

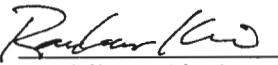



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

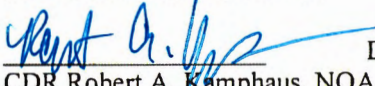
Papahānaumokuākea Marine National Monument
6600 Kalaniana'ole Highway Suite 300
Honolulu, Hawaii 96825

FINAL Project Instructions

Date Submitted: September 2, 2014
Platform: NOAA Ship *Hi'ialakai*
Project Number: HA-14-05
Project Title: PMNM Biogeography
Project Dates: Sept. 6, 2014 to Sept. 30, 2014

Prepared By:  Dated: 2 Sept 2014
Randall Kosaki, Ph.D.
Chief Scientist
NOAA/NOS/ONMS/PMNM

Approved By:  Dated: 02 Sep 2014
David Swatland
Acting Superintendent
NOAA/NOS/ONMS/PMNM

Approved By:  Dated: 3 SEP 2014
CDR Robert A. Kamphaus, NOAA
Commanding Officer
Marine Operations Center – Pacific Islands



I. Overview

A. Brief Summary and Project Period

The NOAA ship *Hi'ialakai* will be engaged as support for a Papahānaumokuākea Marine National Monument, National Ocean Service (NOS), NOAA project from September 6, 2014 until September 30, 2014 for a total of 25 sea days at Ni'ihau, Nihoa, Mokumanamana (Necker), French Frigate Shoals, Pearl and Hermes Atoll, and Midway Atoll. The ship will support SCUBA and snorkeler collections of reef fish, corals, other invertebrates, and algae for population genetics analysis; surveying and monitoring reefs and associated reef fish, as well as searching for invasive/alien species of coral and algae. The ship may also support a SCUBA-based maritime archaeological survey. These studies allow Federal and State resource managers to better understand the resources under their jurisdictions.

B. Service Level Agreements

Of the 25 DAS scheduled for this project, 25 DAS are funded by an NOS Line Office Allocation. This project is estimated to exhibit a High Operational Tempo.

C. Operating Area

The ship will conduct operations at Ni'ihau, Nihoa, Mokumanamana (Necker), French Frigate Shoals, Lisianski, Pearl and Hermes Atoll, and Midway Atoll.

D. Summary of Objectives

The ship will support SCUBA (including closed-circuit trimix technical dives, and open circuit dives) and snorkeler collections of reef fish, corals, other invertebrates, and algae for population genetics analysis; surveying and monitoring reefs and associated reef fish, as well as searching for invasive /alien species of coral and algae. These studies allow Federal and State resource managers to better understand the resources under their jurisdictions.

The ship will support SCUBA diver surveys for the purpose of detecting the presence of Alien Species (AS) with an emphasis on the snowflake coral (*Carijoa riseii*) and a red algae (*Hypnea musciformis*). This portion of the project will involve surveys of habitats believed suitable for AS, collections of individuals believed to be AS, and a general evaluation of the sampling design and methods utilized to survey AS. This work is in direct response to PMNM's Alien Species Action Plan and will assist Federal and State resource managers to better protect, control, eradicate and prevent the introduction of AS into the monument.

The ship will support deployment and recovery of camera bait stations called Baited Remote Underwater Video (BRUV). The twin cameras provide stereoscopic imaging which enables determination of fish size without sacrificing the fish. This study will allow Federal and State resource managers improve our understanding of changes in fish population size structures following the phase-out of commercial fishing in the NWHI in 2011.

The ship will support multibeam sonar operations in 40-100 m depth during non-diving hours to identify bathymetric features and locations as potential rebreather dive sites. The data will not be stored or processed; real-time screen grabs will suffice.

The ship will support apex predator tagging with acoustic transmitters and servicing of underwater instrumentation; SCUBA and snorkeler collections of reef fish, corals, other invertebrates, and algae for ecosystem characterizations. These studies allow Federal and State resource managers to improve our broad understanding of Monument ecology and assist in achieving Monument management priorities.

The ship will support scuba-based coral bleaching and disease surveys. A thermal anomaly detected by NOAA satellite data suggest that there is a high probability of coral bleaching and Lisianski, Pearl and Hermes Atoll, and Midway Atoll. Surveys will be conducted at these reefs. Opportunistic bleaching surveys will be conducted at other reefs if a coxswain and small boat support are available.

Additionally, the ship will support an ancillary project to conduct opportunistic multibeam sonar activities secondary to the daily small boat operations.

The coral reef ecosystem assessments and specimen collections will require support of diving operations (both SCUBA and snorkeling). Five small boats will be operating simultaneously during daylight hours to maximize productivity during the limited amount of time on site. A technical dive team consisting of 3-4 CCR divers and 2 non-diving topside support/divemasters will utilize HI-1, and a team of 2 safety support divers will utilize a 19 foot Safeboat to be provided by Papahānaumokuākea Marine National Monument. Divers conducting SCUBA surveys and collections will utilize HI-2 and a program-supplied 19 foot Safeboat. A two person coral bleaching survey team will utilize HI-3.

Objectives of the project are to:

1. Collect specimens of reef fishes and invertebrates for characterization of genetic diversity and connectivity for the purpose of understanding biological linkages supporting and maintaining Monument island/atoll ecosystems.
2. Conduct invasive algae surveys with technical dive operations (closed-circuit rebreathers). Dive operations will include: visual surveys of the bottom for the selected AS, taking photographs and notes on the habitat and other species present, and the collection of specimens believed to be AS.
3. Conduct surveys to determine baseline abundances of coral, algae and associated reef fishes at technical diving depths. Take photographs and notes to determine species presence and abundance of organisms.
4. Conduct multibeam activities for the purposes of identifying potential dive sites and searching for appropriate habitat for potential survey sites.

Multibeam or echosounding activities will take place opportunistically during non-diving hours.

5. Capture apex predators and tag them with acoustic transmitters in order to determine large-scale movement patterns.
6. Deploy and recover Baited Remote Underwater Video (BRUV) units to quantify fish populations in waters deeper than can be surveyed by divers.

E. Participating Institutions

The scientific party will consist of personnel from NOAA NOS Office of National Marine Sanctuaries Papahānaumokuākea Marine National Monument (PMNM), the NOAA Diving Center (NDC), NOAA NMFS Pacific Islands Fisheries Science Center, the University of Hawaii (UH), the Hawaii Institute of Marine Biology (HIMB), and the Bernice P. Bishop Museum (BPBM).

F. Personnel/Science Party

Name	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Kosaki, Randall	Biologist	9/6/14	9/30/14	Male	NOAA/PMNM	USA
Leonard, Jason	Biologist	9/6/14	9/30/14	Male	NOAA/PMNM	USA
Wagner, Daniel	Biologist	9/6/14	9/30/14	Male	NOAA/PMNM	Germany
Hauk, Brian	Biologist	9/6/14	9/30/14	Male	NOAA/PMNM	USA
Whitton, Robert	Biologist	9/6/14	9/30/14	Male	BPBM	USA
Pyle, Richard	Biologist	9/6/14	9/30/14	Male	BPBM	USA
Asher, Jacob	Biologist	9/6/14	9/30/14	Male	NOAA/NMFS	USA
Barlow, James	Biologist	9/6/14	9/30/14	Male	NOAA NMFS	USA
Giuseffe, Louise	Biologist	9/6/14	9/30/14	Female	NOAA/NMFS	USA
Royer, Mark	Biologist	9/6/14	9/30/14	Male	UH/HIMB	USA
Anderson, James	Biologist	9/6/14	9/30/14	Male	UH/HIMB	UK
Biergwagen, Stacy	Biologist	9/6/14	9/30/14	Female	UH/HIMB	USA
Couch, Courtney	Biologist	9/6/14	9/30/14	Female	UH/HIMB	USA
Gutlay, Tiffany	Biologist	9/6/14	9/30/14	Female	UH/HIMB	USA
Owen, Hadley	Cox'n	9/6/14	9/30/14	Female	NOAA/PMNM (NOAA Corps)	USA
Lopes, Keolohilani	Biologist	9/6/14	9/30/14	Male	NOAA/PMNM	USA

Annandale, Senifa	Biologist	9/6/14	9/30/14	Male	NOAA/PMNM	USA
Bostick, James	Chamber Operator	9/6/14	9/30/14	Male	NOAA/OMAO	USA

G. Administrative

1. Points of Contacts: Chief Scientist Randall Kosaki can be reached at:
Randall.Kosaki@noaa.gov, (808) 725-5816 (desk), or (808) 295-0141 (cell).

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 LT Faith Knighton, NOAA, Operations Officer
 NOAA Ship *Hi'ialakai*
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2. Diplomatic Clearances

This project involves Marine Scientific Research in waters under the jurisdiction of the United States of America; therefore no diplomatic clearance is required.

3. Licenses and Permits

1. This project will be conducted under the (U.S.) Conservation and Management Permit no. PMNM-2014-005 issued by Papahānaumokuākea Marine National Monument to LCDR Dan Simon and NOAA ship *Hi'ialakai*.
2. This project will be conducted under the (U.S.) Research Permit no. PMNM-2014-015 issued by Papahānaumokuākea Marine National Monument to Dr. Randall Kosaki.
5. This project will be conducted under the (U.S.) Research Permit no. PMNM-2014-018 issued by Papahānaumokuākea Marine National Monument to Jacob Asher.
6. This project will be conducted under the (U.S.) Research Permit no. PMNM-2014-031 issued by Papahānaumokuākea Marine National Monument to Dr. Brian Bowen.

7. This project will be conducted under the (U.S.) Research Permit no. PMNM-2014-014 issued by Papahānaumokuākea Marine National Monument to Dr. Carl Meyer.

II. Operations

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

A. Project Itinerary

DATE	PORT	TIME/ACTIVITY	DISTANCE/TIME
Sept. 6	Pearl Harbor	Depart 1200	15 nm, 15 hrs.
Sept. 7	Ni'ihau	Arr. 0430, full day dive ops. Depart for Nihoa 1700	115 nm, 12 hrs.
Sept. 8	Nihoa	Arr. 0600, full day dive ops. Depart for Necker 1700.	157 nm, 16.5 hrs.
Sept. 9	Necker	Arr. 0930, full day dive ops. Depart for FFS 1700.	103 nm, 11 hrs.
Sept. 10	FFS	Arr. 0345, full day dive ops.	
Sept. 11	FFS	Full day dive ops. Depart for Lisianski 1700.	455 miles, 2d
Sept. 12	Transit		
Sept. 13	Transit	Arr Lisianski 1700	
Sept. 14	Lisianski	Full day dive ops.	
Sept. 15	Lisianski	Full day dive ops. Depart for Pearl & Hermes 1700.	144 mi., 14 hrs.
Sept. 16	Pearl & Hermes	Arr. Pearl & Hermes 0700. Full day dive ops.	
Sept. 17	Pearl & Hermes	Full day dive ops.	
Sept. 18	Pearl & Hermes	Full day dive ops. Depart for Midway 1700.	90 nm, 9.5 hrs.
Sept. 19	Midway	Arr. Midway. Full day dive ops. Tie up at Cargo Pier overnight.	
Sept. 20	Midway	Late start; 2/3 day dive ops. Depart for Pearl and Hermes 1700.	90 nm, 10.5 hrs.
Sept. 21	Pearl & Hermes	Arr. Pearl and Hermes 0200. Full day dive ops.	
Sept. 22	Pearl & Hermes	Full day dive ops.	
Sept. 23	Pearl & Hermes	Full day dive ops. Depart for French Frigate Shoals 1700.	584 nm, 2d 21 hrs.
Sept. 24	Transit		
Sept. 25	Transit		
Sept. 26	Transit	Arr. FFS 1220. Partial day dive ops if time allows.	
Sept. 27	FFS	2/3 day dive ops. Depart for	363 nm, 1d 19hrs.

		Ni'ihau 1400.	
Sept. 28	Transit		
Sept. 29	Ni'ihau	Arr. Ni'ihau 0900. Full day dive ops. Depart for PH 1700.	145 nm, 17 hrs.
Sept. 30	Pearl Harbor	Arr. 0950.	

B. Staging and Destaging

Sept. 6 Embark scientists at Pearl Harbor:

1. Randall Kosaki (Chief Scientist)
2. Jason Leonard
3. Daniel Wagner
4. Brian Hauk
5. Robert Whitton
6. Richard Pyle
7. Hadley Owen
8. Jacob Asher
9. James Barlow
10. Louise Giuseffe
11. Mark Royer
12. Stacy Biergarten
13. Hadley Owen
14. Senifa Annandale
15. Keolohilani Lopes
16. Courtney Couch
17. Tiffany Gutlay
18. James Bostick (Chamber Operator/Divemaster)

- Sept. 6 Scientific staff board ship at 0745. Muster in dry lab 0830. 1200 Departure from pier F10. Depart Pearl Harbor. Transit to Ni'ihau.
- Sept. 7 Arrive at Ni'ihau, Conduct full day of dive operations. Deploy and recover BRUVS. Conduct apex predator tagging. Begin Transit to Nihoa.
- Sept. 8 Conduct full day of dive operations at Nihoa. Deploy and recover BRUVS. Conduct apex predator tagging. Begin transit to Mokumanamana.
- Sept. 9 Conduct full day of dive operations at Mokumanamana. Deploy and recover BRUVS. Conduct apex predator tagging. Begin transit to French Frigate Shoals.
- Sept. 10 Conduct full day of dive operations at French Frigate Shoals. Deploy and recover BRUVS. Conduct apex predator tagging. Conduct after-hours multibeam surveys in 40-80 m.
- Sept. 11 Conduct full day of dive operations at French Frigate Shoals. Deploy and recover BRUVS. Conduct apex predator tagging. Begin transit to Lisianski.
- Sept. 12 Transit.

Sept. 13	Transit.
Sept. 14	Transit.
Sept. 15	Conduct full day of dive operations at Lisianski. Deploy and recover BRUVS. Conduct after-hours multibeam surveys in 40-80 m.
Sept. 16	Conduct full day of dive operations at Pearl and Hermes. Deploy and recover BRUVS. Transit to Pearl and Hermes
Sept. 17	Conduct full day of dive operations at Pearl and Hermes. Deploy and recover BRUVS. Conduct apex predator tagging. Begin transit to Midway.
Sept. 18	Conduct full day of dive operations at Pearl and Hermes. Deploy and recover BRUVS. Conduct apex predator tagging.
Sept. 19	Conduct full day of dive operations at Midway. Launch small boats offshore. Deploy and recover BRUVS. Conduct apex predator tagging. Tie up at Cargo Pier overnight.
Sept. 20	Conduct full day 2/3 day of dive operations at Midway. Launch small boats 1000. Deploy and recover BRUVS. Conduct apex predator tagging. Begin transit to Pearl and Hermes.
Sept. 21	Conduct full day of dive operations at Pearl and Hermes. Deploy and recover BRUVS. Conduct apex predator tagging.
Sept. 22	Conduct full day of dive operations at Pearl and Hermes. Deploy and recover BRUVS. Conduct apex predator tagging.
Sept. 23	Conduct full day of dive operations at Pearl and Hermes. Deploy and recover BRUVS. Conduct apex predator tagging. Begin transit to French Frigate Shoals.
Sept. 24	Transit.
Sept. 25	Transit.
Sept. 26	Partial day of dive operations at French Frigate Shoals.
Sept. 27	Conduct 2/3 day of dive operations at French Frigate Shoals. Deploy and recover BRUVs. Conduct apex predator tagging. Begin transit to Ni'ihau.
Sept. 28	Transit.
Sept. 29	Conduct full day of dive operations at Ni'ihau. Deploy and recover BRUVs. Conduct apex predator tagging. Begin transit to Pearl Harbor.
Sept. 30	Arrive at Pearl Harbor.

C. Operations to Be Conducted:

(1) Diving

- a. All diving operations will be conducted from small boats.
- b. Conventional single-cylinder open circuit SCUBA operations will be supported by HI-2 and a program-supplied 19 foot Safeboat. Activities include specimen collection, and fish and benthic transects and surveys.
- c. Technical/rebreather operations will be conducted from MetalShark. Per NOAA diving regulations, a chase boat (program-provided 19 foot Safeboat) will be available and on-site whenever technical or decompression dives are conducted. Additional support divers on conventional open-circuit scuba (required by NOAA regulations for technical diving) will dive from the chase boat. PMNM will provide technical divemasters approved by the NOAA Diving Program/Diving Control and Safety Board. These topside divemasters will oversee rebreather operations from HI-1.
- d. OMAO is requested to provide one ship's diver on each day of technical dive operations, to serve as a safety or support diver. Technical dive operations will occur on each dive day. The diver will perform two dives per day, to a maximum depth of 70 feet. Each dive will use a single 80 cu. ft. tank and standard scuba gear. Dives will be performed from the program-provided 19 foot Safeboat.

(2) Snorkeling

- a. All snorkeling shall be conducted in accordance with the NOAA Scientific Diving Manual, para. 4.13.

(3) Apex Predator Tagging

- a. Apex predator fishing and tagging will be conducted from small boats. Bottom-set longlines will be deployed from small boats. Fishes <1 meter in total length may be tagged in the boat. All larger fishes will be tagged in the water, alongside the boat.

(4) BRUV bait station cameras

- a. BRUVs will be deployed and recovered by hand from small boats.

(5) Small Boat

- a. Scuba diving and snorkeling from small boats are fundamental to accomplishing the goals of this project. The ship is requested to provide coxswains for 3 small boats (both ship's launches, and HI-3) for all 17 days of diving operations. *Hi`ialakai* is responsible for providing fuel for HI-1 and HI-2. PMNM will provide fuel for PMNM Safeboats (2) and HI-3 and any *Hi`ialakai* inflatable boat that may be used. Adequate fuel for the small craft, including the 19 foot Safeboats, will be carried in the ship's tank. OMAO is requested to provide a NOAA recompression chamber operator. OMAO will provide divemaster Jim Bostick. NMFS program biologists will coxswain the 19 foot Safeboat *Steeltoe*.

ONMS NOAA Corps officer ENS Hadley Owen will serve as coxswain for the second program-provided 19 foot Safeboat, but will require a ship's coxswain for training in the ship's procedures during initial days of field operations prior to solo field operations. LTJG Owen has all required NOAA certifications for small boat operations.

- b. Per OMAO Supplement to the NOAA Small Boat Standards and Procedures Manual, March 2010, Section 4.03a2, the program understands that a program certified Operator in Charge (OIC) must "earn the full confidence of both the Commanding Officer and Designated Examiner, and has successfully completed the shipboard training requirements." As part of the program OIC evaluation, it is understood a ship OIC will be designated to accompany and evaluate the program OIC. The program is aware this may limit the number of small boats the ship can deploy during this evaluation period, and while every effort should be made to limit any impact to operations, the program is also aware that said program OIC is not guaranteed to be qualified by the CO and DE during a project.
- c. The scientists' abilities as small boat crew members may be a limiting factor in small boat deployment and recovery operations and they must meet the confidence of the CO. Small boat crew must wear hardhats with chin straps.

(6) OMAO

To be consistent with the mission objectives, the ship will employ all methods feasible to minimize damage to coral reef habitats during anchoring operations.

Project Scientific Objectives Are:

1. Collection of specimens of reef fishes and invertebrates for characterization of genetic diversity and connectivity for the purpose of understanding biological linkages supporting and maintaining Monument island/atoll ecosystems.
2. Collect specimens of corals for genetic and morphological analysis to refine species presence. Recover temperature sensors from selected coral reefs to better understand small-scale changes on coral reefs.
3. Invasive algae surveys will be conducted with technical dive operations. Dive operations will include: visual surveys of the bottom for the selected AS, taking photographs and notes on the habitat and other species present, and the collection of specimens believed to be AS.
4. Benthic and fish surveys will be conducted with technical dive operations. Dive operations will include visual quantitative censuses of fish assemblages, photographic documentation of the benthos, and collection of specimens that may represent new geographic records or undescribed species.
5. Conduct multibeam mapping activities for the purposes of ground truthing potential dive sites and searching for appropriate habitat for potential survey sites. Multibeam or echosounding activities will take place opportunistically. Real-time screen grabs are adequate; data storage will not be required.

6. Conduct fishing for, and tagging of, large apex predators (primarily sharks, jacks, and snappers).
7. Deploy and recover Baited Remote Underwater Video (BRUV) units to quantify fish populations in waters deeper than can be surveyed by divers. BRUVS will be deployed and recovered from small boats.
8. Conduct surveys for coral disease and coral bleaching to follow up on observations of extensive bleaching on HI-14-04.

D. Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship's Commanding Officer.

The Dive Plan for HA-14-05 is presented in Appendix A.

E. Applicable Restrictions

The following operational plans can be considered only a guide as to how the Chief Scientists expect the surveys to progress without being able to predict the weather, operational and scheduling problems, and equipment failures.

The Chief Scientist has the authority to revise or alter the technical portion of the instructions as work progresses, provided that, after consultation with the Commanding Officer, it is ascertained that the proposed changes will not: (1) jeopardize the safety of personnel or the ship, (2) exceed the overall time allotted for the project, (3) result in undue additional expenses, and (4) alter the general intent of the project instructions. In addition, the Chief Scientist must notify the Manager of Papahānaumokuākea Marine National Monument at the earliest opportunity prior to making: (1) deviations from the general project track or area of operations noted in the project instructions, (2) significant changes or additions of research operations to those specified in the project instructions, or (3) port calls not specifically identified in the project instructions.

Prior to sailing, the ship's crew will inspect the, aft deck crane, TSG, VMS, scuba air compressor and delivery systems, scientific freezers, recompression chamber, and ship's small craft to ensure that they are in proper working order.

III. Equipment

A. Equipment and Capabilities Provided by the Ship

All mission equipment must be operational at the time of departure.
The ship will provide the following:

Aft Deck Crane
10-m launch and davit (MetalShark)

8-m launch and davit (HI-2)
 HI-3
 1 SCUBA compressor (Nitrox or Air)
 Recompression chamber
 Dive locker space for 18 divers
 Scientific freezer, storage racks installed (needed 2d prior to departure)
 Scientific Computer System
 Adequate fresh water for gear washdown and disinfection
 Gear washdown tank
 VHF radios for ship's small boats
 GPS for ship's small boats
 Depth sounders capable of reading bottom in 100 m for ship's small boats
 Large flat-screen monitor in dry lab
 Capstan and working line
 Tag lines for small boat ops alongside
 Crane to load equipment
 Vessel Monitoring System
 Field lunches for scientists in small boats

B. Equipment and Capabilities Provided by the Scientists

PMNM will provide:

30	80 cu. ft. scuba cylinders and dive gear
12	80 cu. ft. O ₂ -clean scuba stage bottles
4	pallet tub storage containers for scuba tanks
3	Nitrox/O ₂ gas analyzer
3	Trimix/O ₂ /He gas analyzer
2	DAN emergency diving oxygen kits
2	first aid kits for small boats
3	rescue floats for dive operations
4	portable GPS units for backup
2	19 foot SAFEboat (R/V <i>Malolo</i> and R/V <i>Steeltoe</i>) with lifting bridles and cradles
2	55 gal. drums gasoline, filled to 45 gal.
2	pallet tubs, small boat maintenance gear
20	desktop and laptop computers for use by scientists
10	1 gallon jugs Clorox for disinfection of dive gear in gear washdown tank
1	washdown tank for freshwater rinse of gear after disinfection
2	hand-held VHF radios for Safeboat
1	Low-heat specimen drying oven, 110v
2	Masterline Booster Pump (electric powered)
1	Haskel Booster Pump (compressed gas powered)
14	K-Cylinders O ₂
14	K-Cylinders He
2	K-cylinders 50/50 for chamber
2	Metal tank racks to secure Helium and Oxygen cylinders
22	44 lb. kegs of Sofnolime CO ₂ absorbent for rebreathers
1	10' Baby box to be placed on aft deck
6	Megalodon closed-circuit rebreather units
2	Poseidon SE7EN closed-circuit rebreather units
21	PFD and hardhats for all science personnel

- 1 BRUVS frames, 4x4x5 pallet, total weight 320 lbs.
- 1 BRUVS line, 4x4x4 pallet, 260 lbs.
- 1 BRUVS buoys, misc. gear, 4x4x4 pallet tub, 260 lbs.
- 1 BRUVS misc. gear, 4x4x2 pallet, 170 lbs.

IV. Hazardous Materials

A. Policy and Compliance

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). 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 the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, /or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and a chemical hygiene plan.

Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

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

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

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

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

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

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

B. Inventory

Inventory (itemized):

Common Name of Material	Qty	Notes	Trained Individuals	Spill control
Ethanol	4 x 1000ml	Flammable	Jason Leonard, Brian Hauk, Daniel Wagner	A
Formalin (100%)	4 x 1000ml	Alkalinity, corrosive	Jason Leonard, Brian Hauk, Daniel Wagner	B
Sodium Hypochlorite (6%)	10 x 1 gallon	Alkalinity, Stored in ship chem. lkr	Jason Leonard, Brian Hauk, Daniel Wagner	C
Soda lime (Sofnolime brand)	22 x 44 lb. kegs	Located in Sci Van; NOT considered hazmat	Jason Leonard, Brian Hauk, Daniel Wagner	E
Povidone Iodine (Betadine brand)	1 x 1 gallon	Located in Sci Van; NOT considered hazmat	Jason Leonard, Brian Hauk, Daniel Wagner	D
RNA later	5 gallons	Alkalinity	Jason Leonard, Brian Hauk, Daniel Wagner	F
Z-fix (zinc-buffered formalin)	1 gallon	Alkalinity, corrosive	Jason Leonard, Brian Hauk, Daniel Wagner	H

C. Chemical safety and spill response procedures

PMNM will bring a Spill Containment Kit on board and store it in the wet lab. The kit contains absorbent materials, formaldehyde absorbent, acid absorbent, respirators, gloves, protective clothing, etc. Three personnel in the scientific party have HAZWOPER training (Leonard, Hauk, Wagner). MSDS for all chemicals are attached (Appendix C).

A. Ethanol

Small spill: dilute with water and mop up, or absorb with an inert dry material and place in appropriate waste disposal container. Keep away from sources of ignition. Keep away from heat.

B. Formalin/Formaldehyde

Small spill: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Three cartons of pre-packaged

formaldehyde/formalin absorbent are located in the ship's Spill Containment Kit in the wet lab (where all formalin use will occur).

C. Clorox (sodium hypochlorite)

Containerize liquid and use absorbents on residual liquid. Wash area with water and let dry. Breathing protection should be worn in enclosed or poorly ventilated areas. The ship's Spill Containment Kit in the wet lab contains respirators; however, all anticipated use of Clorox will be outdoors on weather decks (for dilution and disinfection of dive gear).

D. Povidone Iodine

Povidone iodine is NOT considered hazmat. Spills should be absorbed with absorbent paper or similar material and placed in an appropriate waste disposal container. Wash area down with excess water.

E. Sofnolime brand Soda Lime

Soda lime (rebreather "sorb") is NOT considered hazmat. In case of spill, avoid breathing dust. Contain material. Sweep or vacuum up.

F. RNAlater

Ensure adequate ventilation. Avoid contact with skin. Avoid breathing vapor. Spills should be absorbed with inert dry material. Dilute and mop up with water.

G. Z-fix (zinc-buffered formalin)

Small spill: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Three cartons of pre-packaged formaldehyde/formalin absorbent are located in the ship's Spill Containment Kit in the wet lab (where all formalin use will occur).

Inventory of Spill Kit supplies (Located in wet lab)

Product Name	Contents	Chemicals it is useful against	Amount it can clean up
Cary Company 37WSP2	2 -5 gal Bags of Teal-Sorb EQ, 20 - 15"x18" Universal Heavy Weight Pads, 6 - 4' Universal Socks , 1 Pair - Nitrile Gloves, 1 - Pair of Goggles, 3 - Disposal Bags, 1 - 1 gal Empty Shaker	Universal	20 gal

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary (“Piggyback”) Projects
No Supplementary Projects are planned.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA’s Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

VII. Meetings, Vessel Familiarization, and Project Evaluations

- A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship’s crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship’s Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.
- B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project’s start and is normally presented by the ship’s Operations Officer.
- C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship’s officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.

D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <http://www.oma.noaa.gov/fleeteval.html> and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships', specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

Meals and berthing are required for up to 21 scientists. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the survey. Two scientists are vegetarian but consume eggs and dairy.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The 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 which were issued. The Chief Scientist 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 prior to departing the ship.

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 to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project. All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from

the Chief Scientist or the NOAA website

<http://www.corporateservices.noaa.gov/noaaforms/eforms/nf57-10-01.pdf>.

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

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

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

The only secure email process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to setup an account. [Accellion's Web Users Guide](#) is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to accellionAlerts@doc.gov requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

Contact information:
Regional Director of Health Services
Marine Operations Center - Pacific
2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856
Email MOP.Health-Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

C. Shipboard Safety

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

D. 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 e-mail and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required it must be arranged at least 30 days in advance.

E. IT Security

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

- (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.

Completion of these requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

- (4) Provide to the Electronics Technician a spreadsheet with the information per example below to connect personal devices to LAN/WAN, prior to embarking.

<u>Devices/</u>	<u>Names/</u>	<u>Operating Systems/LAN</u>	<u>MAC Address/</u>	<u>WAN MAC</u>
<i>iPhone</i>	<i>Randy Kosaki</i>	<i>MAC</i>		
<i>OS</i>		<i>21:34:6K:P8:W6:77</i>	<i>21:34:6K:P8:W6:78</i>	
<i>Laptop</i>	<i>Randy Kosaki</i>	<i>Windows</i>		
<i>XP</i>		<i>23:34:6K:P8:M6:77</i>	<i>23:34:6K:P8:M6:78</i>	

F. Foreign National Guests Access to OMAO Facilities and Platforms

Two foreign nationals (Germany, Great Britain) are scheduled to be aboard HA-14-05.

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FRNS) to submit requests for access to NOAA facilities

and ships. 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 designated NMFS Deemed Exports point of contact 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) 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.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the e-mail generated by the FRNS granting approval for the foreign national guest's visit. This e-mail will identify the guest's DSN 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 Appendix A) at least annually or as required by the servicing Regional Security Officer.
4. Export Control - *The NEFSC currently neither possesses nor utilizes technologies that are subject to Export Administration Regulations (EAR).*

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

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 NMAO approval 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 FRNS e-mail granting approval for the foreign national guest's visit.
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. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding

Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor 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 of the foreign national 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, NOAA (or DOC) employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

APPENDIX A. Dive Plan

Submitted Separately

APPENDIX B. Material Safety Data Sheets (MSDS)

Submitted Separately