

Project Instructions

Date Submitted August 28, 2025

Platform NOAA Ship *Okeanos Explorer*

Project Number EX-25-07

Project Title Beyond the Blue: Palau Mapping 3

Project Dates September 19, 2025 to October 08, 2025

Prepared by _____ Dated _____
Patricia Albano
Expedition Coordinator, Expeditions and Exploration Division
NOAA Ocean Exploration

Approved by _____ Dated _____
Kasey Cantwell
Operations Chief, Expeditions and Exploration Division
NOAA Ocean Exploration

Approved by _____ Dated _____
Rachel Medley
Chief, Expeditions and Exploration Division
NOAA Ocean Exploration

Approved by _____ Dated _____
CAPT Joshua Slater, NOAA
Commanding Officer
Marine Operations Center – Pacific Islands

1. Overview

1.1 Project Purpose

This project is part of a multi-year campaign with NOAA and interagency partners to enhance understanding of the diversity and distribution of deepwater habitats across the Pacific. It will support the identification of vulnerable marine ecosystems and underwater cultural heritage sites important to multiple NOAA Line Offices, local stakeholders, and regional management councils. The data will also inform models used to identify critical mineral areas.

This expedition will generate new baseline information on habitat distribution and function in the Pacific Islands region, including the characterization, extent, abundance, and sensitivity of deep-sea habitats. It will examine links between benthic and water column productivity to better understand ecosystem function and the role of unique benthic habitats. Results will be compared to data from other regions to address major knowledge gaps identified by scientists and resource managers.

All data will contribute to the National Strategy for Mapping, Exploring, and Characterizing the U.S. EEZ, Seabed 2030, NOAA's Deep Sea Coral Research and Technology Program's upcoming Pacific Islands initiative, and other ongoing partner efforts.

In partnership with the Republic of Palau, the expedition will also map and collect environmental DNA (eDNA) in key areas of Palau's National Marine Sanctuary, advancing scientific knowledge, filling data gaps, and providing critical baseline information for future management decisions.

1.2 Project Impact

EX2507 will conduct mapping and CTD operations to collect baseline environmental data critical for scientific research and future management decisions across the Pacific Islands region. This effort is part of the Beyond the Blue: Illuminating the Pacific campaign, a multi-year effort with NOAA and interagency partners aimed at advancing knowledge of deepwater habitat diversity and distribution in remote areas of the Pacific.

This expedition will also fulfill a key U.S. commitment to the Republic of Palau by mapping and exploring priority areas within the Palau National Marine Sanctuary. These efforts will help provide foundational data to support Palau's long-term ocean management goals and deepen scientific understanding of this globally significant marine protected area. This expedition is being planned and executed in collaboration with Palau scientists.

The expedition will help identify vulnerable marine ecosystems and submerged underwater cultural heritage sites, inform models related to critical mineral deposits, and address regional data gaps. It will also support NOAA's responsibilities under the Magnuson-Stevens Act to study deep-sea coral habitats, which are key priorities for the Deep Sea Coral Research and Technology Program, the Pacific Islands Fisheries Science Center, and the Office of National Marine Sanctuaries.

All activities conducted during the 2025 field season will directly advance global and national ocean exploration goals, including the international Seabed 2030 initiative and the U.S. National Ocean Mapping, Exploration, and Characterization (NOMECE) Strategy.

1.3 Project Performance Metrics

Project performance metrics include the square kilometers of seafloor mapped and CTD casts conducted, as deemed necessary by on-board science priorities, time availability, and weather conditions.

(1) Acoustic/Echo Sampling

Acoustic Doppler Current Profiler (ADCP) % Project Time: As needed while exiting and entering port.

Multibeam Echo Sounder Square Miles # Needed: ~11,583 sq miles (30,000 sq kilometers)

(2) Visual Observation Sampling

Mammal Observation Time (Hours) # Needed: ~160 hours (assuming ~8 hours/day)

(3) Chemical/Oceanographic Sampling

CTD # Needed: At least 10 casts over priority sampling sites, with more as needed

Thermosalinograph (TSG) # Needed: Continuously whenever the ship is underway.

Expendable Bathythermograph (XBT) # Needed: 1 per every 6 hours of mapping operations (~80 total)

(4) Other Mission Sampling

eDNA # Needed At least 20-48 samples.
Dependent on the number of CTD casts and surface water collections conducted.

1.4 Days at Sea (DAS)

20

1.5 Participating Institutions

- (A) National Oceanic and Atmospheric Administration (NOAA), Office of Ocean Exploration and Research — 1315 East-West Highway, Silver Spring, MD 20910 USA
- (B) NOAA, National Centers for Environmental Information (NCEI) — Stennis Space Center, MS 39529 USA
- (C) University Corporation for Atmospheric Research (UCAR) Programs for Advancement of Earth System Science — P.O. Box 3000, Boulder, CO 80307 USA
- (D) Palau International Coral Reef Center- P.O. Box 7086 Koror, Republic of Palau 96940
- (E) Ocean Exploration Cooperative Institute - University of Rhode Island, Kingston, RI 02881, USA
- (F) Coral Reef Research Foundation - PO Box 1765, Koror, Palau PW 96940
- (G) Stanford Center for Ocean Solutions - Jerry Yang and Akiko Yamazaki Environment and Energy Building (Y2E2), 473 Via Ortega, Stanford, CA 94305
- (H) Palau Automated Land and Resources Information System - P.O. Box 6051 Koror, Palau 96940
- (I) Palau Division of Maritime Security and Fish & Wildlife Protection - P.O. Box 6051 Koror, Palau 96940
- (J) Palau National Security Coordination Office - P.O. Box 6051 Koror, Palau 96940

1.6 Licenses and Permits

This project will be conducted in accordance with NOAA Ocean Exploration's Best Management Practices (BMPs), the Essential Fish Habitat (EFH) consultation dated April 1, 2024, and the EFH Supplemental dated August 7, 2024. It is also covered under the Endangered Species Act (ESA) Programmatic Letter of Concurrence issued on March 14, 2022, with subsequent revisions dated May 4, 2023. An updated ESA Concurrence Letter and Conference for the Reinitiation of the Programmatic Consultation reflecting revised and updated Project Design Criteria was issued on March 25, 2025. In addition, a Categorical Exclusion (CE) under the National Environmental Policy Act (NEPA) is currently under development for the project. Copies of all relevant permits are provided in Appendix D and will be included in the final Expedition Report.

1.7 Foreign Research Clearances

U.S. Department of State (DOS) Marine Scientific Research data (MSR) clearances are required for this expedition for the Federated States of Micronesia and Palau. MSR clearance applications were submitted in November for Palau and the Federated States of Micronesia (F2024-093). Resubmission of a separate MSR clearance application for Federated States of Micronesia (F2025-023) by request of U.S. Embassy Kolonia was submitted on March 10, 2025 (F2025-023).

1.8 Personnel/Science Party

(A) Principal Investigators/Chief Scientists

Name & Title: Patricia Albano
 Laboratory/Office: NOAA Ocean Exploration
 Phone Number: (202) 924-0658
 Email Address: trish.albano@noaa.gov

(B) Additional Contacts

Name & Title: Rachel Medley
 Laboratory/Office: NOAA Ocean Exploration
 Phone Number: (301) 789-3075
 Email Address: rachel.medley@noaa.gov

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Albano, Trish	Expedition Coordinator	17Sept25	09Oct25	F	OER	USA
Azuma Malsol, Meangeldill	Senior Regional Science Advisor	18Sept25	08Oct25	F	CRRF	Palau
Baechler, Neah	Technical Operations Team, Mapping Lead	18Sept25	09Oct25	F	UCAR / OER	USA
Brantschen, Jeanine Linda	Senior Regional Science Advisor	18Sept25	08Oct25	F	Stanford University	Switzerland
Closek, Collin John-Erik	Senior Regional Science Advisor	18Sept25	09Oct25	M	Stanford University	USA
Doros, Brian	Data Engineer	Onboard	09Oct25	M	OECI	USA
Drennon, Hayley	Mapping Watchstander	18Sept25	10Oct25	F	UCAR	USA

Freitas, Daniel	Mapping Watchstander	18Sept25	09Oct25	M	UCAR	USA
Medley, Rachel	Division Chief, Expeditions and Exploration Division, Mapping Watchstander	18Sept25	09Oct25	F	OER	USA
Miller, Nicole	'Omics Coordinator	18Sept25	08Oct25	F	UCAR / OER	USA
Nakamura, Jeremy	Police Officer, Observer	18Sept25	08Oct25	M	Palau Division of Maritime Security and Fish & Wildlife Protection	Palau
Ngirmeriil, Manzel	Coastal State Observer	18Sept25	08Oct25	M	Palau National Security Coordination Office	Palau
Otto, Evelyn Ikelau	Senior Regional Science Advisor	18Sept25	08Oct25	F	PICRC	Palau
Triana, Felipe	Marine Mammal Observer	18Sept25	09Oct25	M	Whaleology	USA
Weaver, Cory	Marine Mammal Observer	18Sept25	08Oct25	F	Whaleology	USA
Wright, Chris	Data Engineer	Onboard	09Oct25	M	OECI	USA
Yoshida, Rodney	Senior Regional Science Advisor	18Sept25	08Oct25	M	PALARIS	Palau

1.9 Project Classification

(A) Supplementary (“Piggyback”) Projects

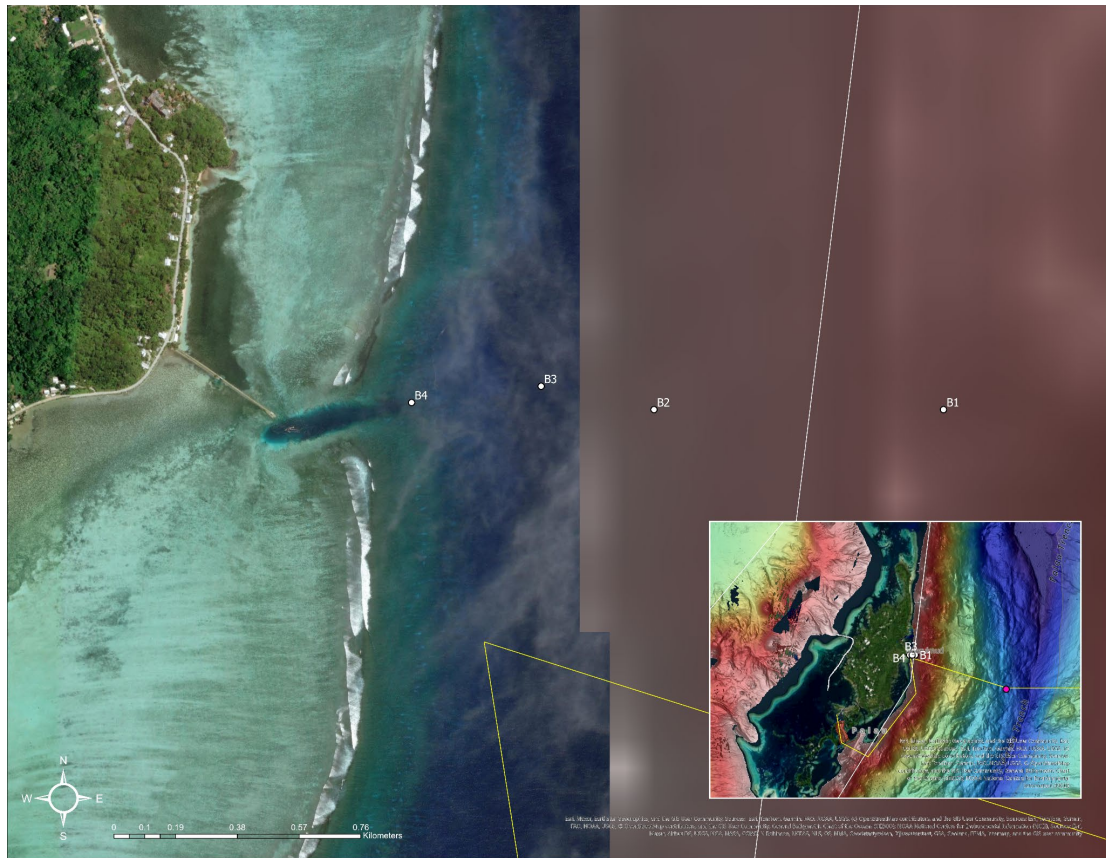
The Japan International Cooperation Agency (JICA) is conducting a data collection survey in Palau to assess the feasibility of installing infrastructure for renewable energy, specifically Ocean Thermal Energy Conversion (OTEC), and related industries such as hydroponics and aquaculture, using deep ocean water. The project concept was presented to President Whipps on January 26, 2025, and received his support.

To gather the necessary data for intake construction planning and environmental impact assessment, the JICA survey consultant team is collaborating with the Coral Reef Research Foundation (CRRF) to review existing information and conduct offshore surveys. However, CRRF has expressed concern about its technical capacity to provide the required data. This limitation poses a significant barrier to confirming the feasibility of the OTEC concept and could delay future infrastructure development.

To address this challenge, CRRF and the JICA team approached NOAA Ocean Exploration with a request to opportunistically collect data from the proposed OTEC site while *Okeanos Explorer* operates in Palauan waters. Given the high priority of this effort to the Palauan government, the office agreed to support the request, with formal approval from NOAA Ocean Exploration Director CAPT Bill Mowitt on July 15, 2025.

The planned data collection includes updated bathymetry, temperature, and nutrient sampling down to ~800 meters depth. The primary survey area lies east of the Melekeok State Government building. Water sampling via CTD is proposed at two sites: B1 (~270m depth) and B2 (~765m depth), with multibeam sonar lines run between them. Due to their shallow depths, NOAA Ocean Exploration did not agree to sample sites B3 or B4.

This survey should ideally only require 1 day of ship time, either upon entering Palauan waters from Guam or at the end of the expedition prior to arrival in port. The survey site is approximately 30 nautical miles from the port of Koror via the eastern channel. This survey requires a permit from the Melekeok State of Palau, which CRRF and JICA will obtain.



(B) NOAA Fleet Ancillary Projects
None

2. Operations

2.1 Project Area

This project will occur within the waters of the Republic of Palau, the Federated States of Micronesia, and Guam.

(A) Desired Operational Waters

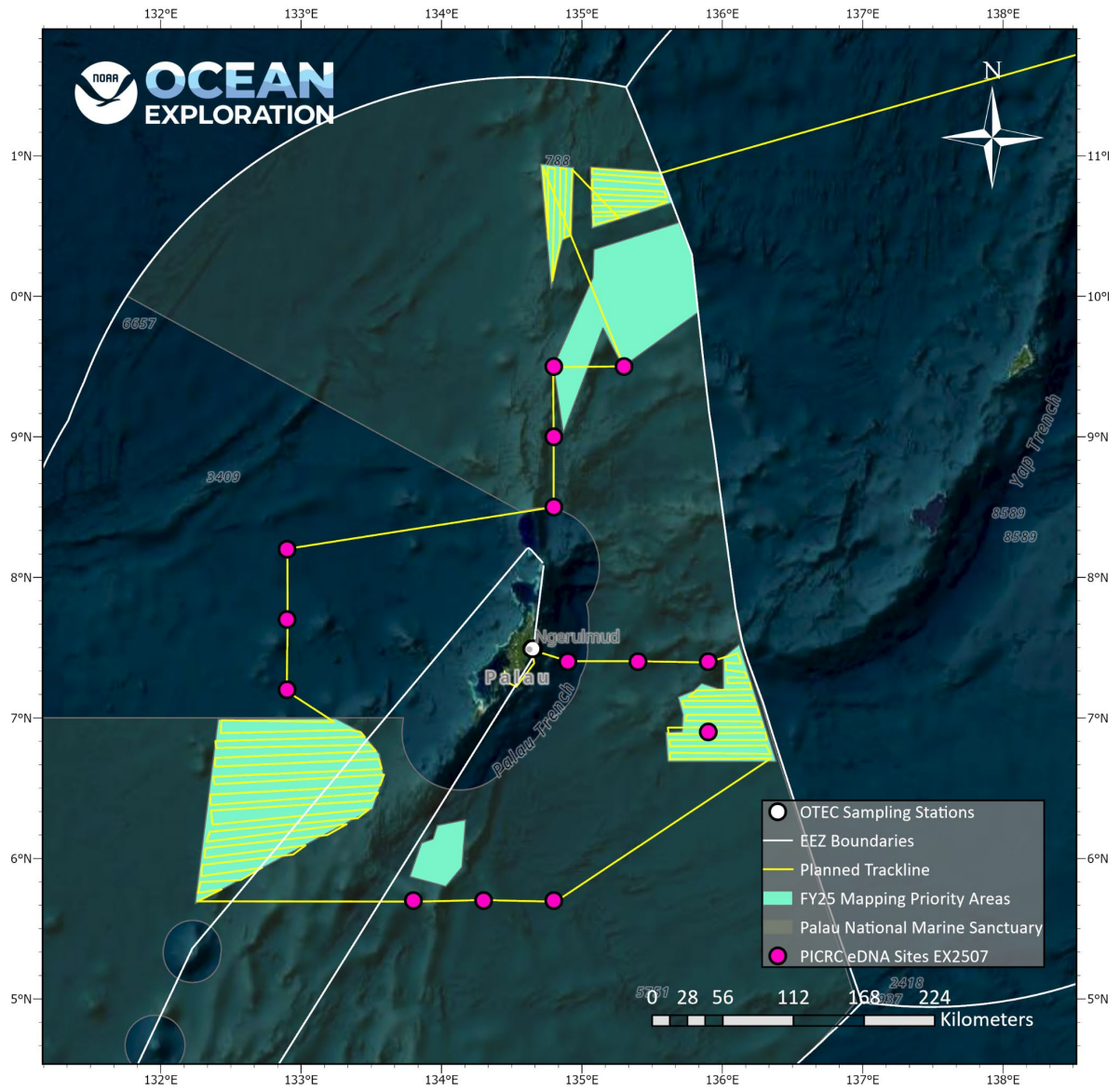
Ocean. Primary operations will take place within the Palauan EEZ. Other operational areas are for transit or CTDs. CTD locations are included in the Station List below.

(B) Way Point/Station List

Station ID	Name	Lat DD (N)	Long DD (E)	Depth (m)	Science Objective	Notes
CTD01	North_NM S_S12	9.5026954	135.2982631	4630	eDNA Sampling	
CTD02	North_NM S_S13	9.5026954	134.8029898	2420	eDNA Sampling	
CTD03	North_NM S_S11	9.0025811	134.8011213	4576	eDNA Sampling	
CTD04	North_AF Z_S10	8.5123361	134.7941973	3845	eDNA Sampling	
CTD05	West_DFZ _S21	8.1998082	132.8995678	4776	eDNA Sampling	
CTD06	West_DFZ _S22	7.6988984	132.8951276	4391	eDNA Sampling	
CTD07	West_DFZ _S23	7.1997708	132.8989819	4430	eDNA Sampling	
CTD08	South_NM S_S31	5.7061219	133.8002782	2274	eDNA Sampling	
CTD09	South_NM S_S32	5.6970885	134.3001284	4791	eDNA Sampling	
CTD10	South_NM S_S33	5.7036649	134.7934868	5090	eDNA Sampling	
CTD11	East_NMS _S42	6.9005535	135.8976163	4100	eDNA Sampling	
CTD12	East_NMS _S43	7.4031126	135.8961385	4078	eDNA Sampling	

CTD13	East_NMS_S41	7.3974288	135.3988085	5399	eDNA Sampling	
CTD14	East_AFZ_S40	7.4002471	134.8999106	6127	eDNA Sampling	Deep
CTD15	OTEC_B1	7.490579	134.6580072	765	OTEC Sampling Site: water sample collected and preserved	Water samples (4.5L) collected and preserved in the freezer for CRRF to collect post-cruise.
CTD16	OTEC_B2	7.4905345	134.6500086	268	OTEC Sampling Site: CTD only, no water sample preserved	

(C) Project Area Shapefile(s)



2.2 Project Itinerary

- (A) Starting Port: Guam
- (B) Number (#) of Staging Days: 2
- (C) Itinerary Information: Day by day schedule is listed below.
- (D) Intermediate Port Call(s): None
- (E) Foreign Port Call(s): Koror, Palau
- (F) Ending Port: Koror, Palau
- (G) Number (#) of Destaging Days: 2

Date	Day of Week	Day	Where	Objectives
9/17/2025	Weekday	MOB	Naval Base Guam	Mobilization
9/18/2025	Weekday	MOB	Naval Base Guam	Mobilization, mission team move aboard, ping test
9/19/2025	Weekday	1	Underway	Depart Guam, begin transit mapping to Palau
9/20/2025	Weekend	2	Underway	Transit mapping to Palau, through Federated States of Micronesia
9/21/2025	Weekend	3	Underway	Transit mapping to Palau, through Federated States of Micronesia
9/22/2025	Weekday	4	Underway	eDNA sample collection and focused mapping operations
9/23/2025	Weekday	5	Underway	eDNA sample collection and focused mapping operations
9/24/2025	Weekday	6	Underway	eDNA sample collection and focused mapping operations
9/25/2025	Weekday	7	Underway	eDNA sample collection and focused mapping operations
9/26/2025	Weekday	8	Underway	Transit to second mapping priority area
9/27/2025	Weekend	9	Underway	eDNA sample collection and focused mapping operations
9/28/2025	Weekend	10	Underway	eDNA sample collection and focused mapping operations
9/29/2025	Weekday	11	Underway	eDNA sample collection and focused mapping operations

9/30/2025	Weekday	12	Underway	Transit to third mapping priority area
10/1/2025	Weekday	13	Underway	Focused mapping operations
10/2/2025	Weekday	14	Underway	Focused mapping operations
10/3/2025	Weekday	15	Underway	Focused mapping operations
10/4/2025	Weekend	16	Underway	Focused mapping operations
10/5/2025	Weekend	17	Underway	Focused mapping operations
10/6/2025	Weekday	18	Underway	Transit mapping and eDNA sample collection
10/7/2025	Weekday	19	Underway	OTEC water sample collection and mapping/Transit to Koror
10/8/2025	Weekday	20	Underway	Arrive in Koror, Palau
10/9/2025	Weekday	DEMOB	Koror, Palau	Demobilization, some mission team move off, hold for tours for local teachers
10/10/2025	Weekday	DEMOB	Koror, Palau	Demobilization, rest of mission team move off, hold for tours for Palauan government officials

2.3 Staging and Destaging

No significant support is expected outside of permissions from port for a sonar ping test.

There may be opportunities for tours in the several days following arrival in Palau (est. 9 October and 10 October). While no ship personnel are required, they are welcome and appreciated if they would like to be involved.

2.4 Operations To Be Conducted

- A. CTD casts to collect eDNA in Paluan waters.
- B. XBT launches via the autolauncher and the handhelds.
- C. Exploratory acoustic mapping operations during transits.
- D. Focused mapping operations once in Paluan waters.
- E. Transit mapping from Guam to Palau.
- F. Sun photometer measurements.

2.5 Dive Operations

Dives are not planned for this project.

2.6 Small Boat Operations

Small boat operations are not planned for this project, however mission and ship may coordinate to take advantage of any training opportunities, time and weather permitting.

2.7 Uncrewed Systems Operations

Uncrewed systems operations are not planned for this project.

2.8 Applicable Restrictions

(A) Conditions That Preclude Normal Operations

Poor weather conditions, mapping systems, and CTD equipment failures, foreign vessel activity, or other unforeseen software or mechanical failures may preclude operations. Contingency plans may be identified if original locations are inaccessible, and decisions made in conjunction with the ship as needed.

3. Equipment

3.1 Platform Capabilities

Itemized list of required equipment and capabilities provided by the ship. Use the following headers to categorize the list.

- (A) Vessel Core Systems: Functioning/seaworthy Safety of Life at Sea (SOLAS) approved fast rescue boat, functioning/seaworthy work boat to support personnel transfers, Electronic Chart Display and Information System (ECDIS), Kongsberg dynamic positioning system, meteorological and weather sensor package, three voice over internet protocol (VOIP) telephone lines.
- (B) Labs/Interior Spaces: Wet Lab and ROV workshop for the staging of equipment, Dry Lab, Wet Lab and Mission Control Room for mission team workspaces, Server Room for mission network and equipment. ROV Hangar, Workshop, and Winch Room for ROV operations and maintenance (potential to conduct ROV evaluation alongside and storage of equipment/systems).
- (C) Exterior Spaces: CTD deck, fantail, boat deck, space available for HAZMAT storage available for ethanol, space available for conex box that hosts ROV spares and equipment
- (D) Handling And Over-The-Side Deployment/Retrieval: J-Frame for deployment/recovery of CTDs, hand-deployment of CastAway CTD, and potential hand-deployment of EK calibration gear (if needed).
- (E) Acoustic Suite: Kongsberg EM 304 MKII multibeam echosounder, Kongsberg Simrad EK60/80 split-beam sonars: general purpose transceivers (18, 120, 200 kHz) and wide band transducers (38 and 70 kHz), Knudsen Chirp 3260 sub-bottom profiler, Teledyne RDI Workhorse Mariner ADCP (300 kHz), Teledyne RDI Ocean Surveyor ADCP (38 kHz) (if operational).
- (F) Other: Lockheed Martin Sippican XBT Mark21 system, Sea-Bird SBE 9-11Plus CTD and deck box, Sea-Bird SBE 32 carousel and 12 10 L Niskin Bottles, Sea-Bird SBE 43 Dissolved Oxygen sensor, Sea-Bird SBE 45 MicroTSG Thermosalinograph, Sea-Bird SBE 38 Temperature Probe, ECO-FLNTU-RTD Fluorescence/Turbidity sensor, PMEL Oxidation-Reduction Potential (ORP) sensor, PMEL Altimeter sensor, Scientific Computing System (SCS), Scientific Seawater System, HYPACK software license.

3.2 Scientific Capabilities

Itemized list/table of equipment and capabilities provided by scientists. All Standard Operating Procedure(s) must be provided for equipment and capabilities operated by the ship.

Equipment Name	Category	Type
EK80 38 kHz WBT	Mapping	Hardware
EK80 70 kHz WBT	Mapping	Hardware

EK80 18 kHz WBT	Mapping	Hardware
EK80 120 kHz WBT	Mapping	Hardware
EK80 200 kHz WBT	Mapping	Hardware
Kongsberg Synchronization Unit	Mapping	Hardware
Castaway CTD	Mapping	Hardware
AOML XBT Autolauncher	Mapping	Hardware
EK Calibration Spheres	Mapping	Hardware
EK Calibration Gear	Mapping	Hardware
Marinestar Correctors (POS MV)	Mapping / ROV	Service
Marinestar Correctors (Seapath)	Mapping / ROV	Service
Sippican Deep Blue XBTs	Mapping	Consumable
Kongsberg Acquisition Computer	Mapping	Hardware
EK60/80 Acquisition Computer	Mapping	Hardware
Knudsen 3260 Acquisition Computer	Mapping	Hardware
UHDAS Computer and CTD Acquisition Computer	Mapping	Hardware
QPS Software Suite	Mapping	Software
NCEI Cruise Information Management System	Mapping / ROV	Software
Microtops II Ozone Monitor Sun Photometer and Handheld GPS required for NASA Marine Aerosols Network Supplementary Project	Other	Hardware
Mission-Provided VSAT High-Speed Link (15 Mbps Ship-to-Shore; 5 Mbps Shore-to-Ship)	Telepresence	Hardware
Mission Starlink Terminals	Telepresence	Hardware
Exploration Operations Networking Infrastructure	Telepresence	Hardware / Software
Telepresence System	Telepresence	Hardware / Software

Mission VoIP System	Telepresence	Hardware
Mission-Provided Data Storage	Data Management	Hardware

4. Hazardous Materials

4.1 Policy and Compliance

Hazardous Materials are required for this project and will be utilized in compliance with current NOAA Policies.

OER keeps hazardous materials onboard the ship between projects. An annual inventory is supplied to the ship's ECO officer and any additional hazardous materials brought on, OER supplies the SDS to the ship. For this project no additional hazardous materials will be brought onboard.

4.2 Inventory

A preliminary HAZMAT inventory indicates that quantities fall within the capacity of the onboard spill kits. The mission team will confirm enough spill containment material prior to departing.

Common Name of Material	Quantity	Notes	Trained Individual	Spill Control
Ethanol (95%)	454 L	Stored in shed (Container side = 55 gallon drum)	Trish Albano	Univ.
Formaldehyde (37.5%)	8 L	Stored in fume hood (4 L container)	Trish Albano	HAZ.
Bleach	8 L	Stored in fume hood (4 L container)	Trish Albano	Univ.
AquaShield	Will be confirmed during staging	ROV workshop fire cabinet, pit	Trish Albano	Univ.
Mercury	150 ml	Stored in fume hood	Trish Albano	Univ.
Dow Corning 4	Will be confirmed during staging	ROV workshop fire cabinet, pit	Trish Albano	Univ.
Fluid film spray	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Isopropanol alcohol (2 gal)	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Scotchkote	Will be confirmed	ROV workshop fire cabinet	Trish Albano	Univ.

	during staging			
3M silicone spray	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Synthetic AW hydraulic oil, ISO-22	Will be confirmed during staging	Hanger, pit, vehicles	Trish Albano	Univ.
Tap Magic cutting fluid	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Tap Magic heavyweight cutting fluid	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Tuff Coat M	Will be confirmed during staging	Winch room	Trish Albano	Univ.
Dow Coming Molykote 111	Will be confirmed during staging	ROV workshop Fire cabinet, pit	Trish Albano	Univ.
WD40	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Loktite	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Shell Diala S2	Will be confirmed during staging	Hanger, vehicles	Trish Albano	Univ.
Por-15	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Aeroshell 41	Will be confirmed during staging	Hanger, ROV Deep Discoverer	Trish Albano	Univ.
Ultratane	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Rust-oleum	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Flux-Off	Will be	ROV workshop fire	Trish Albano	Univ.

	confirmed during staging	cabinet		
Propane	Will be confirmed during staging	ROV workshop fire cabinet	Trish Albano	Univ.
Adhesive Pliobond 25	Will be confirmed during staging	Tool room	Trish Albano	Univ.
AP 120 Metal Prep	Will be confirmed during staging	Pit	Trish Albano	Univ.
Butane fuel	Will be confirmed during staging	Tool room	Trish Albano	Univ.
PVC cement	Will be confirmed during staging	Tool room	Trish Albano	Univ.
Phosphoric acid	Will be confirmed during staging	Tool room	Trish Albano	Univ.
Pipetite paste	Will be confirmed during staging	Tool room/pit	Trish Albano	Univ.
Spindle oil 10, ROS PT	Will be confirmed during staging	Tool room	Trish Albano	Univ.
DC557	Will be confirmed during staging	Tool room/pit	Trish Albano	Univ.
Tether potting catalyst	Will be confirmed during staging	Pit	Trish Albano	Univ.
Tether potting compound	Will be confirmed during staging	Pit	Trish Albano	Univ.
ThermaPlex bearing grease	Will be confirmed during staging	Pit	Trish Albano	Univ.
Tritech Seaking	Will be confirmed during staging	Pit	Trish Albano	Univ.

4.3 Safety and Spill Response

Product Name	Quantity	Chemicals it is effective against	Amount it can clean up
PIG® Spill Kit in 95-Gallon High-Visibility Container	1	Oils, coolants, solvents, water, universal	60 gal
PIG® HazMat Spill Kit in a Clear-Top Duffel Bag	1	Acids, bases, unknowns	8 gal
Oil-only absorbent mat	300	Oil	28 oz/mat

4.4 Radioactive Materials and X-ray Generating Devices

No Radioactive Isotopes or X-ray Generating Devices are planned for this project.

4.5 Lithium Batteries

Laptops and cell phones brought on board will contain Lithium-Ion batteries. These batteries are enclosed within each unit and do not present any risks or disposal hazards. These items will frequently be on a person (as is the case for cell phones) or in an occupied space (e.g. dry lab, control room, or state room at night) and may move around the ship to various locations, depending on where the owners are located.

Additionally, the ROVs and their component parts have enclosed lithium batteries. These are currently located on the vehicles (ROV hangar and fantail), in the ROV pit, and in the connex box. We will work with the ship to ensure compliance with OMAO Procedure 1102-04.

5. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships must conform to all Federal, Agency, Chief Scientist's LO, and OMAO data governance directives, policies and stewardship (Appendices A and B). Systems that produce data continually, periodically, and during specific operations described in Section 2.4, and equipment listed in Sections 3.1 and 3.2, will have accompanying entries in the Project Data Management plan. The data will be classified as either OMAO data or Program Data and roles and responsibilities for acquisition, stewardship, and submission to archive will be determined during pre-project communications and meetings. OMAO expects the Chief Scientist, Program, and Lab

Directors to abide by their LO Data Management Plan and procedural directive. By completing this section all parties agree to OMAO Policy 1102-38 Shipboard Data Acquisition and Stewardship.

5.1 Data Acquisitions Plan

The Data Management Plan (DMP) is completed following a program specific template.

Okeanos Explorer Mission EX2507 Data Management Plan

Report Date: 2025-07-29

1. General Description of Data to be Managed

1.1. Name and Purpose of the Data Collection Project:

EX-25-07, 2025 Beyond the Blue: Palau Mapping 3

This expedition will commence on September 18, 2025, at the naval base located in Santa Rita, Guam and conclude on October 9, 2025, in Koror, Republic of Palau. Operations will include mapping and CTD sampling while exploring priority areas within the Palau National Marine Sanctuary and Palauan EEZ.

1.2. Summary Description of the data to be collected:

Operations will include the use of the ship's deepwater mapping systems (Kongsberg EM 304 MKII multibeam echosounder, Kongsberg Simrad EK60/80 split-beam sonars, Knudsen 3260 Chirp sub-bottom profiler, and Teledyne RDI Workhorse Mariner ADCP (300 kHz), Teledyne RDI Ocean Surveyor ADCP (38 kHz) (if operational), Lockheed Martin Sippican XBT Mark21 system, CastAway CTD, Sea-Bird SBE 9-11Plus CTD and deck box, Sea-Bird SBE 32 carousel and 12 10 L Niskin Bottles, Sea-Bird SBE 43 Dissolved Oxygen sensor, Sea-Bird SBE 45 MicroTSG Thermosalinograph, Sea-Bird SBE 38 Temperature Probe, ECO-FLNTU-RTD Fluorescence/Turbidity sensor, PMEL Oxidation-Reduction Potential (ORP) sensor, PMEL Altimeter sensor, Scientific Computing System (SCS), Scientific Seawater System, HYPACK software license and a high-bandwidth satellite connection for continuous ship-to-shore communications.

1.3. Keywords or phrases that could be used to discover the data:

Theme Keywords:

Acoustic doppler current profiler, ADCP, Acoustic sound velocity profile, ASVP, Bathymetry gaps, Conductivity temperature depth, CTD, Coral communities, Deep sea, Deepsea, Deep-sea, Deep Sea Coral Research and Technology Program, Dissolved oxygen, Expendable bathythermograph, XBT, Fish habitats, Geohazards, Habitat areas of particular concern, HAPC, Habitat characterization, High-bandwidth satellite connection for continuous ship-to-shore communications, Mapping survey, Marine education, Multibeam, Multibeam backscatter, Multibeam sonar, MB, Multi-beam, NOAA, NOAA fleet, Ocean, Ocean education,

Ocean exploration, Ocean exploration and research, Ocean Exploration Cooperative Institute, OECI, Ocean literacy, Ocean research, Oceans, OER, Okeanos, *Okeanos explorer*, R337, Science, Scientific computing system, SCS, Scientific mission, Scientific research, Sea, Seabed 2030, Single beam sonar, Singlebeam sonar, Single-beam sonar, Site characterization, Sonar anomalies, Split beam sonar, Stewardship, Sub-bottom profile, Submarine geohazards, Sun photometer, Systematic exploration, Water column backscatter, Beyond the Blue, biological samples, eDNA, niskin bottles, still images, telepresence, water samples.

Place Keywords:

Santa Rita, Guam, Koror, Republic of Palau, Pacific Ocean, Palau National Marine Sanctuary.

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

Beyond the Blue: *Illuminating the Pacific*

1.5. Planned or Actual Temporal Coverage of the data:

Start Date: 2025-09-19 and End Date: 2025-10-09

1.6. Actual or Planned Geographic Coverage of the data:

Northernmost Boundary: 6.0 and Southernmost Boundary: 5.5

Westernmost Boundary: 132.0 and Easternmost Boundary: 144.6

1.7. What data types will be created or captured and submitted for archive?

Project Instructions, Expedition Report, Seafloor Imagery, Multibeam Data (raw, processed, derived products), Bottom Backscatter, Water Column Backscatter, EK60/EK80 Split Beam Data, Ship Navigation Data (raw), Meteorological Data (raw), Sub-Bottom Profile Data, Acoustic Sound Velocity Profile Data, ASVP, Sea Surface Temperature Data, Sun Photometer Data, CTD Data (raw, processed), temperature, depth, dissolved oxygen, eXpendable BathyThermograph, XBT, Acoustic Doppler Current Profiler, ADCP, Scientific Computing System (SCS raw), eDNA, Water Samples.

1.8. What platforms will be employed?

NOAA Ship *Okeanos Explorer*

2. Points of Contact for this Data Producing Project

Overall POC: NOAA Ocean Exploration

Title: Expedition Coordinator Team

Email: EX.ExpeditionCoordinator@noaa.gov

3. Points of Contact for Managing the Data

Data POC: NOAA National Centers for Environmental Information (NCEI)

Data POC Title: Stewardship Data Management Team

Data POC Email: OER.info.mgmt@noaa.gov

4. Resources

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

Yes

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?**

Navigational, meteorological, and oceanographic data shall be delivered in its native format to NCEI for preservation in the Oceanographic Archive. Mapping (multibeam, water column, sub bottom) data are sent to the University of New Hampshire (UNH) for post-processing. Raw and processed mapping data are then delivered to NCEI for preservation in the Geophysical Archives.

5.2. What quality control procedures will be employed?

Quality control procedures for the data from the Kongsberg EM304 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). Navigational, meteorological, and oceanographic 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.

6. Data Documentation**6.1. Does the metadata comply with the Data Documentation Directive?**

Yes, Metadata Standard: ISO 19115-2 Geographic Information with Extensions for Imagery and Gridded Data will be the metadata standard employed.

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

Not Applicable

6.2. Where will the metadata be hosted?

Organization: An ISO format collection-level metadata record will be published in the NOAA OneStop catalog and an NOAA Ocean Exploration Web Accessible Folder (WAF) hosted for public discovery and access at:

URL: <https://data.noaa.gov/waf/NOAA/NESDIS/ncei/oer/iso/>

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?**

Yes

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. Data POC: OER.info.mgmt@noaa.gov

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

Organization: NOAA National Centers for Environmental Information (NCEI)

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

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

Hold time: Data are considered immediately publicly accessible as soon as possible after the mission, unless there are documented restrictions (i.e., Underwater Cultural Heritage Sites).

Hold authority: not applicable

7.4. Prepare a Data Access Statement

No data access constraints, unless data are protected under Section 304 of the National Historic Preservation Act of 1966. Data collected and derivative data products produced by the *Okeanos Explorer* will be archived in a location where it can be withheld from public disclosure.

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 (NCEI). Refer to the corresponding Annual *Okeanos Explorer* Data Management Plan at NOAA Central Library Institutional Repository for detailed descriptions of the processes, procedures, and partners involved in this collaborative effort.

8.2. If no archive planned, why?

Not Applicable

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

Not Applicable

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 Ocean Exploration.

Appendix A Operational Standards

1. Meetings, Vessel Familiarization, and Project Evaluations

1.1 Pre-Project Meeting

The Chief Scientist and Commanding Officer (CO) will meet with 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 must 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 Chief Scientist in arranging this meeting.

1.2 Vessel Familiarization Meeting

The CO is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and ship protocols (e.g., meals, watches, etiquette, drills, etc.). A ship familiarization meeting must be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer. See OMAO Procedure 1102-20 - General Rules and Minimum Requirements for Embarked Personnel and OMAO Procedure 1201-08 - NOAA Ship Familiarization.

1.3 Meals and Berthing

- (A) The ship will provide meals for the scientists listed above. Meals will be served three (3) times daily beginning one (1) hour before scheduled departure, extending throughout the project, and ending two (2) 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. Send special dietary requirements for scientific participants to the ship's command no less than two (2 weeks) before the start of a project.
- (B) Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and CO will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current makeup of the ship's complement per OMAO Procedure 1102-03 - Vessel Quarters. The Chief Scientist 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 that were issued. Unless prior arrangements are made, the science party may move aboard the night before scheduled departure and must move off the ship the day after scheduled arrival (at the end of project). The Chief Scientist/Principal Investigator is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion before departing the ship.
- (C) All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non-NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist or Principal Investigator 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.

1.4 Shipboard Safety

- (A) All embarked personnel are required to fully support and comply with NAO 202-1106: NOAA Sexual Assault and Sexual Harassment Prevention and Response Policy. The at-sea working/living environment is particularly sensitive and it is incumbent upon all personnel to uphold a positive and professional workplace dynamic in order to successfully accomplish cruise objectives.
- (B) All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations administered by the CO. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO Procedure 1102-20 General Rules and Minimum Requirements for Embarked Personnel, which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.
- (C) Surge protectors, power strips, and Uninterrupted Power Sources (UPS) must be approved for marine/shipboard use, removed from service if hot to the touch, regularly inspected for damage or wear, limited to one surge protector per duplex receptacle (i.e., “outlet”), and never daisy chained. The equipment must meet Military Performance Specification MIL-PRF-32167A (Transient Voltage Surge Suppressors), which incorporates American Society for Testing and Materials ASTM F1507 (Standard Specifications for Surge Suppressors for Shipboard Use) and Underwriters Laboratories UL 1449 (Safety Standards for Surge Protective Devices).
- (D) 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.
- (E) Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals, clogs, or crocs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire. See OMAO Procedure 1102-20 or SSI equivalent.

1.5 Post-Project Meeting

The CO is responsible for conducting a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and shortcomings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements are discussed and mitigations for future projects will be documented for future use. This meeting includes the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the ship's Operations Officer and Chief Scientist.

1.6 Project Evaluation Report

Within 7 days of the completion of the project, the Chief Scientist or Principal Investigator completes a Customer Satisfaction Survey, as appropriate. The form is available at <https://sites.google.com/a/noaa.gov/omao-intranet-dev/operations/marine/customer-satisfaction-survey> and provides a “Submit” button at the end of the form. It is also located at [Marine Operations Customer Satisfaction Survey](#). 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.

2. Shoreside Support

2.1 Medical Forms and Emergency Contacts

- (A) The Chief Scientist must ensure all scientists have created/updated their eSAIL account with their emergency contact information. This must be completed seven (7) days prior to the departure date. An emergency contact is required to include: valid phone number, address, and email (if applicable). US based phone numbers are preferred, if a foreign number is used we require a US based alternate be listed as well.

Link for eSAIL: esail.omao.noaa.gov

- (B) All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non-NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist or Principal Investigator 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. NOAA Form (NF) 57-10-01 - Health Services Questionnaire (NHSQ) must be completed in advance by each participating scientist.

NHSQs must be submitted every 2 years for individuals under the age of 50 and every 1 year for ages 50 and above. NHSQs 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 Marine Health Services at marinemedicine@noaa.gov. Before clearance to sail can be granted, all participating scientists must submit the NHSQ and Tuberculosis Screening Document to Marine Medical Branch no later than 4 weeks before the start of the project to allow time for the participant to obtain and submit additional information should health services require it. Please contact Marine Medical Branch with any questions regarding eligibility or completion of either form. 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. https://www.osec.doc.gov/opog/privacy/pii_bii.html.

(C) Contact information:

Marine Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757-441-6320
Fax 757-441-3760

OR

Marine Health Services
Marine Operations Center – Pacific
2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856

3. Communications and Information Technology (IT)

3.1 Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the Project Instructions.

The ship's primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. If increased bandwidth is being considered, program accounting is required and it must be arranged through the CO at least 30 days in advance.

3.2 IT Security

(A) IT Security Awareness Training:

- (1) Guest scientists must complete NOAA's IT Security Awareness Course before using or accessing any NOAA ship science computer or network resources. It is recommended that guests complete the course 3 days before embarking. Guest scientists must review and sign the Rules of Behaviour (ROB)
- (2) For Foreign Nationals see Section 7.6

(B) Any computer that will be hooked into the ship's network must meet the following requirements, at a minimum:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.

- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.
- (4) No Kaspersky products are allowed
- (5) Adhere to all licenses, copyright laws, contracts, and other restricted or proprietary information.
- (6) Utilize all security measures that are in place to protect the confidentiality, integrity, and availability of information and systems.
- (7) Refrain from using NOAA OMAO Public Network information resources for inappropriate activities.
- (8) Do not visit inappropriate sites while using NOAA OMAO Public Network. Inappropriate sites can be but are not limited to:
 - (a) Sexually Explicit Content (including nudity, pornography, and other obscene materials)
 - (b) Websites With Extreme Political Views
 - (c) Hate Websites
 - (d) Websites That Promote Drug Use or Terrorist Activities
 - (e) Online Gambling (including ads with adult-only content)
 - (f) Web Sharing Websites (downloading illegal content, BitTorrent, Webtorrent, uTorrent)
- (C) Computer Operating Systems that the support vendor has identified as reaching “End of Life” for support will not be allowed on the shipboard network.
- (D) At any time, NOAA/OMAO may monitor and/or audit user activity and/or network traffic. In addition, NOAA/OMAO may access your system and disclose information obtained through audits to third parties, including law enforcement authorities.

3.3 Disposition of Data and Reports

Data Classifications:

(A) OMAO Data

- (1) Since OMAO has limited tools and bandwidth for moving large datasets, OMAO commits to acquisition and archive responsibility for:
 - (a) Scientific Computer System (SCS) data and metadata
 - (b) Conductivity Temperature Depth (CTD profile) data
 - (c) Acoustic Doppler Current Profile (ADCP) data
 - (d) Ship Daily Activity Tracker (SDAT) Cruise level metadata
- (2) On a project by project basis, if special submission capabilities are made available, the CO may commit to stewardship of other datasets.

(B) Program Data

- (1) Systems attached to and maintained by the ship but will be run by the science party or Survey department such as bathymetric multibeam sonar, water column single, split beam, multibeam sonar, video and other digital imagery.

- (2) Systems the Scientific Party brings aboard
- (3) SCS, CTD, and ADCP will remain part of the Chief Scientist's project data package as well as being submitted to the archive in near real time by ship's personnel.
- (C) Communication and Documentation
 - (1) Data Management Plans are reviewed at the Pre-Project Meeting (Section 7).
 - (2) Instrument, system, geographic, and operational interference are discussed and prioritized during pre-cruise communications and the Pre-Project Meeting. This ensures that every data acquisition system can operate to satisfy commitments to initiatives such as Seabed 2030 and OMAO's general guidance to acquire the most and best data possible, while not interfering with the project's primary objectives.
- (D) Data Transmittal and Storage Media
 - (1) Before departure, bandwidth, storage capacity, and MACC (Marine and Aviation Cyber Center) media policies will guide strategies for stewardship of data collected during the project and the manner that the Chief Scientist's data package and other large data files will be transmitted to shore or carried from the ship at the end of the project.
 - (2) The ship CO completes data transmittal or other chain of custody documentation and a copy of each is retained on the ship and will accompany the data media.
- (E) Acknowledgment and Acceptance
 - (1) Cover page signatures acknowledge each parties acceptance of the data submission responsibilities outlined in this section.

3.4 Responsibilities

- (A) OMAO Data
 - (1) OMAO owned shipboard systems will be maintained, calibrated at prescribed intervals, in good working order, and tested before departure. Sounders and systems that require patch test or sphere calibration may require project time if the ship does not have the means to conduct calibrations before the beginning of the project
 - (2) System (SCS) data, Conductivity Temperature Depth (CTD profile) data, Acoustic Doppler Current Profile (ADCP) data will be submitted in near real time or at end-of-project through existing and developing utilities.
 - (3) Metadata for each data type will be complete, up-to-date, and accurate.
 - (4) SDAT ship and cruise level metadata will be accurate and updated every 2 to 3 days.
 - (5) On a project by project basis, if special submission capabilities are made available, the ship's CO may commit to stewardship of other datasets.
- (B) Program Data
 - (1) All non-OMAO data collected is stewarded and delivered to the lab's data managers for prompt packaging and submission to National Centers for Environmental Information according to their LO's directives.

- (2) Holds, or embargoes may be placed on sensitive data for up to 1 year.

(C) Communication and Documentation

- (1) Data Management Plans are reviewed at the Pre-Project Meeting.
- (2) Instrument, system, geographic, and operational interference are discussed and prioritized during pre-cruise communications and the Pre-Project Meeting. This ensures that every data acquisition system can operate to satisfy commitments to initiatives such as Seabed 2030 and OMAO's general guidance (including OMAO Environmental Data Management Directive and ship specific instructions) to acquire the most and best data possible, while not interfering with the project's primary objectives.

(D) Data Transmittal and Storage Media

- (1) Before departure, bandwidth, storage capacity, and MACC (Marine and Aviation Cyber Center) media policies will guide strategies for stewardship of data collected during the project and the manner that the Chief Scientist's data package and other large data files will be transmitted to shore or carried from the ship at the end of the project.
- (2) The ship CO completes data transmittal or other chain of custody documentation and a copy of each is retained on the ship and will accompany the data media.

(A) Acknowledgment and Acceptance

- (1) Signatures on this document acknowledge each parties acceptance of the data submission responsibilities outlined in this section.

3.5 Shipboard Data Acquisition and Stewardship Procedures

- (A) Chief Scientist/Principal Investigator – Draft Project Instructions, Collect Data, Define Metadata, and Submit Processed Data**

The CS/PI shall:

- (1) Include a section entitled "Disposition of Data and Reports" in the Project Instructions.
 - (a) This section shall state that the CS/PI is responsible for the collection, management, and archiving of all project-specific data in accordance with NOAA's Administrative Order (NAO) 212-15 - Management of Environmental Data and Information.
- (2) Clearly identify in the "Disposition of Data and Reports" the data sets generated during the project and classifications of data as either OMAO Data or Program Data. OMAO is required to archive OMAO data and the Program is required to archive Program Data. Programs will archive their data following their own internal procedures.

- (3) Clearly identify in the “Disposition of Data and Reports” Section 5 of the Project Instructions all data that NOAA will publicly release and all data that NOAA will not publicly release along with responsible parties for each data set.
 - (4) Assign an indefinite date for public release by the proper authorities for data having homeland/national security, cultural heritage, or protected resources.
 - (5) Document in the Project Instructions the specific justification for non-release of data, as well as the authority responsible for the non-release decision.
 - (6) The CS/PI shall work with shipboard personnel to collect data of the highest possible quality and to create project metadata. Unless otherwise excepted, the project data and metadata shall include a date for public release of data not to exceed 1 year after collection.
 - (7) As soon as practical and not to exceed 15 days following the completion of the project, the CS/PI shall obtain a copy of raw data collected with OMAO-owned instruments.
 - (8) The CS/PI shall provide all project-specific processed data with corresponding project metadata to a data archive within 1 year of collection. In addition, the CS/PI shall submit, when available, data event logs, Project Instructions, survey reports, and other high-utility documentation to this archive.
 - (9) Upon receiving evidence (preferably an accession number or a digital object identifier) that the project-specific processed data has been properly archived following NOAA guidelines with metadata, the CS/PI’s responsibility for archival is complete.
 - (10) The CS/PI shall be responsible for all data generated from instruments not owned by OMAO. Future opportunities to participate in data collection activities, as a CS/PI aboard a NOAA ship, may require verification from a data archive that project-specific processed data with project metadata were delivered within 1 year of collection.
- (B) Commanding Officer/Master - Submit Raw Data to NCEI and Data Disposition
- (1) Depending on connectivity, and preferably not to exceed 60 days following the completion of each cruise/project, the CO shall ensure all OMAO-collected data, corresponding project metadata, and Project Instructions are submitted to NCEI.
 - (a) These data include all raw data collected with OMAO-owned and scientific party-provided instruments that OMAO is responsible for per the Project Instructions, as well as any processed data available at the time of submission.

- (2) The CO or the CO's designee shall notify NCEI electronically when the data are ready for transfer. This procedure does not relieve the CS/PI from their responsibility to provide all project-specific data and project metadata to a data archive within 1 year of data collection.
 - (3) The CO's responsibility for archiving the data is complete upon receiving confirmation from NCEI that raw data and project metadata are archived (preferably an accession number or a digital object identifier).
 - (4) Policy for implementing Appendix B Section 3.5 is outlined in OMAO Policy 1102-38 Shipboard Data Acquisition and Stewardship.
 - (5) For each project, the CO shall ensure that all OMAO-owned instruments are acquiring high-quality data. OMAO instruments should be acquiring data at all times unless it interferes with the specific project, violates rules/laws/policy, or is due to another reason specified in the SDAL Ship Operations Log for that sea day.
- (C) OMAO Environmental Data Acquisition Manager
- (1) The EDAM plans, directs, and implements policies and procedures to standardize the acquisition, safeguarding, and submission of high quality environmental, water column, and bathymetric data by NOAA Ships.
 - (2) The EDAM will validate and monitor publication of the appropriate metadata in the NOAA archive, ensure the data is publicly available by the agreed date of public release, and assess current digital inventories of all published OMAO owned data sets.
 - (3) The EDAM will ensure proper data stewardship and implementation of the terms of the submission agreements, address policy requirements, and adopt procedural directives throughout the data lifecycle.

(D) NCEI Data Manager - Archive and Publish Data at NCEI

- (1) After confirming that raw data and project metadata received from the CO or the CO's designee are valid, a DM will archive them at NCEI and then return confirmation (preferably an accession number or a digital object identifier) to the CO and/or the CO's designee and the OMAO Data Manager.
- (2) A DM will validate and publish metadata, archive appropriate data in accordance with data archival best practices, make the data publicly available by the agreed date of public release, safeguard non-public, restricted data (i.e., data with homeland/national security, cultural heritage, or protected resources value), and maintain current digital inventories of all public data.
- (3) NCEI will make publicly available all unrestricted raw and processed data (i.e., all data with no homeland/national security, cultural heritage, or protected resources value) no sooner than the agreed date of public release and not later than 1 year after collection. Ships should account for NCEI's time to receive and process the data (~90 days) in this 1 year.
- (4) OMAO and NCEI will describe the technical details of implementing Section 5 in their Submission Agreements and appendices to this document. The DM will ensure to implement the terms of the submission agreements.

4. Foreign Nationals**4.1 Foreign National Guests Access to OMAO Facilities and Platforms**

All foreign national access to the vessel shall be in accordance with [NAO 207-12: Technology Controls and Foreign National Access](#). All LO personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. FNRS does not route through OMAO for access to OMAO facilities and platforms or for access to OMAO Information Technology systems. Therefore OMAO also requires the form [Request for Foreign National Access to OMAO Facilities and Platforms](#). The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their LO Controlled Technology Coordinators to assist with the process.

Foreign National access must be sought not only for access to the ship involved in the project but also for any Federal Facility access (NOAA Marine Operations Centers, NOAA port offices, USCG Bases, Navy Bases, commercial ports) that foreign nationals might have to traverse to gain access to and from the ship. The following are basic requirements.

Full compliance with NAO 207-12 is required.

(A) Responsibilities of the Chief Scientist

- (1) Provide the CO with the email generated by the Servicing Security Office granting approval for the foreign national guest's visit. This email will identify the guest's DSN

and Designated Escorts (if any) and will serve as evidence that the requirements of NAO 207-12 have been complied with.

- (2) Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
- (3) Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12) at least annually or as required by the Servicing Security Office.
- (4) Export Control - Ensure that approved controls are in place for any technologies subject to [Export Administration Regulations \(EAR\)](#) that will be brought aboard the ship.
- (5) The CO and the Chief Scientist will keep each other informed of controlled technologies belonging to the ship and to the scientific party and will work together to implement any access controls necessary to ensure no unlicensed export occurs.

(B) Responsibilities of the Commanding Officer

- (1) Ensure only those foreign nationals with DOC/OSY clearance are granted access.
- (2) Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.
- (3) Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
- (4) Ensure receipt from the Chief Scientist or the DSN of the Servicing Security Office email granting approval for the foreign national guest's visit. OMAO CTC will email the CO when access to the platform and IT assets has been approved.
- (5) Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
- (6) Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12) at least annually or as required by the Servicing Security Office.

(C) Responsibilities of the Departmental Sponsor

- (1) Export Control - The DSN is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
- (2) The DSN, if not sailing for the project, shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.

- (3) Ensure completion and submission of NAO 207-12 (Certification of Conditions and Responsibilities for a Foreign National) within 3 days of the FN's arrival onboard the ship.

5. Hazardous Materials

5.1 Policy and Compliance

The Chief Scientist is responsible for complying with OMAO Procedure 0701-22 Visiting Scientists' Chemicals and Related Hazardous Materials (Mission HAZMAT). 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, Safety Data Sheets (SDS), appropriate spill cleanup materials (i.e., 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.

- (A) Per OMAO Procedure 0701-22, the scientific party will include with their Project Instructions and provide the CO of the respective ship 30 days before departure:
 - (1) List of chemicals by name with anticipated quantity;
 - (2) List of spill response materials, including neutralizing agents, buffers, and absorbents;
 - (3) Chemical safety and spill response procedures, such as excerpts of the program's Chemical Hygiene Plan or SOPs relevant for shipboard laboratories; and
 - (4) For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify the ship's Operations Officer regarding quantity, packaging, and chemical to verify safe stowage is available.
- (B) During embarkation and before loading hazardous materials aboard the vessel, the scientific party will provide the CO or their designee:
 - (1) An inventory list (NF 57-07-11 or similar) showing actual amount of hazardous material to be brought aboard;
 - (2) An SDS for each material;
 - (3) 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; and
 - (4) Confirmation that chemical safety and spill response procedures were brought aboard.
- (C) During loading, the scientific parties will work with the ship's Operations Officer and the ECO to track mission hazmat brought aboard, using NOAA Form 57-07-11 or similar. SDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.
- (D) Underway, the 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.
- (E) Upon departure from the ship, the removal of mission hazmat and related products must

be verified and the Chief Scientist and Operations Officer or designee must initial the Mission HAZMAT Log (NF 57-07-11). A closed out copy of the Mission Hazmat Log will be provided to the scientific party upon request.

5.2 Chemical safety and spill response procedures

(A) ACID [A]

- (1) Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas.
- (2) Ventilate closed spaces before entering them.
- (3) Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.
- (4) Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
- (5) Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
- (6) Never return spills in original containers for re-use.
- (7) Neutralize spill area and washings with soda ash or lime. Collect in a non-combustible container for prompt disposal.
- (8) J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

(B) Mercury [M]

- (1) Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate dust. Sprinkle area with sulfur or calcium polysulfide to suppress mercury. Use Mercury Spill Kit if need be.

(C) Formalin/Formaldehyde [F]

- (1) Ventilate area of leak or spill. Remove all sources of ignition.
- (2) Wear appropriate personal protective equipment.
- (3) Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- (4) Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container.
- (5) Do not use combustible materials, such as sawdust.

5.3 Radioactive Materials and X-ray Generating Devices

The Chief Scientist is responsible for complying with OMAO Procedure 0701-10 Radioactive Material and X-ray Generating Device Use Aboard NOAA Ships. Documentation regarding those requirements is provided by the Chief of Operations, Marine Operations, upon request. Use of radioactive isotopes in areas under the jurisdiction of other countries may require

additional permits from the host countries. Port calls in other countries, while the ship is carrying radioactive isotopes, may also require special notification, compliance with host country regulations, and consent from the host.

(A) Radioactive Materials (RAM)

The Chief Scientist submits, at least three months in advance of a domestic project and eight months in advance of a foreign project start date, required documentation to MOC-CO, including:

- (1) NF 57-07-02 Request to use Radioactive Material Aboard a NOAA Ship.
- (2) Draft Project Instructions (only one copy required per project).
- (3) Licenses: Nuclear Regulatory Commission (NRC) Materials License (NRC Form 374) or State license with Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters (NRC Form 241).
- (4) Experiment and usage protocols, including spill clean-up and accidental exposure procedures.
- (5) If applicable, copies of any applications submitted and/or consent obtained from other countries.

(B) X-ray Generating Devices (XGD)

The Chief Scientist submits, at least three months in advance of a domestic or foreign project start date, required documentation to MOC-CO, including:

- (1) NF 57-07-19 Request to use X-ray Generating Device (XGD) Aboard a NOAA Ship.
- (2) Draft Project Instructions (only one copy required per project).
- (3) Experiment or usage protocol, including all proposed use parameters.
- (4) A current (within 1 year of the day the vessel is to leave port) performance test report for each device
- (5) Manufacturer specification sheet.
- (6) If applicable, copies of any applications submitted and/or consent obtained from other countries.

Scientific parties will follow responsibilities and requirements for storage and use, routine wipe tests, signage, and material disposal as outlined in OMAO Procedure 0701-10.

5.4 Lithium Batteries

Lithium batteries include:

- Lithium batteries,
- Lithium cells,
- Lithium battery-powered, or associated, systems or equipment, and
- Batteries that utilize lithium metal, alloys, or compounds.

Per OMAO Procedure 1102-04 Lithium Battery Safety Procedures, the Chief Scientist is responsible for:

(A) Providing a risk management plan to mitigate lithium battery concerns, including:

- (1) Packaging. How will the system/battery be packaged?

- (2) Storage facilities. How will the system/battery be stored from delivery to disposal?
 - (3) Transportation methods
 - (4) Operational use scenario (Include a complete description of how the system/batteries will be handled and used; what platform(s) will carry or deploy the system; location of recharging operations; recovery operations; number of units anticipated to be used; and, where appropriate, the sequence of events before system use/activation/deployment, etc.).
 - (5) Disposal information
- (B) Provide scientific party and Ship's Command with relevant SOPs related to equipment containing lithium batteries.
- (C) Include Safety Data Sheets and/or Technical Data Sheets in the hazardous materials inventory that is transmitted to the ship.
- (D) Notify the ship's Command/ECO when equipment arrives on-scene.

Appendix B References

Federal Regulations and Standards

- ASTM F1507 American Society for Testing and Materials - Standard Specifications for Surge Suppressors for Shipboard Use
- Export Administration Regulations (EAR)
- MIL-PRF-32167A Military Performance Specification - Transient Voltage Surge Suppressors
- UL 1449 Underwriters Laboratories - Safety Standards for Surge Protective Devices

NOAA Administrative Orders

- NAO 121-15-B Management of NOAA's Data and Information
- NAO 202-1106 NOAA Sexual Assault and Sexual Harassment Prevention and Response Policy
- NAO 207-12 Technology Controls and Foreign National Access
- NAO 212-15 Management of Environmental Data and Information
 - NOAA Data Documentation Procedural Directive
 - NOAA Data Management Planning Procedural Directive (preparation of DMPs)
- NAO 216-101 Ocean Data Acquisitions

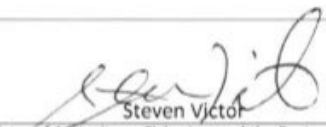
OMAO Policies and Procedures

- OMAO Policy 1008 Tuberculosis Protection Program
- OMAO Policy 1102-38 Shipboard Data Acquisition and Stewardship
- OMAO Procedure 0701-10 Radioactive Material and X-ray Generating Device Use aboard NOAA Ships
- OMAO Procedure 0701-22 Visiting Scientists' Chemicals and Related Hazardous Materials (Mission HAZMAT)
- OMAO Procedure 1102-03 Vessel Quarters
- OMAO Procedure 1102-04 Lithium Battery Safety Procedures
- OMAO Procedure 1102-20 General Rules and Minimum Requirements for Embarked Personnel
- OMAO Procedure 1201-080 NOAA Ship Familiarization

Appendix C Forms

- NOAA Form 57-07-02 Request to Use Radioactive Material Aboard a NOAA Ship
- NOAA Form 57-07-19 Request to Use X-ray Generating Devices (XGD) Aboard a NOAA Ship
- NOAA Form 57-10-02 Tuberculosis Screening Document
- NOAA Form 57-10-01 Health Services Questionnaire (NHSQ)
- NRC Form 374 Nuclear Regulatory Commission Materials License
- NRC Form 241 Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters
- Request for Foreign National Access to OMAO Facilities and Platform

Appendix D Environmental Compliance, Permits, and Diplomatic Clearances

	MINISTRY OF AGRICULTURE, FISHERIES, AND THE ENVIRONMENT P.O. BOX 100 REPUBLIC OF PALAU		Permit # 25-10 VALIDITY DATE 05/19/25—12/31/25
	MARINE RESEARCH PERMIT		
The following permit owner and associates are hereby accorded all the privileges and responsibilities associated with possession of the Marine Research Permit, as set for the in the Regulations on the Collection of Marine Resources for Aquaria and Research and the Marine Protection Act of 1994 as amended.			
PERMIT OWNER			
Note: Declare all Collected Specimen Prior to Shipment at the Bureau of Fisheries Office	Name: <u>Kelley Suhre</u> <u>NOAA Office Ocean Exploration and Research</u> Address <u>1315 Easr-West Highway, SSMC3 #2352</u> <u>Silver Spring, MD, 20910-3282</u>		
	Research Members Team Leader: Kelley Suhre Attached list		
	Permit Conditions Total allowable specimens to be collected not to exceed listed number and weight per species as indicated in permit application. Follow all related laws and regulations and to obtain necessary/required state permits.		
 Steven Victor Ministry of Agriculture, Fisheries, and the Environment		<u>06-26-2025</u> Date	



Department of Foreign Affairs Federated States of Micronesia

DFA-LSR-182-25
April 28, 2025

The Department of Foreign Affairs of the Federated States of Micronesia presents its compliments to the Embassy of the United States of America in the FSM and has the honor to provide the enclosed copy of the research permit issued to research vessel NOAA Okeanos Explorer.

The Department has the further honor to request the Embassy's assistance in forwarding the enclosed permit to the recipient.

The Department of Foreign Affairs of the Federated States of Micronesia avails itself of this opportunity to renew with the Embassy of the United States of America in the FSM the assurances of its highest consideration.

Palikir, Pohnpei

Enclosure:





RESEARCH AND TRAINING PERMIT FOR THE EXCLUSIVE
ECONOMIC ZONE OF THE FEDERATED STATES OF
MICRONESIA

PERMIT NO: FM25-US20251RS-26107

EFFECTIVE DATE: 01 May 2025

EXPIRATION DATE: 31 December 2025

VESSEL NAME: RV NOAA OKEANOS EXPLORER
NAME OF PERMIT HOLDER: NOAA
TYPE OF VESSEL: RESEARCH
RADIO CALL SIGN: WTDH
COUNTRY OF REGISTRATION: US
REGISTRATION NUMBER: MMSI: 369888000

YEAR BUILT:	1988	GROSS TONNAGE:	2312
LENGTH:	224	ENGINE HORSEPOWER:	1600 Kilowatt
		AUTHORIZED CREW SIZE:	27

OPERATING CONDITIONS ARE ON THE REVERSE SIDE OF THIS PERMIT



18 Mar 2025

DATE ISSUED

Limanman Helgenberger,
Acting Executive Director
APPROVED BY:

NATIONAL OCEANIC RESOURCE
MANAGEMENT AUTHORITY

PERMIT SHALL BE PROMINENTLY DISPLAYED IN WHEELHOUSE OF THE VESSEL

Application ID: 1b717dcb-ebc5-4592-b859-acc952a13df

OPERATING CONDITIONS

1. This Permit is valid only during the specified Effective and Expiration dates above.
2. Research and Survey within the 12 miles of the FSM is prohibited unless authorized by the State concerned.
3. This permit shall be displayed prominently in the wheelhouse of the vessel.
4. A copy of the Research or Survey report shall be submitted to the FSM.
5. This permit is not transferable.

Application ID: efe0ca55-7b1b-4a96-a403-d7b16fb3af96

Categorical Exclusion (CE) Evaluation Worksheet

Project Identifier: EX2507

Date Review Completed: 8/12/2025

OAR NEPA Project Lead: Amanda Maxon, Environmental Compliance Specialist, Contractor,
NOAA Office of Ocean Exploration and Research

OAR Functional Area: OER

Worksheet File Name: 2025-08-OER-E3-EX2507

Step 1. CE applicability

- **Is this federal financial assistance, including via grants, cooperative agreements, loans, loan guarantees, interest subsidies, insurance, food commodities, direct appropriations, and transfers of property in place of money?**

no

- **What is the proposed federal action?**

The proposed federal action is for NOAA's Office of Ocean Exploration and Research (OER) to conduct the EX2507 expedition, Beyond the Blue: Palau Mapping 3, focused on deepwater mapping (depths >200 meters) in the Exclusive Economic Zone (EEZ) of Palau, Guam, and the nearby high seas. Transit mapping may be conducted within the EEZ of the Federated States of Micronesia utilizing NOAA Ship Okeanos Explorer's deepwater sonar systems as the ship transits from Guam to Palau.

The expedition is scheduled to begin on or around September 19, 2025, in Guam and conclude on or around October 8, 2025, in Koror, Palau. The exact start and end dates may vary by a few days to several weeks depending on weather and other logistical considerations. The expedition will span approximately 20 days at sea and mapping operations will be conducted continuously 24 hours per day.

Planned and proposed operations include the following:

- Deepwater mapping using Okeanos Explorer's suite of sonar systems, including the Kongsberg EM 304 multibeam sonar, EK60/EK80 split-beam sonars, Knudsen 3260
- Chirp sub-bottom profiler, and Teledyne acoustic doppler current profilers;
- Deployment of expendable bathythermographs (XBTs) in support of sonar mapping;
- Conductivity, temperature, and depth (CTD) casts to assess oceanographic conditions and validate system performance;
- Continuous ship-to-shore communications via high-bandwidth satellite telepresence, enabling real-time shore-based participation;
- Water samples collected via the CTD rosette system.

This expedition will serve as a mapping expedition to validate the performance of newly integrated mission equipment, support personnel training, mapping, eDNA and CTD operations, and to map the marine regions of Palau, Guam, and surrounding high seas. Water samples may be collected via CTD casts for eDNA analysis in partnership with the Palau International Coral Reef Center (PICRC), Palau National Marine Sanctuary, and within Guam. Although the collection of other biological samples is not planned, any organism that inadvertently attaches to or is caught in the CTD system will be preserved and made publicly available for research. Any data acquired will be made publicly available. We intend to operate with full transparency and close collaboration with PICRC while operating within Palau's marine region.

EX2507 will also gather exploratory baseline data to characterize deep-sea habitats and support regional science and management needs. Mapping operations will address known data gaps and inform ongoing initiatives including the National Strategy for Mapping, Exploring, and Characterizing the U.S. EEZ (NOMECS Strategy), the Seabed 2030 project, the Deep-Sea Coral Research and Technology Program's Pacific Islands initiative, and U.S. Department of State regional priorities.

Transit routes will be strategically selected to maximize mapping coverage in support of Seabed 2030 and the NOMECS Strategy which seek to create a complete map of the global ocean floor by 2030. The actions under this NEPA CE have independent utility and have not been inappropriately segmented from a larger federal action for review.

3. Which class of CE in Appendix E of the NAO 216-6A Companion Manual is applicable to this action and why?

- a. E3: Activities to collect aquatic, terrestrial, and atmospheric data in a non-destructive manner.
- b. to collect aquatic, terrestrial, and atmospheric data in a non-destructive manner. The expedition will utilize active acoustic sound sources, expendable sensors, cabled scientific instruments, and a limited number of water samples to collect baseline information from unexplored deep-water areas (>200 meters) within the EEZ of Palau,

Guam, and nearby high seas. Contingency mapping may be conducted within the EEZ of the Federated States of Micronesia using NOAA Ship Okeanos Explorer's deepwater sonar systems in the event of unforeseen circumstances such as inclement weather. The expedition may include calibration of mapping sonars to collect aquatic data in a non-destructive manner, documenting the physical and biological characteristics of the environment. Water samples may be collected via CTD cast for eDNA analysis in partnership with PICRC and Palau National Marine Sanctuary. Any data acquired will be made publicly available to Palau. The expedition will use CTD instruments, deploy XBTs, and conduct cup-shrinking activities for scientific outreach. The deployment and retrieval of these technologies will follow industry standards and all applicable provisions under the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), and Magnuson-Stevens Fishery Conservation and Management Act (MSA) to mitigate potential adverse impacts on marine life. Local and regional regulatory requirements will also be observed. All activities are temporary, cause no permanent environmental changes, have negligible impacts, and follow best practices.

Step 2. Extraordinary Circumstances Consideration

4. Explain whether the action would result in considerable adverse effects on human health or safety.

The proposed activities aboard NOAA Ship Okeanos Explorer will primarily take place in remote deep-sea regions (depths >200 meters) offshore of Palau and Guam's EEZ, within adjacent high seas, and extending into contingency and transit areas located in the EEZ of the Federated States of Micronesia. Operations are focused on underwater mapping and oceanographic data collection, with no human presence in the operational areas except for personnel aboard the vessel. The vessel transits through different depths as it moves from the ports of call to the areas of activities in deeper waters. These actions are not expected to affect human health or safety.

5. Explain whether the action result in considerable adverse effects on an area with unique environmental characteristics.

While operations will occur within the EEZ of Palau and Guam (with plans for contingency transit through the EEZ of the Federated States of Micronesia) any effects will be negligible. Acoustic mapping, CTD operations, and XBT deployments would not cause any permanent or more than negligible impacts on the seabed or within the water column. XBTs will likely be deployed once every three to six hours to ensure accurate bathymetric data collection. The very fine copper wire connecting the XBT probe to the instrument onboard the ship is extremely easy to break and does not present an entanglement risk to protected species in the areas of operation.

Operations are well-documented and follow accepted best management practices for all activities conducted aboard the vessel, ensuring that any impacts remain negligible.

6. Explain whether the action would result in considerable adverse effects on species or habitats protected by the Endangered Species Act, Marine Mammal Protection Act, Magnuson-Stevens Fishery Conservation and Management Act, National Marine Sanctuaries Act, or Migratory Bird Treaty Act.

The activities are not likely to adversely affect species or habitats protected by the laws and regulations listed above. As outlined in response to Question 11, NOAA OER has completed consultations and evaluations in accordance with the MMPA, ESA, and MSA. These reviews concluded that the federal actions proposed by OER will not result in violations of any Federal, State, or local environmental laws or requirements. Operations conducted by NOAA Ship Okeanos Explorer will abide by the Best Management Practices (BMPs) and Mitigation Measures developed in coordination with various federal and regulatory agencies to ensure that operations in these sectors would not result in any activities having adverse effects on the species or habitats protected under the above regulations and laws. Before each expedition, expedition coordinators and vessel crews receive BMPs and mitigation guidance to ensure the activities follow the actions developed to minimize or limit adverse effects on species or habitats in the proposed action area.

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

The expedition operations are designed to follow FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it) to ensure generation, use, storage, transport, and disposal of such substances will not result in significant impacts.

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

The proposed action will not cause direct or indirect adverse effects, as no activities will occur near any properties listed or eligible for the National Register of Historic Places, or on Tribal lands, cultural or religious sites.

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

Based on prior operations and established mitigation measures, this action is unlikely to contribute to the introduction, continued presence, or spread of noxious weeds or non-native invasive species in the region. During EX2507, NOAA Ship Okeanos Explorer will only make landfall in Koror, Palau, and Guam and will operate primarily in offshore deepwater environments. The ship and OER mission teams comply with all applicable local and federal regulations regarding the prevention or spread of invasive species.

To minimize the risk of biological transfer between sites, all overboard equipment will be thoroughly rinsed with fresh water and completely air dried after each deployment. The Engineering Department aboard NOAA Ship Okeanos Explorer attends yearly Ballast Management Training in accordance with NOAA Form 57-07-13 NPDES VGP Annual Inspection and Report to prevent the introduction of invasive species.

10. Explain whether the action would result in a potential violation of Federal, State, or local law or requirements imposed for protection of the environment.

OER has taken measures to ensure that any effects on species or habitats protected by the ESA, MMPA, and MSA meet the definition of negligible. The proposed actions will not result in any Federal, State, or local law violations or requirements imposed for protection of the environment.

Under the ESA, OER received a Programmatic Letter of Concurrence and Project Design Criteria (NMFS No: OPR-2021-03453) from the NOAA Fisheries ESA Interagency Cooperation Division on March 14, 2022. This letter concurs with OER's determination that the proposed action "may affect, but is not likely to adversely affect" ESA-listed species or their designated critical habitats. On March 25, 2025, NOAA's Office of Protected Resources reinitiated consultation to address new technologies, species, and geographic areas not covered under the initial Programmatic Letter of Concurrence (NMFS No: OPR 2021-03453) or amendments. NMFS concurs with OER that the effects of OER's changes in marine operations and action area under the recent reinitiation are not likely to adversely affect whales, seals and sea lions, and invertebrates. NMFS

also concurs with OER that the effects of OER's changes in marine operations and action area considered in the reinitiation are not likely to adversely affect the following designated or proposed critical habitat: whales, seals and sea lions, sea turtles. Conclusions for listed and proposed species and designated and proposed critical habitat included in the 2022 consultation and 2023 amendment have not changed.

In accordance with the MSA, OER requested an Essential Fish Habitat (EFH) consultation under Section 304. The EFH Letter of Concurrence was received on April 1, 2024 from the Assistant Regional Administrator for the NOAA Office of Habitat Conservation Division stating that the FY24 through FY26 expeditions will not adversely impact EFH critical habitats for species that reside in those areas.

11. Explain whether the action would have the potential to establish a precedent for future action or an action that represents a decision in principle about future actions with potentially significant environmental effects.

The decision to proceed with this action will not set a precedent for future actions or represent a decision in principle that could lead to actions with potentially significant environmental effects. Each expedition conducted by NOAA Ship Okeanos Explorer is considered independent, with no direct connection to future federal or non-federal actions. This action will not result in growth-inducing changes, compel future activities that may have environmental impacts, or limit options for future actions. Therefore, it is unlikely to create a precedent that would affect future environmental assessments or decisions.

CE Determination

☒ I have determined that a Categorical Exclusion is the appropriate level of NEPA analysis for this action and that no extraordinary circumstances exist that would require preparation of an environmental assessment or environmental impact statement.

☐ I have determined that an environmental assessment or environmental impact statement is required for this action.

OAR Decision Maker's Name: Kristen Crossett

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Date: 2025.08.26 14:56:53 -04'00'

OAR Decision Maker's Position/Title: Acting Deputy Director, NOAA Ocean Exploration and Research

Date Signed: 8/26/2025



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

Jennifer Lukens
Deputy Director
National Oceanic and Atmospheric Administration
Office of Ocean Exploration and Research
Silver Springs, MD 20910

April 1, 2024

Dear: Dr. Lukens:

The National Marine Fisheries Service, Pacific Islands Regional Office (NMFS) received a request for an essential fish habitat (EFH) consultation on March 14, 2024 from NOAA's Office of Exploration and Research (OER) for the "Beyond the Blue" campaign, the fisheries and ecosystem research that OER will conduct and/or fund from 2024 – 2026 across the Pacific region. OER has proposed to include and adhere to best management practices (BMPs) and minimization measures that when implemented would be suitable to ensure that adverse effects to EFH would be minimal. NMFS appreciates the opportunity to review the proposed permit action pursuant to the EFH provisions (Section 305(b) as described by 50 CFR 600.920) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. 1855(b)). After reviewing the consultation enclosures, we have determined that there may be adverse effects to EFH. We provide conservation recommendations under the EFH provisions within Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to help the permit applicant to avoid and minimize adverse effects to EFH.

Project Description

OER's proposed marine operation activities are intended to support initiatives including the Seabed 2030 and the National Strategy for Ocean Mapping, Exploration, and Characterization. To support these initiatives, the focus of the "Beyond the Blue" campaign will be to fill the gaps in basic understanding of deep-ocean and seafloor data, information, and overall awareness within the U.S. Exclusive Economic Zone (EEZ) and international waters. Work is expected to commence in the Pacific Ocean starting in April 2024, and extend through to December 2026.

Expeditions will be conducted primarily on *Okeanos Explorer*, *Nautilus*, and other vessels of similar or smaller size. Activities will be funded by OER and will provide real-time or near real-



time, open access deep-water oceanographic data that would benefit NOAA, research and education institutions, resource managers, and the general public. These same technologies are also used on other OER supported projects and oceanographic research platforms.

Okeanos Explorer conducts four types of expeditions annually:

1. Mapping survey expeditions: These expeditions conduct 24/7 seafloor mapping using hull-mounted sonars, and conductivity-temperature-density (CTD) rosette casts. Additional technologies are occasionally brought on board to acquire more data in the area of interest;
2. Telepresence-enabled remotely operated vehicle(s) (ROV), uncrewed surface vessel(s) (USV), and autonomous underwater vehicle(s) (AUV) expeditions. During these expeditions, ROV, USVs, and AUVs dives or deployments are conducted for several hours to several days. When the ROV is not in the water, the ship conducts mapping and occasional CTD rosette casts;
3. Shakedown expeditions: These expeditions are to test mapping capabilities; ROV, USV, AUV, and CTD systems; and
4. Technology Testing Expeditions: These expeditions are planned to test novel and emerging technologies.

E/V Nautilus conducts very similar cruise types to those above, however more frequently deploys additional scientific equipment including human occupied vehicles, profilers, landers, profiling floats, and other cabled equipment. Other research vessels also conduct these same activities, however, most are not equipped with telepresence technology.

On average each year, approximately five *Okeanos Explorer* expeditions are dedicated to mapping, while up to four expeditions combine ROV, and/or USVs and AUVs work and overnight mapping. The duration of these expeditions typically range from 7 to 30 days. Shakedown and emerging technology expeditions range from 7 to 30 days in duration. In addition, OER-supported expeditions may be conducted based on available funding and vessel(s) availability.

OER also occasionally supports USV operations that are either dedicated missions deployed from shore, or deployed from a ship. Several of these deployments may be supported by OER each year and each deployment ranges from 1 to 60 days.

Proposed Action Area

The proposed activities will be conducted in unknown and poorly known marine environments around the Central, Southern, Eastern, and Western Pacific Ocean in depths of 656 feet (200 meters) and deeper, and the areas transited by vessels between ports, including but not limited to ports of calls located in North America and the Pacific Islands. Transit mapping operations are also planned between all areas mentioned, including the high seas.

In the Pacific Islands and Central Pacific, NOAA OER will primarily target areas with lower percentage of mapping coverage. Complementary exploration opportunities, activities and operations conducted by partners but funded by OER, will include systematic mapping in Howland/Baker, Jarvis, Wake Island, Johnston Atoll, and American Samoa. Focal areas for the *Okeanos Explorer* are expected to include Kingman and Palmyra and Johnston Atoll, and deep waters surrounding the Northwest Hawaiian Islands and along the Emperor Seamount chain.

Essential Fish HabitatPelagic FEP

The marine water column extending from the surface to a depth of 656 feet (200 meters) from the shoreline to the outer limit of the EEZ for eggs and larvae, and to a depth of 3,280 feet (1,000 meters) for adults, in the pelagic environment have been designated as EFH under the Western Pacific Fishery Management Council's Pelagic Fishery Ecosystem Plan.

Pacific Remote Island Area

The marine water column from the surface to a depth of 3,280 feet (1,000 meters) from the shoreline to the outer boundary of the EEZ (230 miles), and the seafloor from the shoreline out to a depth of 328 feet (100 meters) around the islands and atolls of the Pacific Remote Islands, have been designated as EFH. As such, the water column and submerged bottom habitats of around each of the Pacific Remote Island Areas are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's Pacific Remote Island Areas Fishery Ecosystem Plan (FEP). The MUS and life stages found in these waters include: eggs, larvae, juveniles, and adults of Coral Reef Ecosystem MUS, Bottomfish MUS (BMUS), and Crustacean MUS (CMUS); and juveniles and adults of Pelagic MUS (PMUS).

Mariana Archipelago

The marine water column from the surface to a depth of 3,280 feet (1,000 meters) from shoreline to the outer boundary of the EEZ, and the seafloor from the shoreline out to a depth of 1,313 feet (400 meters) around each of the Mariana Islands, have been designated as EFH. As such, those waters are designated as EFH and support various life stages for the MUS identified under the Western Pacific Fishery Management Council's Mariana Archipelago Fishery Ecosystem Plan. The MUS and life stages may include eggs, larvae, juveniles, and adults for BMUS, PMUS, and CMUS.

Hawai'i Archipelago

The marine water column from the surface to a depth of 3,280 feet (1,000 meters) from shoreline to the outer boundary of the EEZ, and the seafloor from the shoreline out to a depth of 2,296 feet (700 meters) around each of the Hawaiian Islands, have been designated as EFH. As such, the water column and bottom of the Pacific Ocean near each of the islands and atoll of the Northwestern Hawaiian Islands, and the surrounding waters and submerged lands are designated as EFH and support various life stages for the MUS identified under the Western Pacific Fishery Management Council's Hawai'i Archipelago FEP. The MUS and life stages found in these waters include larvae, juveniles, and adults of BMUS, PMUS, and CMUS.

American Samoa Archipelago

The marine water column extending from the surface to a depth of 3,280 feet (1,000 meters) from the shoreline to the outer limit of the EEZ, and the seafloor to a depth of 1,313 feet around the islands of American Samoa have been designated as EFH. As such, the water column and bottom of the nearshore Pacific Ocean surrounding the islands and atolls in American Samoa are designated as EFH and support various life stages for the MUS identified under the Western Pacific

Fishery Management Council's American Samoa Archipelago FEP. The MUS and life stages found in these waters include: eggs, larvae, juveniles, and adults of BMUS.

Specific types of habitat considered as EFH for the all of the above FEPs include coral reef, patch reef, hard substrate, artificial substrate, seagrass beds, soft substrate, lagoon, estuarine, surge zone, deep slope terraces and pelagic/open ocean.

Potential Adverse Effects

There is the potential for adverse effects to EFH due to vessel transits (including tender boats), from the deployment and recovery of instruments (including ROVs, USVs, etc.), and the collection of biological and geological samples. Adverse effects may be a result of physical damage, turbidity, chemical contamination, and the introduction of invasive species.

Physical Damage/Removal (physical stressor): Physical damage to principle benthic organisms may result in breakage or dislocation (i.e., mortality). Corals are particularly vulnerable to physical damage because their slow-growing carbonate skeleton is relatively brittle and their polyps are easily damaged. Reduction of topographic complexity in the habitats of the coral reef ecosystem reduces biodiversity and productivity (Alvarez-Filip et al. 2009). Literature reviews (Newell et al., 1998; ICES 2016) suggest that the successional marine community requires at least six to eight months to recover back to initial levels after removal.

Turbidity: Increased turbidity can cause smothering of benthic species and block sunlight necessary for species that rely on photosynthesis. For corals, turbidity has been shown to reduce species diversity, change growth patterns, and reduce growth and survival (Rogers 1990). For fish, turbidity is less likely to cause significant impacts because of their mobility, but some effects are still possible. Fish may be displaced from their normal home range which could result in negative intra- and interspecies interactions and impact fitness, leading to lower reproductive success and a lower ability to find prey or avoid predators (Kjelland et al. 2015).

Chemical Contamination (pollution stressor): Chemical pollutants can have a variety of lethal and sublethal effects on habitat-forming marine organisms, including alteration of growth, interference with reproduction, disruption of metabolic processes, and changes in behavior. These adverse effects can cascade through ecosystems, altering species composition and ecosystem functions and services. Some pollutants are environmentally persistent and can take years or even decades to biodegrade, and others can bioaccumulate or biomagnify through the food chain, eventually posing a direct threat to human health. Petroleum contamination can adversely affect coral, with results including mortality, inhibition of reproduction, reduced calcium deposition, alteration of physiological processes, tissue loss, and reduced carbon fixation (Turner and Renegar 2017).

Introduction of invasive species (biological stressor): Introduced species are organisms that have been moved, intentionally or unintentionally, into areas where they do not naturally occur. Invasive species may rapidly increase in abundance to the point that they come to dominate their new environment, creating adverse ecological effects to other species of the ecosystem and the functions and services it may provide (Goldberg and Wilkinson 2004). Invasive species can decrease species diversity, change trophic structure, and diminish physical structure, but adverse effects are highly variable and species-specific.

*OER-proposed BMPs*Physical impact to benthic habitat

- All vessels in coastal waters will operate in a manner to minimize propeller wash and seafloor disturbance, and transiting vessels should follow deep water routes, as practicable.
- Except in an emergency, the vessel will not anchor while at sea.
- Vessels will avoid anchoring on hard-bottom and coral habitat.
- Vessels will avoid anchoring in areas containing seagrass or eelgrass.

Turbidity

- Whenever possible, cabled instruments deployed will not be allowed to contact the seafloor. Those that do contact the seafloor will only do so for the minimal time required to achieve scientific objectives.
- The vessel will employ the use of dynamic positioning during ROV dives, or other vehicle/instrument operations that would otherwise require anchoring.
- Vehicles/instruments will be operated in a manner to avoid seafloor disturbance, and setting the vehicles/instruments on the seafloor will be held to a minimum. For those situations when the vehicle/instrument does make contact with the seafloor, visual observations will be made to confirm that the area the vehicle/instrument is set down on does not include corals or other fragile animals that can reasonably be avoided.
- When possible, rock samples will be selected in a way to minimize disturbance to the surrounding environment and to minimize the take of attached organisms.
- Landers will not be deployed in, or adjacent to, areas with benthic environments designated as EFH or Habitat Areas of Particular Concern (HAPC).
- OER will not conduct operations with these types of bottom-impacting AUVs in designated EFH and HAPC

Introduction of invasive species

- Avoid discharge of ballast water in designated protected habitats.
- All vessels will use anti-fouling coatings.
- Clean hull regularly to remove aquatic nuisance species.
- Avoid cleaning of hull in protected habitats.
- After each instrument/vehicle is used, the vehicles/instruments will be brought back onboard and thoroughly sprayed with freshwater and allowed to air dry before the next dive. Though marine organisms should not survive this process, the instruments/vehicles are thoroughly inspected prior to every dive and checked for the presence of biological organisms to prevent the spread of invasive species from one location to another.

Vessel waste and discharge

- All vessels operating in areas where protected habitats are known to be present in the region will continue to follow the International Convention for the Prevention of Pollution from Ships discharge protocols.

- The use of detergents and other pollutants which may be washed into the marine environment will be avoided or held to a minimum.
- Avoid use of cleaners with nonylphenols.

OER Determination

OER has determined that implementation of the various BMPs listed above during the 2024 – 2026 fisheries and ecosystem research conducted and/or funded by OER will be sufficient to avoid or minimize adverse effects to EFH. OER seeks NMFS concurrence with this determination.

NMFS Concerns

NMFS expects that many potential adverse effects from the “Beyond the Blue” campaign will be reduced when implementing the OER-imposed BMPs. However, NMFS remains concerned that there is a risk of unavoidable loss of EFH due to the potential degradation of the quality of EFH from direct physical impacts from the potential use of anchors. To further avoid and minimize the risk to EFH in the project area, NMFS offers the conservation recommendations below.

Conservation Recommendations

NMFS offers the following conservation recommendation to the OER pursuant to 50 CFR 600.920 so that potential adverse effects from the proposed project activities are avoided, minimized, offset for, or otherwise mitigated:

Conservation Recommendation 1: Inspect all equipment prior to beginning work each day to ensure the equipment is in good working condition, and there are no contaminant (e.g., oil, fuel) leaks. Work must be stopped until leaks are repaired and equipment is cleaned.

Conservation Recommendation 2: All AUV and submersible missions will have a plan that details the mission, geographic locations, and deployment and retrieval plans to minimize the potential for collisions and groundings and ensure proper retrieval.

Conservation Recommendation 3: As possible, a spill response kit should be kept on all boats while in operation in order to be able to respond rapidly in the event of a spill (gas, oil, etc.).

Conclusion

Please be advised that regulations (Section 305(b)(4)(B)) to implement the EFH provisions of the Magnuson-Stevens Act require that federal activities agencies provide a written response to this letter within 30 days of its receipt and at least 10 days prior to final approval of the activities. A preliminary response is acceptable if final activities cannot be completed within 30 days. The final response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the activity. If the response is inconsistent with our EFH Conservation Recommendations, an explanation of the reason for not implementing the recommendations must be provided.

NMFS greatly appreciates the OER’ efforts to comply with the EFH provisions of the Magnuson-Stevens Act for the proposed Jarvis Island project. NMFS has determined that while the OER’ proposed mitigation measures will help to avoid and minimize adverse effects to EFH, some unavoidable loss may still occur. NMFS provides the EFH conservation recommendation as described above to help OERS ensure that adverse effects to EFH included coral reef resources are avoided, minimized, offset for, or otherwise mitigated.

Please do not hesitate to contact Richard Hall at 808-725-5018 and or richard.hall@noaa.gov should you have any questions, comments, or require additional technical assistance.

Sincerely,

A handwritten signature in dark ink, appearing to read "Gerry Davis". The signature is fluid and cursive, with the first name "Gerry" being more prominent than the last name "Davis".

Gerry Davis
Assistant Regional Administrator
Habitat Conservation Division

cc by e-mail: Kelly Suhre, NOAA OER
Amanda Maxon, NOAA OER
Malia Chow, NOAA NMFS PIRO HCD
David Delaney, NOAA NMFS
Richard Hall, NOAA NMFS PIRO HCD PIRO HCD

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Richard Hall - NOAA Federal
to Kelley, Trish, David, Malia, Gerry, me

4:11PM (5 minutes ago)

Amanda,

The National Marine Fisheries Service (NMFS), Pacific Islands Regional Office (PIRO) received a request on March 14, 2024 for an essential fish habitat (EFH) consultation from NOAA's Office of Exploration and Research (OER) for the 2024 – 2026 "Beyond the Blue" campaign. PIRO completed that consultation on April 1, 2024. On July 17, 2024, OER requested a supplemental EFH consultation to cover additional activities that will be conducted on the NOAA vessel *Okeanos Explorer* which were not covered in the original consultation. Those new activities are deployment of plankton nets (specifically: Bongo nets) and the shrinking of styrofoam cups for educational purposes.

NMFS appreciates the opportunity to review the proposed additional campaign activities pursuant to the EFH provisions (Section 305(b) as described by 50 CFR 600.920) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. 1855(b)). NMFS has determined that the OER-proposed Best Management Practices (BMPs) are suitable to ensure that adverse effects to EFH will be no more than minimal for these supplemental activities. Therefore, NMFS will not provide additional conservation recommendations for these activities, thus satisfying the requirements of Section 305(b)(2)(D) of the Magnuson-Stevens Act.

Description of the Supplemental Activities

Cup Shrinking

Shrinking styrofoam cups is an education and outreach activity routinely performed onboard the *Okeanos Explorer*. There are two methods used to deploy the cups: one is attached to the Conductivity, Temperature, and Depth (CTD) rosette and the other is inside the Remotely Operated Vehicle (ROV) called Senios. The ROV has a specially built interior box to house the cups to ensure that they do not escape into the marine environment. When the ROV is not operational, the CTD rosette can be used similarly. When using the CTD, the cups are placed into a knotted drawstring woven mesh bag that is attached to the instrument's frame at multiple points using zip ties to ensure that the bag does not open or become detached during deployment retrieval. The bag used is sturdy and designed to interact with seawater without deteriorating the bag or the contents it contains.

Plankton tows

Plankton tows will be conducted using Bongo nets, which are a pair of nets that are mounted side-by-side on a frame which is towed off the fantail of the ship. The samples collected include but are not limited to eggs, larvae, and juveniles, of several fish species; micronekton; zooplankton; and mesozooplankton. When deployed, Bongo nets are towed at ~2 knots while being raised and lowered slowly through the upper 150 feet of the water column using a nylon line. One 15 to 25 pound vinyl coated lead weight is attached to the bottom of the Bongo net frame to ensure the net reaches the desired depth. Each deployment is less than an hour, and usually 1-2 deployments are conducted per sea day.

The nets are ring shaped with a small mesh width and a long funnel shape that is enclosed by a cod-end. Each Bongo net opening has a diameter of ~20 inches and a length of around 6.6 feet. The Bongo net mesh is 333 micron and 500 micron, which will primarily target larval fish and other larger micronekton. The size of organisms caught in this net ranges from 0.79 to 7.9 inches.

Proposed Action Area

The proposed supplemental activities will be conducted at irregular intervals as part of the 2024 – 2026 Beyond the Blue Campaign. As such, they will be conducted at various locations around the Central, Southern, Eastern, and Western Pacific Ocean.

Essential Fish Habitat

Pacific Remote Island Area Fishery Ecosystem Plan (FEP)

The marine water column from the surface to a depth of 3,280 feet (1,000 meters) from the shoreline to the outer boundary of the Exclusive Economic Zone (EEZ; 230 miles), and the seafloor from the shoreline out to a depth of 1312 feet (400 meters) around the islands and atolls of the Pacific Remote Islands, have been designated as EFH. Also the bottom habitat and water column within the EEZ bounded by latitude 29°–35° N and longitude 171° E–179° W between 656 and 1968 feet (200 and 600 meters). As such, the water column and submerged bottom habitats of around each of the Pacific Remote Island Areas are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's Pacific Remote Island Areas FEP. The MUS and life stages found in these waters include: eggs, larvae, juveniles, and adults of Coral Reef Ecosystem MUS (CRE-MUS), Bottomfish MUS (BMUS), Seamount Groundfish, and Crustacean MUS (CMUS); and juveniles and adults of Pelagic MUS (PMUS).

Mariana Archipelago FEP

The marine water column from the surface to a depth of 3,280 feet (1,000 meters) from shoreline to the outer boundary of the EEZ, and the seafloor from the shoreline out to a depth of 1,313 feet (400 meters) around each of the Mariana Islands, have been designated as EFH. As such, those waters are designated as EFH and support various life stages for the MUS identified under the Western Pacific Fishery Management Council's Mariana Archipelago FEP. The MUS and life stages may include eggs, larvae, juveniles, and adults for BMUS, PMUS, and CMUS.

Hawai'i Archipelago FEP

The marine water column from the surface to a depth of 3,280 feet (1,000 meters) from shoreline to the outer boundary of the EEZ, and the seafloor from the shoreline out to a depth of 2,296 feet (700 meters) around each of the Hawaiian Islands, have been designated as EFH. As such, the water column and bottom of the nearshore Pacific Ocean surrounding the islands and atolls in American Samoa are designated as EFH and support various life stages for the MUS identified under the Western Pacific Fishery Management Council's Hawai'i Archipelago FEP. The MUS and life stages found in these waters include larvae, juveniles, and adults of BMUS, PMUS, and CMUS.

American Samoa Archipelago FEP

The marine water column extending from the surface to a depth of 3,280 feet (1,000 meters) from the shoreline to the outer limit of the EEZ, and the seafloor to a depth of 1,313 feet (400 meters) around the islands of American Samoa have been designated as EFH. As such, the water column and bottom of the nearshore Pacific Ocean surrounding the islands and atolls in American Samoa are designated as EFH and support various life stages for the MUS identified under the Western Pacific Fishery Management Council's American Samoa Archipelago FEP. The MUS and life stages found in these waters include: eggs, larvae, juveniles, and adults of BMUS.

Specific types of habitat considered as EFH for the all of the above FEPs include coral reef, patch reef, hard substrate, artificial substrate, seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep slope terraces and pelagic open ocean.

Pelagic FEP

The marine water column extending from the surface to a depth of 656 feet (200 meters) from the shoreline to the outer limit of the EEZ for eggs and larvae, and to a depth of 3,280 feet (1,000 meters) for adults, in the pelagic environment have been designated as EFH under the Western Pacific Fishery Management Council's Pelagic FEP.

Adverse Effects

The proposed action may cause adverse effects to EFH from the potential exposure to chemical contaminants (e.g., hydraulic fluid, detergents), and the potential for the introduction of invasive species. Adverse effects to EFH from these impacts may range from temporary to permanent if not avoided or minimized.

Chemical Contamination (pollution stressor) There is a risk of chemical contamination from a leak associated with the instruments/vehicles used in these activities, and detergents or other contaminants related to cleaning the instruments/vehicles after recovery or from deck wash. Chemical pollutants can have a variety of lethal and sublethal effects on marine organisms, including alteration of growth, interference with reproduction, disruption of metabolic processes, and changes in behavior. In general, the impacts from contaminants in the marine environment is dependent on how long the chemical components persist and their tendency to bio-accumulate in the food web (van Dam et al. 2011). Some pollutants are environmentally persistent and can take years or even decades to biodegrade (Minton 2017). These adverse effects can cascade through ecosystems, altering species composition and ecosystem functions and services. Fortunately, many contaminants entering the marine environment are lighter than water (oil, gas, etc.), and thus float on the surface where much of it evaporates within a few days (Neff et al. 2000). To date, there have been few studies conducted on the adverse effects of oil on tropical fish, but decreased growth, altered behavioral responses, and changes in metabolic rate have been observed (Johnson et al. 1979; Kloth and Wohlschlag 1972).

Introduction of invasive species (biological stressor) There is a risk of an introduction of an invasive species from the re-deployment of the CTD, ROV, and the Bongo nets. Introduced species are organisms that have been moved, intentionally or unintentionally, into areas where they do not naturally occur. After introduction, invasive species can rapidly increase in abundance to the point that they come to dominate their new environment, creating adverse ecological effects to other species of the ecosystem and the functions and services it may provide (Goldberg and Wilkinson 2004). Invasive species can decrease species diversity, change trophic structure, and diminish physical structure, but adverse effects are highly variable and species-specific.

OER-proposed BMPs

In order to minimize the risk of impacts to EFH in the action area, OER has agreed to implement the following BMPs while undertaking the proposed supplemental activities:

Introduction of invasive species

- After each instrument/vehicle is used, the vehicles/instruments will be brought back onboard and thoroughly sprayed with freshwater and allowed to air dry before the next dive. Though marine organisms should not survive this process, the instruments/vehicles are thoroughly inspected prior to every dive and checked for the presence of biological organisms to prevent the spread of invasive or non-endemic species from one location to another.

Chemical runoff

- The use of detergents and other pollutants which may be washed into the marine environment will be avoided or held to a minimum.
- The use of cleaners with nonylphenols will be avoided.

Conclusion

NMFS has determined that the OER-proposed BMPs are suitable to ensure that adverse effects to EFH from the proposed supplemental activities will be no more than minimal. Therefore, NMFS will not provide additional conservation recommendations for these activities, thus satisfying the requirements of Section 305(b)(2)(D) of the MSA. This completes the OER's obligation to consult with our office under the EFH provision of the Magnuson-Stevens Act.

Thank you for coordinating on this proposed project. Feel free to contact me 808-725-5018 or at richard.hall@noaa.gov with any questions or comments.

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