 48 hours, verbally require the permittee to temporarily modify or temporarily cease activities identified in the permit if, in the opinion of the MMB member or their designee, such

action is necessary to limit effects on Monument resources beyond the intended scope of the permit, to protect governmental equipment, or to ensure the safety of personnel. Such action will be followed as soon as possible by MMB emergency consideration of the temporary permit modification or temporary permit cessation. If the MMB concurs with the temporary action taken by the MMB member or designee, the Co-Trustees may amend the permit with the necessary changes or withdraw it. A decision by the Co-Trustees to amend the permit or to allow the activity to continue unchanged will include the necessary findings that the activity and its effects satisfy Monument permit issuance criteria and do not risk the safety of governmental employees or damage to governmental equipment.

No further disturbance of the cultural or natural resources of the Monument is allowed.

PERMITTED ACTIVITY LOCATIONS:

Other than entrance into the Monument, the permitted activities listed shall take place within marine areas greater than 250 meters depth throughout the Monument including the Midway Atoll Special Management Area and the following Special Preservation Areas:

1. Nihoa Island
2. Mokumanamana (Necker) Island
3. French Frigate Shoals
4. Gardner Pinnacles
5. Maro Reef
6. Laysan Island
7. Lisianski Island
8. Pearl and Hermes Atoll
9. Kure Atoll

GENERAL TERMS AND CONDITIONS:

In accordance with the Proclamation and applicable regulations, the permitted activities listed above are subject to the following general terms and conditions:

1. The permittee must sign and date this permit on the appropriate line below. Once signed and dated, the permittee must provide a signed original copy to the Monument official identified below. The permit becomes valid on the date the last signature is obtained and shall remain valid until the permit expiration date.

   NOAA/Daniel K. Inouye Regional Center
   NOS/ONMS/ Papahānaumokuākea Marine
   National Monument
   1845 Wasp Blvd., Building 176
   Honolulu, HI 96818

2. This permit is neither transferable nor assignable and must be carried by the permittee while engaging in any activity authorized by this permit. All other persons entering the Monument under the authority of this permit must provide the name of the permittee or the permit number to any authorized enforcement or management personnel upon request.

3. This permit may only be modified by written amendment approved by the Co-Trustees. Modifications to this permit must be requested in the same manner as the original request was made. Any modifications requested by the permittee, such as adding or changing personnel to be covered by the permit or to change the activities that are allowed, must be made in writing.

4. This permit is subject to suspension, modification, non-renewal, or revocation for violation of the Proclamation, implementing regulations, or any term or condition of the

permit. Any verbal notification of a violation from an authorized Monument representative may require immediate cessation of activities within the Monument. The issuance of a permit shall not constitute a vested or property right to receive additional or future permits. This permit may, in the sole discretion of the Co-Trustees, be renewed or reissued. However, there is no right to a renewal or re-issuance. Failure to fulfill permit requirements may affect consideration of future permit applications.

5. Permit terms and conditions shall be treated as severable from all other terms and conditions contained in this or any other ancillary permit. In the event that any provision of this permit is found or declared to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining terms or conditions of this permit.

6. This permit does not relieve the permittee of responsibility to comply with all federal, state and local laws and regulations. For a list of federal, state and local laws and regulations, refer to attached Papahānaumokuākea Marine National Monument Laws and Regulations document. Activities under this permit may be conducted only after any other permits or authorizations necessary to conduct the activities have been obtained.

7. The permittee may be held liable for the actions of all persons entering the Monument under the authority of this permit.

8. All persons entering the Monument under the authority of this permit are considered under the supervision of the permittee and may be liable in addition to the permittee for any violation of this permit, the Proclamation and implementing regulations in conjunction with this permit. The permittee must ensure that all such persons have been fully informed of the permit terms and conditions prior to entry into the Monument. Each such person must provide written acknowledgment to the permittee, prior to entry into the Monument, that he/she has received a copy of the permit, agrees to abide by all applicable terms and conditions, and may be liable for violations of the permit. The permittee shall maintain all signed acknowledgments and submit them with the summary report described in General Condition #22.b. An acknowledgement form is attached.

9. Notification of entry into the Monument must be provided at least 72 hours, but no longer than one month, prior to the entry date. Any updates to the list of personnel must also be provided at least 72 hours before entering the Monument. Notification of departure from the Monument must be provided within 12 hours of leaving the Monument. Notification may be made via e-mail or telephone by contacting: E-mail: nwhi.notifications@noaa.gov; Telephone: 1-866-478-6944; or 1-808-395-6944. No other methods of notification will be considered valid.

10. The permittee and any person entering the Monument under the authority of this permit shall, before entering the Monument, attend a cultural briefing or view designated cultural informational materials on Papahānaumokuākea regarding the region's cultural significance and Native Hawaiians' spiritual and genealogical connection to the natural

and cultural resources. Persons entering the Monument at Midway Atoll may satisfy this requirement upon arrival.

11. All vessels (including tenders and dive boats), engines and anchor lines shall be free of introduced species prior to entry into the Monument. To ensure this, all vessels, engines and anchor lines shall be inspected for potential introduced species prior to departing the last port before entering the Monument. No later than 24 hours prior to entry, the permittee shall provide the Monument Permit Coordinator with a report prepared by the individual conducting the inspection that: a) sets forth when and where the inspection occurred; b) identifies any introduced species observed, including where found; c) summarizes efforts to remove any species observed; and d) certifies the vessel as free of all introduced species. The Monument Permit Coordinator shall review the report and, based on the review, may delay the entry into the Monument until all concerns identified by the Monument Permit Coordinator have been addressed.

12. All hazardous materials, biohazards and sharps, must be pre-approved by the Co-Trustees. For purposes of this permit, "hazardous material" has the same meaning as the definition found at 49 CFR §105.5 (U.S. Department of Transportation). All hazardous materials, biohazards and sharps must be stored, used, and disposed of according to applicable laws and Monument-approved protocols. The permittee or a designated individual entering the Monument under the authority of this permit must be properly trained in the use and disposal of all such materials proposed. Proof of appropriate training may be required by the Co-Trustees. No such material may be left in the Monument after the departure of the permittee unless it has been previously approved by Monument staff. Immediately after the project is complete the permittee must remove all such materials from the Monument. The permittee will be responsible for all costs associated with use, storage, transport, training, disposal, or HazMat response for these materials.

13. All equipment or supplies brought into the Monument, or structures of any kind built in the Monument by the permittee are the responsibility of the permittee. All materials that are brought to the Monument by the permittee must be removed by the permittee except as otherwise permitted. Any permanent structures, equipment, or supplies that require maintenance, are determined to be unserviceable, or are a safety hazard, must be immediately repaired or removed from the Monument by the permittee. No structures, equipment, or supplies may be left in the Monument following the completion of the project except as listed in the permit.

14. If Monument staff is present at the field site, the permittee must meet with them before beginning permitted activities. Even with a valid permit, authorized Monument staff may prohibit entry into any location(s) within the Monument as they may deem appropriate to conserve or manage resources, particularly in areas where cumulative impacts of permitted activities are concentrated.

15. In order to facilitate monitoring and compliance, any person entering the Monument under the authority of this permit, including assistants and ship's crew shall, upon request

by authorized Monument enforcement personnel, promptly: a) allow access to and inspection of any vessel or facility used to carry out permit activities; b) produce for inspection any sample, record, or document related to permit activities, including data, logs, photos, and other documentation obtained under, or required by, this permit; and c) allow inspection on board the vessel or at the permitee's premises of all organisms, parts of organisms, and other samples collected under this permit.

16. It is prohibited to possess or consume alcohol in the Hawaiian Islands National Wildlife Refuge in accordance with the refuge policy. Any violations will result in immediate removal of the offender from the Monument at the individual's own cost. Offenders may not be readmitted to the Monument.

17. All persons entering the Monument under the authority of this permit are responsible for the cost of removing themselves from the Monument at the conclusion of the term of the permit or upon revocation or suspension of the permit. All such persons are also responsible for the cost of removing themselves from the Monument in the event of a necessary medical evacuation, emergency evacuation, including weather, or for the cost of any necessary search and rescue operation.

18. Except as expressly required by applicable law, the Co-Trustees are not liable for any damages to equipment or injuries to the permittee and persons entering the Monument under the authority of this permit. The permittee and any person entering the Monument under the authority of this permit shall release, indemnify, and hold harmless the National Oceanic and Atmospheric Administration, the Department of Commerce, the U.S. Fish and Wildlife Service, the Department of the Interior, the United States Government, the State of Hawai'i, and their respective employees and agents acting within the scope of their duties from and against any claims, demands, actions, liens, rights, subrogated or contribution interests, debts, liabilities, judgments, costs, and attorney's fees, arising out of, claimed on account of, or in any manner predicated upon the issuance of this permit or the entry into or habitation upon the Monument or as the result of any action of the permittee or persons participating in the activity authorized by this permit. In the event that a government employee, acting in his official capacity, is the permittee, or is entering the Monument under the authority of this permit, then he shall be subject to all applicable federal and State laws that pertain to claims by or against him predicated upon the issuance of this permit or entry into or habitation upon the Monument.

19. Monument managers or their designees may verbally require the permittee to modify or cease activities not identified in this permit if, in the opinion of the managers or designees, such action is necessary to limit disturbance to or protect Monument resources, to protect government equipment, or to ensure the safety of personnel. After providing such verbal instructions, the managers or designees will provide the permittee with a written modification, suspension or revocation to this permit at the earliest practicable opportunity. The failure to follow verbal instructions or modified permit terms, or to cease activities upon suspension or revocation of this permit, may constitute a violation of this permit, the Proclamation, the regulations, or other applicable law.

20. Disturbance of any cultural or historic property, including but not limited to Native Hawaiian cultural sites, burials, archaeological deposits, and WWII structures and features, such as stone walls and mounds, stone uprights, bunkers, batteries, camp sites, maritime heritage sites, hospitals, housing areas, and radio towers; or the disturbance or collection of any historic or cultural materials and artifacts, including but not limited to bottles, dishes, cartridges, hospital materials, carvings, human remains, or Native Hawaiian bone or stone implements, found within the Monument, including the sale or trade in such items, is prohibited.

21. All Monument resources within the jurisdiction of the State of Hawai'i are held in trust under the Hawai'i State Constitution, Article XI, Sec. 1. The State of Hawai'i and the Government of the United States reserve ownership or control, as the case may be, of Monument resources, both living and nonliving, that may be taken or derived from those found in the Monument.

22. The permittee must satisfy the following reporting requirements:

    a. Within thirty (30) days after the expiration date of this permit, the permittee must submit a summary report of activities conducted under this permit. The report shall be submitted using the Monument permit report template, if applicable.

    b. For permitted vessels, the permittee having authority over the vessel must maintain and submit a cruise log within thirty (30) days after the expiration date of this permit. The log shall include but is not limited to: description of cruise activities, geographic locations of those activities, anchoring locations, and small boat dive locations. The permittee shall also maintain a daily vessel discharge log, which must be submitted with the cruise log.

    c. Annual Report. The comprehensive annual report is a summary of all activities undertaken, including but not limited to: dates of all arrivals and departures from islands and atolls within the Monument, names of all persons involved in permitted activities, details of all specimens collected, handled, etc., any other pertinent information, GPS locations of all samples collected, transects, etc., results of work to date, copy of all data collected, and a proposed schedule of publication or production of final work. The report shall include a concise summary or abstract for use in Monument reports. Two hard copies and one electronic copy (Microsoft Word preferred, but not required), must be submitted to the Co-Trustees. The annual report is due by December 31 for each calendar year the permit was in effect. Subsequent annual reports are requested each year until all data collected under research permits are fully analyzed or before a new permit is issued, whichever comes first.

    d. For activities on State lands or within State waters, the permittee must submit a monthly report on the specified form.

e. The permittee may debrief the Co-Trustees following the completion of all activities in the Monument covered under this permit. The permittee may schedule the debriefing upon submitting the annual report.

f. The permittee must submit two copies of any article, publication, or other product created as a result of the information gained or work completed under this permit, including materials generated at any time in the future following expiration of this permit.

g. Any publications and/or reports resulting from activities conducted under the authority of this permit must include the notation that the activity was conducted under permit number PMNM-2015-018. This requirement does not apply to publications or reports produced by the news media.

h. All required submissions (including plans, logs, reports, and publications) shall be provided to the Monument official at the address indicated in General Condition #1.

23. All data acquired or created in conjunction with this permit will be submitted with the summary report, and annual report. Photographic and video material is considered data. The permittee retains ownership of any data, (including but not limited to any photographic or video material), derivative analyses, or other work product, or other copyrightable works, but the Federal Government and the State of Hawai'i retain a lifetime, non-exclusive, worldwide, royalty-free license to use the same for government purposes, including copying and redissemination, and making derivative works. The permittee will receive acknowledgment as to its ownership of the data in all future use. This requirement does not apply to data acquired or created by the news media.

24. Because photographic or video material that is created for personal use (i.e., not specifically acquired or created in conjunction with this permit) could unintentionally collect data that is also valuable for management purposes, the Co-Trustees reserve the right to request copies of any such material and the permittee agrees to provide a copy of such material within a reasonable time. The Co-Trustees may use such material for management purposes.

25. Any question of interpretation of any term or condition of this permit will be resolved by the Co-Trustees.

SPECIAL TERMS AND CONDITIONS:

1. This permit is not to be used for nor does it authorize the sale of collected organisms. Under this permit, the authorized activities must be for noncommercial purposes not involving the use or sale of any organism, by-products, or materials collected within the Monument for obtaining patent or intellectual property rights.

2. The permittees may not convey, transfer, or distribute, in any fashion (including, but not limited to, selling, trading, giving, or loaning) any coral, live rock, or organism collected under this permit without the express written permission of the Co-Trustees.

3. Tenders and small vessels must be equipped with engines that meet EPA emissions requirements.

4. Refueling of tenders and all small vessels must be done at the support ship and outside the confines of lagoons or near-shore waters in the State Marine Refuge.

5. No fishing is allowed in State waters except as authorized under State law for subsistence, traditional and customary practices by Native Hawaiians.

6. Observers shall monitor for the presence of Federally-listed marine species at all times.

7. Unless specifically covered under a separate permit that allows activity in proximity to marine protected species, all mapping will be postponed, meaning the vessel would stop when whales and other protected species are within 400 meters of the ship, and magnetometer would be retrieved. Vessel will resume mapping operations only after the animal(s) depart the area.

8. To ensure the protection of Monument resources, the permittee must conduct all activities in accordance with the following Monument Best Management Practices (BMPs) and guidelines, as attached:

    a. Best Management Practices for Boat Operations and Diving Activities (BMP #004)
    b. Marine Wildlife Viewing Guidelines (BMP #010)

Your signature below, as permittee, indicates that you accept and agree to comply with all terms and conditions of this permit. This permit authorizes only those activities listed above. This permit becomes valid on the date when signed by the last Monument Official. Please note that the expiration date on this permit will not be extended by a delay in your signing below.

Kelly P. Elliott July 9, 2015

Kelly Elliott (Date)
NOAA Office of Ocean Exploration and Research

Attachments (5):

1. Map of the Papahānaumokuākea Marine National Monument (PMNM)
2. PMNM Rules and Regulations
3. Permit Acknowledgement Form
4. Best Management Practices for Boat Operations and Diving Activities (BMP #004)
5. Marine Wildlife Viewing Guidelines (BMP #010)

6/29/15

Suzanne Case
Chairperson
Board of Land and Natural Resources
Department of Land and Natural Resources
State of Hawaii

Date

7/1/15

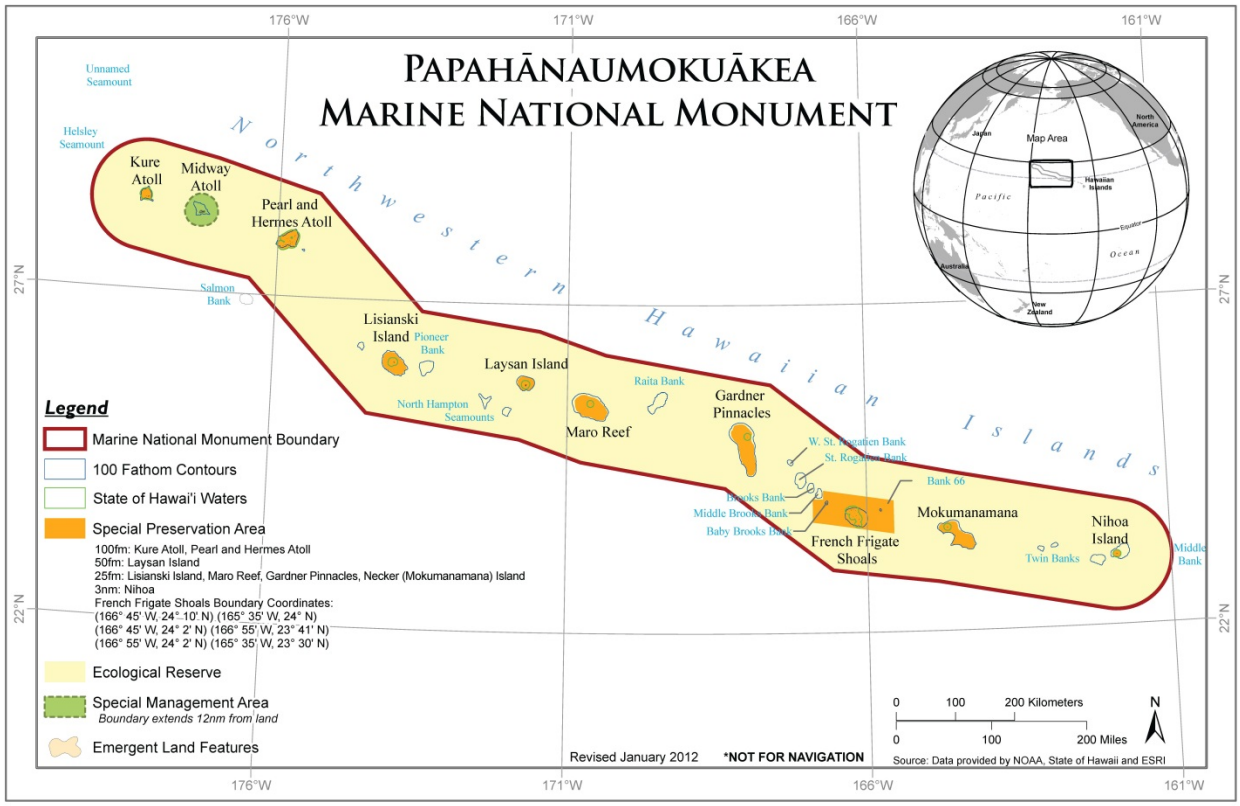
Barry Stieglitz
Refuge and Monument Supervisor
Hawaiian & Pacific Islands National Wildlife Refuge Complex
Department of the Interior
U.S. Fish and Wildlife Service

Date

for 6-30-2015

Athline Clark
Superintendent
Papahānaumokuākea Marine National Monument
Department of Commerce
National Oceanic and Atmospheric Administration

Date


PAPAHĀNAUMOKUĀKEA
MARINE NATIONAL MONUMENT
Northwestern Hawaiian Islands
176°W
171°W
166°W
161°W
27°N
22°N
Unnamed Seamount
Helsley Seamount
Kure Atoll
Midway Atoll
Pearl and Hermes Atoll
Salmon Bank
Lisianski Island
Pioneer Bank
Laysan Island
North Hampton Seamounts
Raita Bank
Maro Reef
Gardner Pinnacles
W. St. Rogatien Bank
St. Rogatien Bank
Bank 66
Brooks Bank
Middle Brooks Bank
Baby Brooks Bank
French Frigate Shoals
Mokumanamana
Twin Banks
Nihoa Island
Middle Bank
Map Area
Pacific Ocean
Hawaiian Islands
North America
Japan
Australia
New Zealand
Legend
Marine National Monument Boundary
100 Fathom Contours
State of Hawai'i Waters
Special Preservation Area
100fm: Kure Atoll, Pearl and Hermes Atoll
50fm: Laysan Island
25fm: Lisianski Island, Maro Reef, Gardner Pinnacles, Necker (Mokumanamana) Island
3nm: Nihoa
French Frigate Shoals Boundary Coordinates:
(166° 45' W, 24° 10' N) (165° 35' W, 24° N)
(166° 45' W, 24° 2' N) (166° 55' W, 23° 41' N)
(166° 55' W, 24° 2' N) (165° 35' W, 23° 30' N)
Ecological Reserve
Special Management Area
Boundary extends 12nm from land
Emergent Land Features
0 100 200 Kilometers
0 100 200 Miles
N
Revised January 2012
*NOT FOR NAVIGATION
Source: Data provided by NOAA, State of Hawaii and ESRI

BEST MANAGEMENT PRACTICES (BMPS) FOR BOAT OPERATIONS AND DIVING ACTIVITIES

Papahānaumokuākea Marine National Monument

The National Marine Fisheries Service recommends the following BMPs be followed to reduce or eliminate adverse effects on protected marine species through potential interactions with in-water activities such as boat operations or diving. They are primarily aimed at small-scale projects such as research dives, marine debris removal, or small buoy placement or repair projects conducted by resource agencies or contracted personnel. These BMPs are not necessarily comprehensive for major construction activities:

1. Constant vigilance shall be kept for the presence of Federally-listed marine species;
2. When piloting vessels, vessel operators shall alter course to remain at least 100 yards from Hawaiian monk seal mom-pup pairs and humpback whales, and at least 50 yards from other marine mammals and sea turtles;
3. Reduce vessel speed to 10 knots or less when piloting vessels in the proximity of marine mammals;
4. Reduce vessel speed to 5 knots or less when piloting vessels in areas of known or suspected turtle activity;
5. Marine mammals and sea turtles should not be encircled or trapped between multiple vessels or between vessels and the shore;
6. If approached by a marine mammal or turtle, put the engine in neutral and allow the animal to pass;
7. Unless specifically covered under a separate permit that allows activity in proximity to marine protected species, all in-water work will be postponed when whales are within 100 yards, or other protected species are within 50 yards. Activity will commence only after the animal(s) depart the area;
8. Should marine protected species enter the area while in-water work is already in progress, the activity may continue only when that activity has no reasonable expectation to adversely affect the animal(s); and
9. Do not attempt to feed, touch, ride, or otherwise intentionally interact with any marine protected species.

Adopted by Papahānaumokuākea Marine National Monument

BEST PRACTICES FOR MINIMIZING THE IMPACT OF ARTIFICIAL LIGHT ON SEA TURTLES

Papahānaumokuākea Marine National Monument

NOAA's National Marine Fisheries Service (NOAA Fisheries) and the U.S. Fish and Wildlife Service are jointly responsible for the protection of threatened and endangered sea turtles. In Hawai'i, the agencies are especially concerned about the impact of shoreline activities on the successful nesting and basking of green and hawksbill sea turtles.

Over 90 percent of nesting activity for the Hawaiian population of the threatened green sea turtle (*Chelonia mydas*) occurs at French Frigate Shoals in the Northwestern Hawaiian Islands (NWHI). Green turtles nest from May through September, peaking in June and July. Hatchlings continue to emerge from nests through November. Large numbers of green turtles are also known to bask throughout the NWHI. The endangered hawksbill sea turtle (*Eretmochelys imbricata*) also nests in Hawai'i, with over 90 percent of documented nests occurring on the Island of Hawai'i. Regular nesting also occurs on Maui and Moloka'i. Hawksbills appear to nest and forage primarily within the main Hawaiian Islands, though they have been sighted in the Northwestern Hawaiian Islands.

Many factors affect the potential survival of these turtles, including the loss or destruction of nesting and basking beaches, and other human shoreline activities such as the use of artificial lights. The following set of measures should be adopted as appropriate, to minimize the impacts of lighting on sea turtles:

A. Avoid the use of artificial lighting near beaches, where possible, particularly during nesting and hatching seasons.
Artificial light sources on a nesting beach may deter adult females from exiting the water to lay eggs on the beach, cause abandonment of nesting attempts, or disorient adult females and disrupt their natural behavior of returning to the sea after nesting. Artificial light will disorient hatchlings that use light cues to find their way to the sea, making them more vulnerable to predation, exhaustion, and desiccation. Artificial light may also disturb basking turtles.

B. Do not use excessive or unnecessary amounts of light, or leave lights on or allow campfires to burn longer than necessary.
Basking behavior may help turtles avoid marine predators. If artificial lighting causes a basking turtle to return to the sea, it may be more vulnerable to predation.

C. Shield or redirect lights to reduce as much as possible the amount of light that can be seen from the nesting or basking beach.
Effective light shields should be completely opaque, sufficiently large, and positioned so that light from the shielded source does not reach the beach.

D. Where possible, use low-intensity light sources that emit long wavelength light (yellow, red) and avoid sources that emit short wavelengths (ultraviolet, blue, green, white).
Long wavelengths are the least disturbing to sea turtles. Red light-emitting diodes (LEDs) are the best option and one of the light sources least disruptive to sea turtles. Amber or yellow filters placed on light sources are less desirable than red lighting, as they vary in effectiveness and will fade over time.

E. Aboard vessels at sea, use the minimum lighting necessary to comply with navigation rules and best safety practices.
Sea turtles of all life stages may be attracted to lights from vessels at sea. These turtles may be vulnerable to vessel activities, as well as being vulnerable to predators that may also be attracted to the same lights.

Marine Wildlife Viewing Guidelines

Papahānaumokuākea Marine National Monument

Guidelines[1]:

Papahānaumokuākea Marine National Monument promotes Responsible Marine Wildlife Viewing and offers the following guidelines. These guidelines do not replace Federal or state law. Pursuit and feeding of marine mammals is **prohibited** by Federal law.

1. Remain at least 100 yards (300 feet / 92 meters) from all Hawaiian monk seal mom-pup pairs and humpback whales.
2. Remain at least 50 yards (150 feet / 46 meters) from other marine mammals (dolphins, other whale species, and adult Hawaiian monk seals).
3. Observe turtles from a distance.
4. Bring binoculars along on viewing excursions to assure a good view from the recommended viewing distances.
5. Do not attempt to touch, ride, or feed turtles.
6. Limit your time observing an animal to 1/2 hour.
7. Marine mammals and sea turtles should not be encircled or trapped between boats or shore.
8. If approached by a marine mammal or turtle while on a boat, put the engine in neutral and allow the animal to pass. Boat movement should be from the rear of the animal.

Background:

The marine wildlife viewing guidelines are intended to help you enjoy watching marine wildlife without causing them harm or placing personal safety at risk.

Before you visit a wildlife location, read about the wildlife, viewing sites and local regulations to get the most from your wildlife viewing experience. Many species live only in specific habitats such as estuaries, coral reefs, sand dunes or the open ocean. Seasonal and daily cycles also influence when and where an animal may be located.

Keep your distance from wildlife by using binoculars, spotting scopes and cameras with zoom lenses to get a closer look. Marine wildlife may be very sensitive to human disturbance, and if cornered, they can harm the viewer or leave the area. If wildlife approaches you, stay calm and slowly back away or place boat engines in neutral. When closer encounters occur, do not make sudden moves or obstruct the travel path of the animals - let them have the unhindered "right of way."

Stay away from wildlife that appears abandoned or sick. Some marine animals such as seals leave the water or are exposed at low tide as part of their natural life cycle -- there may be nothing wrong with them. Young animals that appear to be orphaned may

[1] These guidelines are taken from NOAA's National Marine Fisheries Service website: http://www.fpir.noaa.gov/PRD/prd_laws_policies_guidelines1.html

actually be under the watchful eye of a nearby parent. An animal that is sick or injured is already vulnerable and may be more likely to bite. If you think an animal is in trouble, do not attempt to approach or assist the animal and contact the local authorities for advice.

Never touch, handle or ride marine wildlife. Touching wildlife, or attempting to do so, can injure the animal, put you at risk and may also be illegal for certain species. The slimy coating on fish and many marine invertebrates protects the animal from infection and is easily rubbed off with a hand, glove or foot. Avoid using gloves when diving or snorkeling to minimize the temptation to touch. Remember, wild animals may bite, body slam or even pull you underwater if startled or threatened.

Do not feed or attract marine wildlife. Feeding or attempting to attract wildlife with food, decoys, sound or light disrupts normal feeding cycles, may cause sickness or death from unnatural or contaminated food items, and habituates animals to people. Habituated animals are vulnerable to vessel strikes or vandalism, and can be dangerous to people.

Never chase or harass wildlife. Following a wild animal that is trying to escape is dangerous. Never completely surround the animal, trap an animal between a vessel and shore, block its escape route, or come between mother and young. When viewing from a boat, operate at slow speed, move parallel to the swimming animals, and avoid approaching head-on or from behind, and separating individuals from a group. If you are operating a non-motorized vessel, emit periodic noise to make wildlife aware of your presence and avoid surprise.

Help others to become responsible wildlife watchers. Speak up if you notice other viewers behaving in a way that disturbs the wildlife or other viewers, or impacts sensitive habitats. Be friendly, respectful and discrete when approaching others. When operating a boat, lead by example and reduce your speed in areas frequented by marine wildlife, anchor properly and encourage others to do the same. Violations of the law should be reported to local authorities.

Information on reporting an injured, stranded (beached), entangled whale, or dead or dolphin:

Please call:
Marine Mammal Health & Response Program Manager David Schofield at 808 721-5343 (available 24/7)

Information on reporting injured, entangled, or dead Hawaiian Monk Seal:

Please call: HMSRP veterinarian Michelle Barbieri (443) 834-8612 (available 24/7)

Information on reporting stranded, entangled, or injured sea turtles:

Please call: Oahu Sea Turtle Stranding Telephone: (808) 725-5730 (available 7am – 4pm M-F), or visit the NOAA Fisheries website for all call-in information by island at http://www.pifsc.noaa.gov/marine_turtle/strandings.php

DISEASE AND INTRODUCED SPECIES PREVENTION PROTOCOL FOR PERMITTED ACTIVITIES IN THE MARINE ENVIRONMENT

Papahānaumokuākea Marine National Monument[1]

I. Equipment and Dive Gear Disinfection

Equipment and gear is treated according to three levels that correspond to the potential for the spread of disease and/or introduced species.

General points applicable to all the levels and acceptable disinfection solutions are listed in part D.

A. Level One: Equipment in direct contact with diseased coral tissue or other diseased organisms.

- Equipment: includes gloves, chisels, forceps, drill bits, shears, clippers, and spear tips, etc.
- Multiple sets of equipment: Use a disinfected set of equipment for diseased organisms and another disinfected set of equipment for non-diseased organisms at each dive site.
- Disinfect between uses: Use a disinfected set of equipment at each dive site.
- Disinfection method: 1) Remove any organic matter from the equipment. 2) Soak equipment for a minimum often minutes in a 1:32 dilution of commercial bleach in freshwater (1/2 cup bleach per gallon of freshwater), yielding a 1000 ppm dilution of sodium hypochlorite, or 3% free chlorine solution.
- Secure all samples: Seal all samples in bags or jars under water and place sample bags and jars in secure holding container.

B. Level Two: Benthic equipment not used to sample diseased coral tissue or other diseased organisms

- Benthic equipment: includes equipment that may contact the benthos such as reels, tape measures, goodie bags, transect lines, etc.
- Disinfect between sites: Use a disinfected set of equipment at each dive site.
- Disinfect equipment: 1) Remove any organic matter from the equipment. 2) Soak and or wipe equipment as specified for equipment type, below. See list of acceptable disinfection solutions in part D.

  1. Non-porous equipment must be wiped and/or soaked. lfwiping, use wipes in which the active ingredient is a quaternary ammonium compound

[1] This protocol and a companion document, "Disease and Introduced Species Prevention Protocol for Permitted Activities in the Marine Environment of the Papahānaumokuākea Marine National Monument Explanation," were accepted at the April 9, 2007 Monument Management Board Meeting.

(QAC). Acceptable wipes include Clorox® wipes or Lysol® wipes. If soaking, soak for a minimum often minutes in an acceptable disinfectant solution.

2. Porous equipment must be soaked for a minimum often minutes in an acceptable disinfectant solution.

C. Level Three: All dive gear used in the Monument

- Dive gear includes any wetsuit, mask, fin, snorkel, BC, regulator, weight belt, booties, etc.
- Disinfect dive gear daily (if used): 1) Remove any organic matter. 2) Disinfect by submerging for a minimum often minutes in an acceptable disinfection solution, followed by a thorough fresh water rinse, and hanging to dry.
- Rinse after disinfection: Rinse all gear in close proximity to the face or skin, e.g. masks, regulators, gloves, etc. with potable water following disinfection.

D. General points applicable to all three levels

- Disinfect any equipment and gear at least daily if used. Also, only disinfected equipment and gear may be transported either direction between the Monument and the main Hawaiian islands or other point of origin/destination.
- Dispose of organic matter, used disinfection solution, and rinse according to the ship's solid waste disposal or other approved secure holding system.
- Acceptable Disinfection Solutions:

  1. Levels One, Two, and Three: a 1 :32 dilution of commercial bleach in freshwater (1/2 cup bleach per gallon of freshwater), yielding a 1000 ppm dilution of sodium hypochlorite, or 3% free chlorine solution; and

  2. Levels Two and Three: For dive gear and level two equipment, the manufacturer's recommended disinfection strength dilution ofQACs in "soft" (low concentration of calcium or magnesium ions) fresh water. An example of an acceptable QAC solution is Lysol® All Purpose Cleaner in a 6.6% Lysol in water dilution.

- Rinse after disinfection: All gear in close proximity to the face or skin, e.g. masks, regulators, gloves, should be rinsed with potable water following disinfection.

II. Cleaning Tender Vessels

- At least daily if tender vessel if used, inspect for and remove for any algal fragments or other organisms (dispose of organic matter and used solution according to the ship's solid waste disposal or other approved secure holding system).

- Rinse tender vessel internal and external surfaces with fresh water between islands, including during transits in either direction between the Monument and the main Hawaiian islands or other point of origin/destination.
- Allow tender vessel to dry before redeployment.

III. Disinfection of Shipboard Wet Laboratory

- At least daily if used, disinfect entire laboratory, including sinks, countertops, walls, doors, and floors.
- Acceptable Disinfection Solutions and Wipes:

    1. a 1:32 dilution of commercial bleach in freshwater (1/2 cup bleach per gallon of freshwater), yielding a 1000 ppm dilution of sodium hypochlorite, or 3% free chlorine solution;

    2. the manufacturer's recommended disinfection strength dilution of QACs in "soft" (low concentration of calcium or magnesium ions) fresh water. An example of an acceptable QAC solution is Lysol® All Purpose Cleaner in a 6.6% Lysol in water dilution. Also, commercially available wipes containing QACs (e.g. Clorox® wipes, Lysol® wipes) are acceptable; and

    3. 70-80% ethanol.

- Dispose of all materials generated during cleaning according to the ship's solid disposal or other secure holding system.
- The laboratory must be clean between islands, including during transits in either direction between the Monument and the main Hawaiian islands.

PAPAHĀNAUMOKUĀKEA
Marine National Monument

RESEARCH PERMIT

MEMO TO FILE
PERMIT CHANGE
PMNM-2015-018-M2

December 18, 2015

Permittee: Ms. Kelley Elliott NOAA Office of Ocean Exploration and Research 1315 East-West, Hwy, SSMC3 Room 10236 Silver Spring, MD 20910	**Permit Number**: PMNM-2015-018 **Effective Date**: July 1, 2015 **Expiration Date**: June 30, 2016

Project Title: Bathymetric Mapping in Papahānaumokuākea Marine National Monument

This permit change is issued for activities in accordance with Proclamation 8031 ("Proclamation") establishing Papahānaumokuākea Marine National Monument ("Monument") under the Antiquities Act of 1906, 16 USC §§ 431-433 ("Antiquities Act") and implementing regulations (50 CFR Part 404). All activities must be conducted in accordance with the Proclamation and the regulations (attached). No activity prohibited by the Proclamation or 50 CFR Part 404 is allowed except as specified below. Chapter 13-60.5, Hawaii Administrative Rules remains in effect for proposed activities in State waters.

Permit number PMNM-2015-018 is changed to include one additional researcher (Charlotte A. Seid) for sharing collected samples under Permitted Activity Description #9 as follows:

9. Sharing samples collected under Permitted Activity # 7 and # 8, with the following researchers:

    i. Michael Garcia (mogarcia@hawaii.edu), University of Hawai'i, Post 617D, Honolulu, HI 96822

    ii. David Clague (clague@mbari.org), Monterey Bay Aquarium Research Institute, 7700 Sandholdt Road, Moss Landing, CA 95039

    iii. James Hein (jhein@usgs.org), U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025

    iv. Christopher Kelley (ckelley@hawaii.edu), University of Hawai'i, 1000 Pope Rd., MSB 229, Honolulu, HI 96822

v. Maziet Cheseby (corelab@coas.oregonstate.edu or labtech1@coas.oregonstate.edu), Oregon State University 104 CEOAS Admin Building, Corvallis, Oregon 97331-5503

vi. Charlotte A. Seid (c.seid@neu.edu), Ocean Genome Legacy Center of New England Biolabs, Marine Science Center, Northeastern University, 430 Nahant Rd., Nahant, MA 01908

All other terms and conditions of PMNM-2015-018 are unchanged and still apply.

Your signature below, as permittee, indicates that you accept and agree to comply with all terms and conditions of this permit change. This permit change becomes valid when you, the permittee, sign and date below.

Kelley R. Elliott 12/10/2015

Kelley Elliott
Acting Okeanos Explorer Program Coordinator
NOAA Office of Ocean Exploration and Research

Date

PAPAHĀNAUMOKUĀKEA
Marine National Monument

RESEARCH PERMIT

MEMO TO FILE
PERMIT CHANGE
PMNM-2015-018-M1

August 20, 2015

Permittee: Ms. Kelley Elliott NOAA Office of Ocean Exploration and Research 1315 East-West, Hwy, SSMC3 Room 10236 Silver Spring, MD 20910	**Permit Number**: PMNM-2015-018 **Effective Date**: July 1, 2015 **Expiration Date**: June 30, 2016

Project Title: Bathymetric Mapping in Papahānaumokuākea Marine National Monument

This permit change is issued for activities in accordance with Proclamation 8031 ("Proclamation") establishing Papahānaumokuākea Marine National Monument ("Monument") under the Antiquities Act of 1906, 16 USC §§ 431-433 ("Antiquities Act") and implementing regulations (50 CFR Part 404). All activities must be conducted in accordance with the Proclamation and the regulations (attached). No activity prohibited by the Proclamation or 50 CFR Part 404 is allowed except as specified below. Chapter 13-60.5, Hawaii Administrative Rules remains in effect for proposed activities in State waters.

Permit number PMNM-2015-018 is changed to include one additional researcher (Maziet Cheseby) for sharing collected rock samples under Permitted Activity Description #9 as follows:

9. Sharing rock samples collected under Permitted Activity # 8, with the following researchers:

    i. Michael Garcia (mogarcia@hawaii.edu), University of Hawai'i, Post 617D, Honolulu, HI 96822

    ii. David Clague (clague@mbari.org), Monterey Bay Aquarium Research Institute, 7700 Sandholdt Road, Moss Landing, CA 95039

    iii. James Hein (jhein@usgs.org), U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025

    iv. Christopher Kelley (ckelley@hawaii.edu), University of Hawai'i, 1000 Pope Rd., MSB 229, Honolulu, HI 96822

v. Maziet Cheseby (corelab@coas.oregonstate.edu or labtech1@coas.oregonstate.edu), Oregon State University 104 CEOAS Admin Building, Corvallis, Oregon 97331-5503

All other terms and conditions of PMNM-2015-018 are unchanged and still apply.

Your signature below, as permittee, indicates that you accept and agree to comply with all terms and conditions of this permit change. This permit change becomes valid when you, the permittee, sign and date below.

Kelley Elliott — Date
Acting Okeanos Explorer Program Coordinator
NOAA Office of Ocean Exploration and Research

Appendix E: ESA Section 7 Initiation Letter, Biological Evaluation and Letter of Concurrence

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

January 14, 2016

Ann Garrett
Assistant Regional Administrator
Protected Resources Division
NMFS Pacific Islands Regional Office
1845 Wasp Blvd., Building 176
Honolulu, HI 96818

Re: Request to Initiate Consultation under Section 7 of the Endangered Species Act for the Campaign to Address Pacific Monument Science, Technology and Ocean Needs (CAPSTONE Project)

Dear Ms. Garrett:

Operating under a partnership with NOAA's Office of Ocean Exploration and Research and the Office of Marine and Aviation Operations, the *Okeanos Explorer* team is preparing to continue the CAPSTONE campaign into the Central and Western Pacific during the 2016 and 2017 field seasons. The action area for the 2016 – 2017 season will include the marine environments in and around: the 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.

The activity would occur during two years and could include up to twenty different research cruises aboard the NOAA Ship *Okeanos Explorer* scheduled between February 2016 and December 2017. All cruises will focus on collecting critical baseline information in monuments and sanctuaries to meet NOAA science and management needs. The overarching goal of the project is to extend and improve the understanding of the distribution and diversity of deep-water habitats within the marine protected areas in the Pacific. Data and information from the cruises will build on previous work where appropriate, and provide a foundation of publicly-accessible baseline information to improve management and spur further exploration and research. Like previous expeditions in the Gulf of Mexico, western Atlantic, Indonesia, and Hawaii, NOAA

will work with the scientific community and public to characterize unknown and poorly-known areas through telepresence-based exploration. Operations will use the ship's deep water mapping systems, NOAA's 6000m remotely operated vehicles (ROV), CTD rosette, and a high-bandwidth satellite connection for real-time ship to shore communications. These expeditions will help establish a baseline of information in the region to catalyze further exploration, research and management activities.

We propose to conduct activities to explore and improve understanding of the distribution and diversity of deep water habitats. No activities would occur on land. The expedition teams (26 crew and up to 20 rotating scientists/technicians on each cruise leg) would be authorized to conduct mapping and 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.

Enclosed is a Biological Evaluation (BE) to initiate consultation under Section 7(a)(2) of the Endangered Species Act (ESA). As described in the BE, we have determined that the proposed 2016 CAPSTONE cruises may affect, but are not likely to adversely affect, the following ESA-listed marine species: 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.*

We request your concurrence with our 'not likely to adversely affect' determination for the species listed above and for Hawaiian monk seal critical habitat.

Please contact Kelley Elliott (**Kelley.Elliott@noaa.gov**, 301-734-1024) with questions regarding this consultation request.

Respectfully,

by Path
For John McDaugh

Appendix F: NASA Maritime Aerosols Network Survey of Opportunity

Survey or Project Name

Maritime Aerosol Network

Points of Contact (POC)

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 G: Permit to Collect Data in the Marshall Islands

REPUBLIC OF THE MARSHALL ISLANDS
MINISTRY OF FOREIGN AFFAIRS
P.O. BOX 1349
MAJURO, MARSHALL ISLANDS 96960

US/98-15

The Ministry of Foreign Affairs of the Republic of the Marshall Islands presents its compliments to the Embassy of the United States of America and has the honor to make reference to U.S. ***Diplomatic Note No.15-105*** regarding request for an authorization for NOAA Chief of Scientist Jeremy Potter to conduct marine scientific research in area requiring the consent from the RMI Government. It is in this regard that the Ministry has the further honor to inform the Embassy that in compliance with the requirements of the MIMRA Act 1997, NOAA Research Vessel, "Okeanos Explorer", has been granted permission, on the condition that a copy of report of all data and other information from the research vessel in RMI WATERS be forwarded to the Ministry of Foreign Affairs and the Marshall Islands Resource Authority.

The Ministry has the further honor to advise that authorization is granted pursuant with the understanding that the said vessel, captain and crew will comply with all RMI laws and regulations, and in particular the Marine Water Quality (1992) regulations, Solid Waste (1989) regulations, and Toilet Facilities and Sewage Disposal (1990) regulations, copies of which are available for download at the RMI-EPA website http://rmiepa.org.

Furthermore, the Ministry wishes to forward herein, RMI's nominees from Marshall Islands Marine Resources Authority to participate in afore-named research.

Ms. Candice M. Guavis
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MIMIRA
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Mr. Benedict Yamamura
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Phone: (692) 625-2699/2763/3012/3181 Fax: (692) 625-4979 RMI Website: http://www.rmiembassyus.org/

The Ministry of Foreign Affairs of the Republic of the Marshall Islands avails itself of this opportunity to renew to the Embassy of the United States of America the assurance of its highest consideration.

18 December, 2015

MINISTRY OF FOREIGN AFFAIRS

Embassy of the United States of America
Majuro, REPUBLIC OF THE MARSHALL ISLANDS

Appendix H: Submerged Cultural Heritage SOP

NOAA Office of Ocean Exploration
Operational Policy and Procedures for Underwater Cultural Heritage Missions Conducted onboard the NOAA Ship *Okeanos Explorer*

IV. Purpose

The purpose of this document is to provide guidance for OER mission activities conducted aboard the NOAA Ship Okeanos Explorer, when such mission activities involve either unexpected discovery or targeted exploration of potential Underwater Cultural Heritage sites.

II. Background

Since the inception of NOAA's ocean exploration program in 2000, OER data management practices have been guided by the 2000 President's Panel Report recommendations, which prioritized rapid and unrestricted data sharing as one of five critical exploration program components. More recently Public law 111-11 [Section XII Subtitle A Part 1 Exploration] reinforced and expanded OER data management objectives, continuing to stress the importance of sharing unique exploration data and information to improve public understanding of the oceans, and for research and management purposes.

OER missions conducted aboard the NOAA Ship Okeanos Explorer offer a 'best-case' scenario for meeting Program mission objectives related to data sharing:

- Dedicated shipboard and shore-side teams work in tandem to ensure near-real time data product generation from shipboard and ROV sensors;
- Telepresence is used to share data products and information in real-time with shore-side participants and the public;
- Mission information is publically communicated in real time via Internet access to streamed video and related resources; and
- Data are managed throughout the lifecycle in accordance with all applicable policy directives and community best practices.

The nature of exploration defines the possibility of discovery, including unexpectedly exposing the location of underwater cultural resources; on some occasions, exploration targets are specifically focused on the exploration of suspected underwater cultural heritage (UCH) sites.

The need to protect the location of suspected UCH sites until they are fully understood, whether purposefully explored or fortuitously discovered, is an important statutory

responsibility. In the case of OER expeditions aboard the Okeanos Explorer, a range of operational procedures must be modified to ensure this protection occurs to the fullest extent possible. The following sections of this document define the methods for ensuring protection of these sensitive data throughout the data lifecycle.

III. Authority

a. ***Marine Archaeology:*** This document is informed by: the Federal archaeology program; U.S. legislation on the treatment of cultural remains; and the UNESCO Convention for the Protection of the Underwater Cultural Heritage.

The NOAA Office of Ocean Exploration and Research (OER) supports the standards for conducting marine archaeological activities enumerated in the Annex Rules of the UNESCO Convention on the Protection of the Underwater Cultural Heritage. Preservation and protection of prehistoric and historic cultural resources is the policy of the Federal government and OER has a responsibility to consider the effects of its activities on these resources. If data is found to be sensitive because it reveals the location of a historically significant cultural resource, Section 304 of the National Historic Preservation Act provides that the head of a Federal agency or other public official shall withhold from public disclosure information about the location, character, or ownership of a historic property when disclosure may: cause a significant invasion of privacy; risk harm to the historic property; or impede the use of a traditional religious site by practitioners. This document will use the term Underwater Cultural Heritage, or UCH, to refer to historic and prehistoric traces of human existence that are totally or partially underwater.

b. ***Data Management:*** Geospatial data are considered a national capital asset. National policy and international standards guide data management best practices to ensure timely and broad public accessibility to these data. Within NOAA, data management practices are informed by NOAA Administrative Order (NAO) 212-15 Management of Environmental Data and Information, which states in part:

Environmental data will be visible, accessible and independently understandable to users, except where limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements.

Sensitive UCH data collections require special handling while determinations are made as to whether each location will be nominated and will qualify for protection under the NHPA Section 304. OER considers these data to fall within the scope of the NAO 212-15 exceptions during this period.

IV. Roles and Responsibilities

Particular to the NOAA Ship *Okeanos Explorer*, there are many methods employed to ensure rapid and broad data access. When the goal is to restrict access to precise positional information, several operational scenarios must be considered. Alternate operating procedures are then developed for:

- Real time operations:
  - Routine data transmissions and events that broadcast the ship position
  - Seafloor mapping operations and data production
  - Telepresence-enabled ROV operations
  - Video annotations and production
  - Pubic broadcast operations via website and maps
- Post-cruise data management

This table summarizes the roles and responsibilities of each Team Lead in implementing the policy through the management approaches described herein and the SOPs as defined in the Appendices.

MISSION PERSONNEL (Coordinated by: Expedition Coordinator)	
Responsible Team	**Accountable for these (primary) actions**
Expedition Coordinator	Notification of NDA to Mission Personnel ID , communicate and enforce UCH buffer zone Coordinate with Team leads and key personnel / ensure SOP compliance
Seafloor Mapping Team	Segregate raw and processed data into marked files so that restricted data are held separately and are clearly marked
Telepresence Team	Ensure broadcast data is free of any positional information
Video Team	Ensure UCH Dives and dive products are annotated as such; ensure all raw data and products are not geo-referenced
Data Management Team	Ensure all UCH data are appropriately segregated and documented. Follow post cruise and archive procedures as specified.
Communications Team	Ensure all communications are controlled through one primary POC; ensure communications are not geo-referenced.
***Okeanos Explorer* Operations (Coordinated by: CO or Designee)**	
OMAO Operations	Notification to crew of NDA responsibilities Stop SCS events (email notifications) upon entering buffer zone; Start SCS events (email notifications) upon exiting buffer zone

V. Appendices: Standard Operating Procedures

Appendix A: MAPPING OPERATIONS

The following outlines the process for pre-cruise planning, mapping field operations, post-cruise follow up, and data archival procedures for the following scenarios:

- When UCH is unexpectedly discovered on a standard, non-UCH targeted mapping cruise
- When a cruise is specifically targeted at UCH.
- When an Isolated UCH survey is conducted as part of a broader cruise
- Large survey over UCH area with potential to contain multiple instances of UCH

A. Pre-Cruise Planning

1. Standard Mapping Pre-Cruise Planning

a. This section does not affect normal pre-cruise or data management processes for standard mapping cruises that are not conducting targeted UCH mapping. During pre-cruise planning the EX Cruise Coordinator is advised to consult with the OER Marine Archaeologist to discuss possible UCH targets in the mission area. The mapping team may be requested to optimize line planning as necessary to detect UCH and to process data, when possible, to a smaller non-standard grid size to create higher resolution mapping products to provide better images of potential UCH. If so, follow guidance in the UCH Mapping Pre-Cruise Planning section below.

2. UCH Mapping Pre-Cruise Planning

a. Background information - The EX mapping team should be supplied with information about targets in the survey area that will help in their detection and identification. This information will be supplied by OER's marine archaeologist and collaborating archaeologists.

b. Data processing and data products - Archaeologists involved with the survey will consult with the mapping team to discuss data processing and data products that will increase the potential to discover UCH. The cruise coordinator and mapping team lead will work with OER's marine archaeologist to coordinate this activity.

c. Consultation and data sensitivities - Cruise planning must also include a discussion on data sensitivity and data management/archiving. It is the appropriate time to collaborate with other Federal and state agencies that may have a legal or management

interest in potential UCH in the survey area. The risks to the resources should be weighed to inform a post-cruise decision on whether or not UCH with potential historical or cultural significance should have information about their location restricted from public release. This should be a collaborative discussion that includes OER's marine archaeologist, cruise coordinator and cruise data manager along with cultural resource managers and archaeologists from other agencies with an interest in the UCH. Agencies that may have an interest include the Office of National Marine Sanctuaries (ONMS) Maritime Heritage Program, Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement, U.S. Navy History and Heritage Command, National Park Service, State Historic Preservation Officers, and others. While planning expeditions in any foreign country the host government should be made aware of the potential to discover UCH.

d. In survey areas where an agency has responsibility for UCH, the data management team should carry out a consultation process with the agency to identify any special protocols that should be put in place to conform with the policies of the agency and these should be incorporated into the data management plan. The expedition coordinator is responsible for the overall execution of the data management plan.

e. On mapping missions within the National Marine Sanctuary System, pre-cruise discussions between the EX Cruise Coordinator and ONMS should include the ONMS Director of the Maritime Heritage Program (MHP) and the maritime heritage coordinator at the sanctuary site. They will help determine the sensitivity of data and data products.

B. Mapping Field Operations

1. Standard Mapping Field Operations

a. While standard mapping field operations are not affected by the marine archaeology SOP, any features which appear to be of cultural or historical significance, and appear anthropogenic in origin, do require special consideration. Cultural features include wrecks of ships or aircraft, the recognizable debris from wrecks, evidence of previous human settlements, or other items which may appear anthropogenic in origin and have some associated cultural or historical significance.

b. The EX Cruise Coordinator will consult with OER's marine archaeologist <u>immediately</u> on the discovery of UCH in the field. The Cruise Coordinator should provide an image and location information by email. The OER marine archaeologist may request special data products that have higher resolutions than standard data products to aid in characterizing UCH.

c. If UCH is determined not to be historically or culturally significant or it is determined that no harm will result by disclosing position information, no change to standard mapping field procedures is required.

d. If UCH is historically significant or potential to be historically significant, data and data products should be held from public release until reviewed for sensitivity as applicable under the National Historic Preservation Act and other pertinent legislation and regulations, prior to releasing data to a public archive.

e. The expedition coordinator is responsible for the overall execution of the data management plan.

f. When appropriate, OER's marine archaeologist will contact relevant entities to notify them of the discovery and consult with them regarding the significance of the UCH.

2. UCH Targeted Mapping Field Operations

a. No informal information about UCH should be released to the general public by the ship or personnel. This includes posting information and images on social networking sites like Facebook, Twitter or personal blogs. Mapping data will be released to the public following the normal process and announcement of discoveries will be made through the appropriate offices and public affairs officials.

b. A five-mile buffer zone shall be created around the UCH isolated survey box. The following steps will be taken just prior to entering the buffer zone in order to stop broadcasting the ship's location while the survey is conducted:

i. NOAA Shiptracker: Disable the SCS feed from the ship going to Shiptracker

ii. Automated Information System (AIS): NOAA requires that the AIS feed which broadcasts information about the ship, including position, course and speed, must remain on at all times for collision avoidance and other safety reasons. Although the International Maritime Organization's (IMO) Maritime Safety Committee condemns the Internet publication of AIS data, it is easily available for viewing. During the cruise planning phase the Expedition Coordinator will provide the AIS broadcast range on the EX to the chief scientist and science team. The Chief scientist, the science team, or other parties involved in a UCH mapping cruise should be made aware of this and decide whether the value of the operation merits acceptance of the potential issues/outcomes imposed.

iii. Telepresence Video Feeds: Do not stream any feeds that include a visible ship location, for example the multi-beam acquisition screen does not high enough resolution over the video feed to see ship position. Streams include but not limited to the SCS data screen, or any active mapping data acquisition screens, or video feeds. It is acceptable to stream video feeds that do not include the ship's location.

iv. The Cruise Coordinator will ensure the survey department takes steps to distinguish and separate UCH mapping data from non-UCH mapping data as

appropriate.

v. Raw Multibeam Data Acquisition: Raw data will be logged in the standard folder structure on the multibeam acquisition computer. Raw data will be copied into a “Restricted” folder in the RAW data network folder structure. Data acquisition and processing logs will clearly state which files are restricted.

vi. Multibeam Data Field Processing: Restricted files will be processed and gridded separately from other non-restricted data and will be clearly labeled as such in projects and filenames. The products will be created according to normal field quality-control procedures, but will not be sent to shore with the daily products, in order to not become publicly available via normal channels (FTP / Digital Atlas).

vii. Raw EK 60 and Subbottom Data Acquisition: Raw data will be logged in the standard folder structure on the acquisition computers. Raw data will be copied into a 'Restricted' folder on the RAW and CRUISE DATA data network folder structure. Data acquisition and processing logs will clearly state which files are restricted.

viii. Cruise Data Transfer (EX to UNH) Package: In the Cruise Data Package carried from the ship by the Mapping Team Lead, a "Restricted" top-level directory will be added in the cruise data folder. Within the "Restricted" folder the same directory structure as the unrestricted folder will be repeated (i.e. SCS, CTD, Multibeam, Imagery, etc).

ix. CTD and XBT operations conducted within the buffer zone do not need to be isolated from non-UCH data, or repressed from the Okeanos Atlas. CTD and XBT files should follow the normal unrestricted processing procedures and archiving.

x. Daily updates are normally linked to the location of the ship at the time the update is posted. If daily updates are made during UCH surveys, no position shall be provided. If a position is required, the position should be posted as it makes sense, 5 miles outside of the extent of the survey area.

c. Normal transmissions from the ship shall resume after the EX finishes UCH survey operations and exits the 5-mile buffer zone. Exiting the buffer zone should occur at approximately the same location as entry to prevent obvious data location gaps pointing to UCH location.

C. Post-Cruise Follow Up

1. Information Release

a. No informal information about UCH should be released to the general public by the ship or personnel. This includes posting information and images on social networking sites like Facebook or personal blogs. Mapping data will be released

to the public following the normal process and announcement of discoveries will be made through the appropriate offices and public affairs officials.

2. ***Standard Mapping Cruise follow-up where UCH is discovered***
   - ***a.*** The mapping team will provide a brief summary of the survey and target that includes a description of the survey, water depth, site location, site dimensions, bottom type, and images of the target at the best available resolution.
   - ***b.*** The EX Cruise Coordinator and the OER Marine Archaeologist have an initial consultation to discuss the nature of the UCH and its potential significance. This consultation may include other agencies or entities.
   - ***c.*** If UCH is determined not to be historically significant no change to standard data management procedures is required.
   - ***d.*** If UCH has the potential for historical significance but it is determined that no harm will result by disclosing position information, such as UCH in deep water, no change to standard data management procedures is required.
   - ***e.*** If UCH has potential historically significance and disclosing information about the site poses a threat, further discussions will be held on how to minimize potential harmful impacts, including data management decisions outlined in Data Archiving section of this document. The EX cruise Coordinator, a representative from the data management team, OER's marine archaeologist, a representative from the ONMS Maritime Heritage Program, and any parties with jurisdiction, management or other legal ties to the resource shall meet to determine what measures are needed to protect the UCH while minimizing impacts on the distribution of data and data products.

3. ***UCH Targeted Mapping Cruise Follow-Up***
   - ***a.*** The mapping team will create a survey report that provides technical details on the survey, data processing and data products. It should contain a list of targets that includes site location, water depth, site dimensions, bottom type/topography, and images of the target at the best available resolution. Other helpful products include SD and kmz files.
   - ***b.*** The EX cruise coordinator, OER's marine archaeologist, a representative from the ONMS Maritime Heritage Program, archaeologists involved in the survey, and any parties with jurisdiction, management or other legal ties to the resource shall meet to discuss the potential historical significance of the UCH and the sensitivities of releasing data to the public that can be protected under Section 304 of the National Historic Preservation Act.
   - ***c.*** The outcome of this meeting will determine if it is necessary to protect site location information from public release.

d. When data can be released

i. If the findings determine that releasing information and data on UCH is not a threat, development of products and data management should follow the guidelines for a standard mapping cruise.

e. When data should be protected

i. If it is determined that a site is or has potential to be historically significant and eligible for nomination to the National Register of Historic Places, the location and data containing the location should not be released to the public.

ii. Data products that contain position information will be forwarded to the EX data management team where data and products will be stored in an archive with restricted access.

iii. Cruise plans, cruise reports, situation reports, mapping summary reports and other documents that are publically available outside NOAA or freely accessible within NOAA shall not provide location information for UCH or survey areas. In certain circumstances the lead archaeologist for the cruise may request that certain UCH sites are not mentioned in the public reports.

4. UCH mapping follow-up for National Marine Sanctuaries

a. When the EX conducts UCH work inside a National Marine Sanctuary the EX Cruise Coordinator shall inform the OER Marine Archaeologist, ONMS Maritime Heritage Program Director, Sanctuary Superintendent and Sanctuary Maritime Heritage Coordinator on the availability of data products and initial results of the survey. ONMS shall determine the sensitivity of the data and whether or not it can be disclosed to the public. Published metadata shall indicate the point of contact to access UCH data within the NMS system is the Director of the Office of National Marine Sanctuaries.

D. Data Archiving – See Appendix C

Appendix B: TELEPRESENCE-ENABLED ROV OPERATIONS

The following outlines the process for pre-cruise planning, field operations, post-cruise follow up, and data archival procedures for the following scenarios:

- When a cruise conducts ROV operations specifically targeted at UCH.
- When UCH is unexpectedly discovered on non-archaeological operation

A. Unexpected UCH Discovery

- During the Cruise: If UCH is unexpectedly discovered during an ROV dive, the onboard Expedition Coordinator should immediately contact OER's Lead Maritime Archaeologist, and the Archaeology Doctors-on-Call identified for that expedition. Those archaeologists should be engaged in the site investigation as soon as possible to provide information to help assess the site discovered. No changes to the data, video or onboard data acquisition processes should be made. A post-dive and post-cruise discussion will be held with the OER archaeologist to determine whether any datasets should be withheld from archive. (Section 2.D.II).
- **Follow-up when UCH is unexpectedly discovered**
  - ***a.*** The EX Cruise Coordinator and the OER Marine Archaeologist will have an initial consultation to discuss the nature of the UCH and its potential significance. This consultation may include other agencies or entities.
  - ***b.*** If UCH is determined not to be historically significant no change to standard data management procedures is required.
  - ***c.*** If UCH has the potential for historical significance but it is determined that no harm will result by disclosing position information, such as UCH in deep water, no change to standard data management procedures is required.
  - ***d.*** If UCH is or has potential historical significance and disclosing location information about the site poses a threat, further discussions will be held on how to minimize potential harmful impacts, including data management decisions outlined in the Data Archiving section of this document. The EX cruise Coordinator, a representative from the data management team, OER's marine archaeologist, a representative from the ONMS Maritime Heritage Program, and any parties with jurisdiction, management or other legal ties to the resource shall meet to determine what measures are needed to protect the UCH while minimizing impacts on the distribution of data and data products.

B. Cruises conducted with ROV operations specifically targeted at UCH.

1. **Pre-Cruise Planning: ROV Exploration**

   a. Notifying the Team of their Responsibility to Protect Sensitive UCH Resources

   Expedition members and OER personnel to have a legal responsibility to protect sensitive archaeological information (primarily location information) from untimely release.

For a planned UCH cruise, the EC shall notify the CO and each shall have responsibility for ensuring personnel are aware of this responsibility. The EC shall provide an archaeology background document to familiarize personnel with the particular mission and requirements.

Appendix D details the range of existing accountability mechanisms already in place.

2. **Pre-dive planning**

a. Archaeologists will develop a dive plan based on the best available knowledge of the site that will maximize data recovery and minimize any potential impact to the site. The archaeology team will work closely with the cruise coordinator and deep submergence vehicle manager to develop and implement the plan. The plan should include:

I. Objectives (cultural/interdisciplinary science)

II. The types of sensors needed and data to be generated

b. As a rule ROV dives will not disturb or touch the shipwreck or cultural feature. Exceptions to this rule must discuss the rationale behind such a decision and incorporate it into the dive plan (collection of diagnostic artifacts or samples is sometimes conducted if the activity leads to better baseline characterization).

c. Prior to the cruise any permitting requirements should be identified and if required, permits must be procured.

d. Automated Information System (AIS): NOAA requires that the AIS feed which broadcasts information about the ship, including position, course and speed, must remain on at all times for collision avoidance and other safety reasons. Although the International Maritime Organization's (IMO) Maritime Safety Committee condemns the Internet publication of AIS data, it is easily available for viewing. During the cruise planning phase the Expedition Coordinator will provide the AIS broadcast range on the EX to the chief scientist and science team. The science team, chief scientist, or other parties involved in a UCH mapping cruise should be made aware of this and decide whether the value of the operation merits acceptance of the potential issues/outcomes imposed. A Go/No-Go decision will be made based on this information.

C. Field Operations

1. Exploration dives by ROV should be planned to collect optical and acoustic images without causing physical disturbance to the UCH. Representatives and leads from operational groups including the ROV, data/video, and telepresence teams, and ship operations should meet to discuss ROV operations and data collection.

a. The guidelines for mapping operations should be followed to ensure site locations are not disclosed during field operations. SOPs with full operational details are

available on the ship.

b. A three-mile buffer zone shall be created around the UCH target or isolated survey box. The time at which the ship enters, and departs the three-mile buffer zone needs to be recorded and provided to the Data Team Lead for post-processing use. Following work at the site, the ship will return to the site where it first entered the three-mile buffer zone to continue operations.

c. The following steps will be taken just prior to entering the five-mile buffer zone in order to stop broadcasting the ship's location while the survey is conducted:

I. NOAA email events will be stopped (OMAO/ET)

- NOAA Shiptracker: Disable/stop the e-mail updates from the ship going to OMAO / Shiptracker
- *Okeanos* Atlas: Disable/stop the e-mail updates to NCDDC
- SAMOS: Disable/stop the e-mail update to FSU containing METOC and flow-through data, etc.

II. Telepresence Video Feeds (OER Telepresence team lead): Do not stream any feeds that include the ship's location, including but not limited to the SCS data screen, or any active mapping data acquisition screens, or video feeds. It is acceptable to stream video feeds that do not include the ship's location.

III. Redirect Live Feed as needed (OER EC or CO): If highly sensitive features (human remains, evidence of human remain such as shoes or other accoutrements, highly valuable items, etc.) are going to be investigated or are unexpectedly encountered during the course of our seafloor investigation, the lead archaeologist, ROV Team Leader, Expedition Coordinator or Commanding Officer has authority to immediately switch the live feed from the ROV and Seirios camera sled to another camera on the ship.

d. Daily updates on the *Okeanos* Atlas are normally linked to the location of the ship at the time the update is posted. If daily updates are made during UCH surveys, no position shall be provided. If a position is required, the position should be posted as it makes sense, 3 miles outside of the extent of the site or survey area.

e. Normal transmissions from the ship shall resume after the EX finishes UCH survey operations and exits the 3-mile buffer zone. The point of exit should be as near to the point of entry as is feasible to minimize location data gaps pointing to the location of the UCH.

f. No informal information about UCH should be released to the general public by the ship or personnel. This includes posting information and images on social networking sites like Facebook, Twitter or personal blogs. Images, video and information on UCH will be released to the public following the normal process and announcement of discoveries will be made through the appropriate offices and public affairs officials.

g. In addition to the items listed, the ship sends out automated weather (autoIMET) observations every hour and manual weather observations every 6 hours with positions as a voluntary ship observer. These observations are pulled onto public sites by several different websites and Google Map apps. One example is sailwx.info. This is only accurate to the nearest decimal degree (6 nm). This level of accuracy is not of concern.

D. Post-Cruise Data Management – Appendix C for detail

Following completion of the expedition, the Expedition Coordinator should have a follow-up call with the Data Management Team & OER lead archaeologist to review the datasets collected, confirm those that need to be withheld from public archive, and provide information to the data management team for associated metadata records.

E. Post-Cruise Follow-Up

1. Information Release

a. No informal information about UCH should be released to the general public by the ship or personnel. This includes posting information and images on social networking sites like Facebook or personal blogs. Images, video, and mapping data will be released to the public following the normal process and announcement of discoveries will be made through the appropriate offices and public affairs officials.

b. Determination of whether UCH is potentially eligible for nomination to the National Register of Historic Places, or eligible for protection under other legislation such as the Sunken Military Craft Act or National Marine Sanctuary Act, will take some time following completion of the cruise. Sensitive or potentially sensitive information about the UCH is to remain restricted until determination is complete. Following completion of the cruise, the lead Archaeologist will work with others to analyze the UCH data and conduct historical research to determine whether the UCH is eligible for nomination to the National Register of Historic Places.

I. If the UCH is determined to be eligible, the lead Archaeologist will prepare the nomination for the NRHP process.

II. If the UCH is determined to NOT be eligible, and protection of the site does not fall under other legislation, the Lead archaeologist will notify the data management team that site information can be made publicly available.

2. UCH Targeted Cruise Follow-Up

a. The EX cruise coordinator, OER's marine archaeologist, a representative from the ONMS Maritime Heritage Program, archaeologists involved in the survey, and any parties with jurisdiction, management or other legal ties to the resource shall meet to discuss the potential historical significance of the UCH and the sensitivities of releasing data to the public that can be protected under Section 304 of the National

Historic Preservation Act. The outcome of this meeting will determine if it is necessary to protect site location information from public release.

I. When location data can be released:

- ***a.*** If the findings determine that releasing information and data on UCH is not a threat, development of products and data management should follow the guidelines for a standard ROV cruise.

II. When location data should be protected:

- ***a.*** If it is determined that a site is or has potential to be historically significant and eligible for nomination to the National Register of Historic Places, the location and data containing the location should not be released to the public.

III. Data products that contain position information will be forwarded to the EX data management team where data and products will be stored in an archive with restricted access.

IV. Cruise plans, cruise reports, situation reports, mapping summary reports and other documents that are publically available outside NOAA or freely accessible within NOAA shall not provide location information for UCH or survey areas. In certain circumstances the lead archaeologist for the cruise may request that certain UCH sites are not mentioned in the public reports.

Appendix C: Post-Cruise Data Management

Data collected by OER that is considered sensitive will be protected from direct public release until such time as a final determination can be made as to permanent protection. Data in this state will be:

- Fully documented, so as to be independently understandable to users;
- Visible through publication of metadata records by OER;
- Accessible upon request to OER (controlled access by permission);
- Preserved in NOAA archives as 'restricted' (not available for direct public access).

These data will not be available for direct public access unless and until they are eliminated from consideration for nomination to the National Register of Historic Places (NHPA Section 304), or for protection under other legislation such as the Sunken Military Craft Act or National Marine Sanctuary Act.

If data are nominated and accepted for any official protection, then the exceptional status will be made permanent, and all documentation updated and finalized as such.

<u>This section from Appendix A needs clean up</u>

Data generated by the *Okeanos Explorer* Program is archived under a data management agreement with NGDC. Only data that has potential to reveal the nature and location of UCH shall be restricted from

public access. In accordance with the data management agreement, sensitive data from the EX will have restricted access at NCEI. To assist researchers in discovering sensitive data NGDC will publish a metadata record (but not the data) that identifies a point of contact for access. Requests to access the data will be made to the Director of OER who may delegate to the OER marine archaeologist. In lieu of the OER marine archaeologist, the OER Director may delegate to the Director of the ONMS Maritime Heritage Program.

If data is found to be sensitive because it reveals the location of a historically significant cultural resource, Section 304 of the National Historic Preservation Act provides that the head of a Federal agency or other public official shall withhold from public disclosure information about the location, character, or ownership of a historic property when disclosure may cause a significant invasion of privacy; risk harm to the historic property; or impede the use of a traditional religious site by practitioners. Data collected by the EX that is considered sensitive will be archived in a location where it can be withheld from public disclosure.

Data sets and associated products are housed in the appropriate NOAA archive; National Oceanographic Data Center, National Geophysical Data Center, National Coastal Data Development Center, National Climate Data Center, and the NOAA Central Library.

- Digital Atlas: NCDDC will develop appropriate metadata records to post on the digital atlas.
- CTD and XBT data collected during mapping operations conducted within the buffer zone will not be repressed from the *Okeanos Atlas* and will be held in a public archive.
- Cruise reports, cruise plans, mapping summary reports and other documents that are publically available outside NOAA or freely accessible within NOAA should not provide location information for UCH or survey areas.

This section from Appendix B needs cleanup

Start and end times for the 3-mile buffer zone surrounding a UCH site need to be provided to the data management team. Datasets containing sensitive location information will be restricted in their entirety, unless other parsing arrangements have been made. The following datasets may contain sensitive UCH location information and need to be reviewed, post-processed as appropriate, made restricted and pertinent metadata records created and made available.

- Multibeam, sub-bottom and single beam sonar data
- SCS Data Logs are to be restricted
- All ROV dive products (including associated sensor data) need to be restricted
- CTD rosette and *in situ* sensor datasets collected in relation to the UCH, and within the 3 nm buffer zone, need to be restricted.
- All imagery needs to be reviewed and geospatial imagery removed before being made public. Imagery with geospatial information should be restricted.
- Ship track? Other datasets?

Appendix D: NDA References

Expedition members and OER personnel to have a legal responsibility to protect sensitive archaeological information (primarily location information) from untimely release. The following summarizes the types of personnel who might be engaged in an *Okeanos Explorer* Expedition, where their responsibility to protect sensitive location information about UCH lies, and whether this responsibility has already been addressed or signature of a Non-Disclosure Agreement (NDA) is required to allow their participation in an expedition with planned UCH operations.

- If they are federally-employed scientists, they agreed not to disclose sensitive information and to adhere to federal laws as part of the terms of their employment with the federal government.
- The crew onboard the ship are under the CO's purview. On *Okeanos Explorer*, all crew are federal employees, and thus agreed not to disclose sensitive information and to adhere to federal laws as part of the terms of their employment with the federal government.
- All other members of the Mission team who are not federal employees and are engaged at-sea or ashore (including technicians, vehicle operators, students, etc.) are required to sign a non-disclosure agreement to protect sensitive cultural heritage information as part of their contract agreement.

- Other OER personnel who have access to data and information on the FTP site are either federal employees or contractors and need to be similarly reminded of their responsibilities. OER contractors signed an NDA as condition of employment with the federal government (this should be confirmed annually).

At the beginning of the expedition, all personnel need to be notified of their responsibilities:

MISSION PERSONNEL (Notified by: Expedition Coordinator)		
Employee	**Accountability Mechanism for With-holding Sensitive Data**	**Action**
NOAA Federal Employees	NOAA and Federal Contract	Reminder of contract, and provide archaeology background document.
Mission Contractors (UCAR, ERT Inc., 2020 Company LLC)	Non-Disclosure Agreement	Confirm all contractors signed NDA. Send reminder of contract and provide archaeology background document.
NOAA/Federal Scientists	NOAA and Federal Contract	Reminder of Contract, and provide Archaeology background document
Other Federal Scientists (BOEM, Navy, NPS, etc.)	Federal Contract	Reminder of Contract, and provide Archaeology background document
Other Mission Personnel and Scientists	Non-Disclosure Agreement	Get NDA Signed
Okeanos Explorer Crew (Notified by: CO or Desingnee)		
NOAA Federal Employees	Subject to NOAA and the ship's communications plans and protocols for sensitive data	CO sends out reminder of contract to ship via All Hands, and provides Archaeology background document
Other Federal Employees (e.g. Public Health Service)	Subject to NOAA and the ship's communications plans and protocols for sensitive data	CO sends out reminder of contract to ship via All Hands, and provides Archaeology background document
Wage Mariners	Subject to NOAA and the ship's communications plans and protocols for sensitive data	CO sends out reminder of contract to ship via All Hands, and provides Archaeology background document