State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawaii 96813

February 28, 2014

Board of Land
and Natural Resources
Honolulu, Hawaii

Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Research Permit to Dr. Christopher Kelley, University of Hawai'i, Hawai'i Undersea Research Laboratory, for Access to State Waters to Conduct Bathymetric Mapping Activities

The Division of Aquatic Resources (DAR) hereby submits a request for your authorization and approval for issuance of a Papahānaumokuākea Marine National Monument research permit to Dr. Christopher Kelley, University of Hawai'i, Hawai'i Undersea Research Laboratory, pursuant to § 187A-6, Hawaii Revised Statutes (HRS), chapter13-60.5, Hawaii Administrative Rules (HAR), and all other applicable laws and regulations.

The research permit, as described below, would allow entry and management activities to occur in Papahānaumokuākea Marine National Monument (Monument), including the NWHI State Marine Refuge and the waters (0-3 nautical miles) surrounding the following sites:

- Nihoa Island
- Necker Island (Mokumanamana)
- French Frigate Shoals
- Gardner Pinnacles
- Maro Reef
- Laysan Island
- Lisianski Island, Neva Shoal
- Pearl and Hermes Atoll
- Kure Atoll State Wildlife Sanctuary

The activities covered under this permit would occur between March 1, 2014 and February 28, 2015.

The applicant and the proposed activities are a renewal of work previously permitted and conducted in the Monument.

INTENDED ACTIVITIES

The primary purpose of the proposed project is to map the seafloor (i.e. produce bathymetric maps) of the Monument using multibeam sonar and simultaneously collect both gravity and magnetic field data. The applicant would attempt to map presently unmapped portions of the seafloor including a focus on seamounts and rift zone ridges, drowned reef terraces around Gardner Pinnacles, the mesophotic zone (50 to 150 m), completing the coverage of the ridge east of French Frigate Shoals, and filling in data gaps above 3000 m in depth. Understanding the topography of these areas is an important precursor to making significant biological, geological, and oceanographic discoveries in the Monument. These data would directly contribute to the generation of bathymetric maps to be used by other researchers. Examples of other research these data would be useful for include: physical oceanographic modeling of internal tides, investigations into reef evolution, subsistence and sea level changes using fossil reef terraces, identification of geologic features such as seamounts and rift zone ridges, and deciphering the geologic mechanism for the formation of islands.

Approximately forty-eight (48) percent of Monument waters have been mapped, so the proposed project would add to bathymetric data existing in other parts of the Monument. Once collected, these data would be merged with existing bathymetric mapping data to create an updated synthesis of the seafloor in the Monument available through a variety of web venues.

Vessel support for the proposed activities would be from the RV FALKOR (Application currently in review, PMNM-2014-004 for the applicant Eric King). The activities would take place on two thirty-six (36) day cruises (March 7 to April 11, 2014; May 2 to June 7, 2014) for a total of seventy-two (72) days in the Monument. Up to twenty-four (24) individuals would be covered under this permit to perform these activities. Bathymetric mapping would be done via multibeam sonar. Gravity and magnetics data would be collected using a gravimeter and a magnetometer, respectively.

The proposed activities have been performed in both the Monument and marine sanctuaries prior to this permit application. No negative effects of instrumentation involved in the proposed bathymetric mapping activities have been observed. The project would take place in waters deeper than 50 m around the locations listed.

The activities proposed by the applicant directly support the Monument Management Plan's priority management need under the Marine Conservation Science Action Plan (MCS) Activity MCS-1.3: Map and characterize deep-water habitat (defined as waters more than 30 m depth).

The activities described above may require the following regulated activities to occur in State waters:

No regulated activities are applicable to this permit application.

REVIEW PROCESS:

The permit application was sent out for review and comment to the following scientific and cultural entities: Hawaii Division of Aquatic Resources, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Pacific Islands NW Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application was posted on the Monument Web site on November 5, 2013 and revised application was posted on November 18, 2013, giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

Comments received from the scientific community are summarized as follows:

Scientific reviews support the acceptance of this application.

The following concerns were raised. Applicant responses are noted below.

1. **Is there an estimated percentage of the Monument seafloor that would have high-resolution data as a result of the proposed project? If so, please provide the estimated percentage.**

   The Applicant states that the goal is to map all of the 50-4000m depth range within the Monument, leaving only the abyssal seafloor below 4,000m and the shallow depths above 50m. The only exception is that the Applicant intends to map the entire northern end above Midway including the abyssal seafloor since this area is the most remote part of the Monument and they have to ship time and opportunity to complete it. Their lowest priority area is the southern portion of the Monument since we they feel gaps in the coverage in that region will be filled over time by other ships and cruises. They do not know if they will succeed in reaching this goal since a cruise of this nature has a very complicated survey plan that is subject to large number of uncontrollable factors (i.e., weather for example). However, they do expect to be able to achieve at a minimum a significant proportion (80%?) of their target depth range.

2. **The application mentions the Monument will receive a copy of all raw and processed data including syntheses of existing data. Will there also be a finished product in similar format to the 2004 Bathymetric Atlas of the NWHI? Will that be available on the internet?**

   The Applicant states that yes, as stated in the proposal to SOI, the new data they acquire will be merged into existing data to create an updated synthesis of the seafloor in the Monument. This synthesis will be made available through a variety of web venues and in different forms such as digital maps in jpg and tif formats as well as ArcGIS grids and georeferenced tifs. They will not be making

a paper copy of the synthesis since they feel that the relatively low interest in that type of product does not justify the cost.

3. **If there are any marine species that are affected by the sonar multi-beam, will they be documented and included in any final report of the project? How will this information be shared with the public?**

   The Applicant states they have considerable experience in multibeam sonar mapping both in the Monument as well as the main Hawaiian Islands, Line Islands, and elsewhere. During all of those cruises, they have never observed any adverse effects on any animals. The Applicant is a biologist who is very interested in preserving the environment and who has had a significant role in assisting the state with maintaining and improving its system of bottomfish reserves. They have also conducted research that provided data and information to the Kahoolawe Island Reserve as well as the Monument to support their existence and missions. If for some reason they do observe some unexpected negative effect from their mapping activities, they state they will of course cease what they are doing until that effect has subsided, and they will of course document it in their final report and make certain it be made public because they fully realize how important it will be to do so.

4. **Images and maps of PMNM may contain locations and resources deemed culturally sensitive. With this in mind please respond to the following questions:**

   a) **Who makes the determination on how the images are reviewed and used?**

   The Applicant states that it is their understanding that while the MMB has the authority to condition a permit to ensure product outputs are appropriately controlled and/or managed, ultimately, the permittee determines how images will be reviewed and used.

   b) **Who owns the maps and images?**

   The Applicant explains should the permit be approved, General Condition 23 of the permit states, "The permittee retains ownership of any data, (including but not limited to any photographic or video material), derivative analyses, or other work product, or other copyrightable works, but the Federal Government and the State of Hawai'i retain a lifetime, non-exclusive, worldwide, royalty-free license to use the same for government purposes, including copying and redissemination, and making derivative works." The Applicant, being the permittee, is also bound by the conditions the Schmidt Ocean Institute (SOI) imposes when funding a project. SOI is dedicated to free and wide access of data that will benefit mankind and forward their

mission of conserving the environment and speeding the rate of scientific advancement.

c) **Are the Monument Management Board (MMB) and Native Hawaiian Cultural Working Group (CWG) able to review the maps before they are made publicly available?**

The Applicant states it is their understanding that no formal process has been established to review and provide input on products/results from permitted activities. However, the Monument managers (MMB) have the authority to develop guidelines for reviewing products from various permitted projects. If they choose to do so for this project, the Applicant respectfully requests that the MMB review be completed in a timely manner because as stated above, they are also bound by SOI's policy regarding data release as stated above.

5. **The Native Hawaiian Cultural Working Group (CWG) is available to assist in the naming of any new seamounts discovered through your activities.**

The Applicant answers, Noted. It is their understanding that there is no formal process established for a permittee to work with co-managing agencies to name a newly discovered area. As such, if new seamounts are discovered and it is deemed appropriate that the area be named, co-managers could establish such a process. It should also be noted that the Applicant and co-PI Smith have mapped unnamed seamounts in the Monument on previous cruises and they have had no problem with the Monument naming them themselves. Some of these include Kanehunamoku, Kaiuli, and Keoea seamounts.

6. **Have the two additional instruments (gravimeter and magnetometer) been used in other Marine Protected Areas? If so, which ones?**

The Applicant states that gravity and magnetics surveys were conducted in the following Marine Protected Areas by the ships named in the years noted:

Papahānaumokuākea Marine National Monument:

- *2011, R/V Kilo-Moana, gravity*

Hawaiian Islands Humpback Whale National Marine Sanctuary:

- *1998, R/V N.B. Palmer, gravity & magnetics*
- *2002, R/V Melville, gravity*
- *2002, R/V Revelle, gravity*
- *2004-2005, R/V Melville, gravity*

Olympic Coast National Marine Sanctuary

- *2002, JOIDES Resolution, magnetics*
- *2012, R/V Thompson, gravity*

Gulf of Farallones National Marine Sanctuary

- *1998, R/V Melville, gravity*
- *1999, R/V Melville, gravity*
- *2002, R/V Revelle, gravity*

7. **Please provide further information on the specifications and any known impacts to the marine environment and species therein from the gravimeter and magnetometer.**

The Applicant explains that the gravimeter and magnetometer, respectively, measure minute variations in the Earth's pull of gravity, and Earth's magnetic field. They are completely passive instruments, and therefore do not emit anything (e.g., no acoustic signal, no chemical, etc). The gravimeter is completely contained within the ship and is *approximately 4 feet length, 2 feet wide and sits 3 feet high consisting of a cubed housing unit with an adjacent electronics and computer interface system attached. The magnetometer is a cylinder, approximately 49 inches long, by 5 inches in diameter, weighing about 35 lbs that is towed in the water at a depth of ~5 meters, ~150 ft. behind the ship.*

Comments received from the Native Hawaiian community are summarized as follows:

Cultural reviews support the acceptance of this application. No concerns were raised.

Comments received from the public are summarized as follows:

No comments were received from the public on this application.

Additional reviews and permit history:

Are there other relevant/necessary permits or environmental reviews that have or will be issued with regard to this project? (e.g. MMPA, ESA, EA) Yes ☒ No ☐
If so, please list or explain:

- The proposed activities are in compliance with the National Environmental Policy Act.
- A request to the National Marine Fisheries Service (NMFS) for a Section 7 informal consultation pursuant to the Endangered Species Act of 1973 is underway to analyze the effects of conducting multi-beam mapping activities and operating a gravimeter and magnetometer within the Monument on protected species. The outcome of this consultation may require the applicant to adhere to other NMFS-prescribed conditions. Such conditions would be reflected in the PMNM permit, prior to issuance.
- The Department has made an exemption determination for this permit in accordance chapter 343, HRS, and Chapter 11-200, HAR. See Attachment

("DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT RESEARCH PERMIT TO DR. CHRISTOPHER KELLEY, UNIVERSITY OF HAWAI'I, HAWAI'I UNDERSEA RESEARCH LABORATORY, FOR ACCESS TO STATE WATERS TO CONDUCT BATHYMETRIC MAPPING ACTIVITIES UNDER PERMIT PMNM-2014-002.")

Has Applicant been granted a permit from the State in the past? Yes ☒ No ☐
If so, please summarize past permits:

- Monument permits have been issued for sonar mapping activities since 2008. Dr. Christopher Kelley, the current applicant, was issued permit PMNM-2009-052 in 2009 for similar activities. Other past PMNM permits were issued to Joyce Miller in 2008, permit number PMNM-2008-001, and to Dr. James Gardner in 2011, permit number PMNM-2011-013.

Have there been any a) violations: Yes ☐ No ☒
b) Late/incomplete post-activity reports: Yes ☐ No ☒

Are there any other relevant concerns from previous permits? Yes ☐ No ☒

STAFF OPINION

DAR staff is of the opinion that Applicant has properly demonstrated valid justifications for his application and should be allowed to enter the NWHI State waters and to conduct the activities therein as specified in the application with certain special instructions and conditions, which are in addition to the Papahānaumokuākea Marine National Monument Research Permit General Conditions. All suggested special conditions have been vetted through the legal counsel of the Co-Trustee agencies (see Recommendation section).

MONUMENT MANAGEMENT BOARD OPINION

The MMB is of the opinion that the Applicant has met the findings of Presidential Proclamation 8031 and this activity may be conducted subject to completion of all compliance requirements. The MMB concurs with the special conditions recommended by DAR staff.

RECOMMENDATION

That the Board authorize and approve a Research Permit to Dr. Christopher Kelley, University of Hawai'i, Hawai'i Undersea Research Laboratory, with the following special conditions:

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

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

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

4. If there is any Hawaiian monk seal or any other protected species in the area when performing any permitted activity, the activity shall cease until the animal(s) depart the area.

Respectfully submitted,

for Frazer McGilvray
Administrator

APPROVED FOR SUBMITTAL

William Aila Jr.
Chairperson

Papahānaumokuākea Marine National Monument

RESEARCH Permit Application

NOTE: ***This Permit Application (and associated Instructions) are to propose activities to be conducted in the Papahānaumokuākea Marine National Monument. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Papahānaumokuākea Marine National Monument (Monument).***

ADDITIONAL IMPORTANT INFORMATION:

- Any or all of the information within this application may be posted to the Monument website informing the public on projects proposed to occur in the Monument.

- In addition to the permit application, the Applicant must either download the Monument Compliance Information Sheet from the Monument website OR request a hard copy from the Monument Permit Coordinator (contact information below). The Monument Compliance Information Sheet must be submitted to the Monument Permit Coordinator after initial application consultation.

- Issuance of a Monument permit is dependent upon the completion and review of the application and Compliance Information Sheet.

INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED

Send Permit Applications to:
Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
nwhipermit@noaa.gov
PHONE: (808) 397-2660 FAX: (808) 397-2662

SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, SEE THE LAST PAGE.

Papahānaumokuākea Marine National Monument
Permit Application Cover Sheet

This Permit Application Cover Sheet is intended to provide summary information and status to the public on permit applications for activities proposed to be conducted in the Papahānaumokuākea Marine National Monument. While a permit application has been received, it has not been fully reviewed nor approved by the Monument Management Board to date. The Monument permit process also ensures that all environmental reviews are conducted prior to the issuance of a Monument permit.

Summary Information

Applicant Name: Christopher Kelley
Affiliation: Hawaii Undersea Research Laboratory, UH

Permit Category: Research
Proposed Activity Dates: March 7-April 11, and May 2-June 7, 2014
Proposed Method of Entry (Vessel/Plane): Vessel, R/V Falkor
Proposed Locations:
Shallow water (50-150m) around: Nihoa, Twin Banks, Necker, St Rogatien Bank, W. St Rogatien Bank, Gardner Pinnacles, Maro Reef, Laysan, North Hampton Seamounts, Pioneer Bank, Bank 8 (Kilo Moana Seamount), Bank 9, Nero Seamount.

Deep water (>150m) around: Nihoa, Westpac Bank, Twin Banks, Keoea Seamount,Necker, French Frigate Shoals, Rogatien Banks (all), Gardner Pinnacles, Raita Bank, Maro Reef, Laysan, North Hampton Seamounts, Kaiuli Seamount, Pioneer Bank, Lisianski, Bank 8 (Kilo Moana Seamount), Bank 9, Pearl & Hermes, Ladd Seamount, Gambia Shoal, Midway, Nero Seamount, Kure, Wentworth Seamount, Woollard Seamount, Turnif Seamount, Bank 10 (Academician Berg Seamount), and several un-named seamounts

Estimated number of individuals (including Applicant) to be covered under this permit: 24

Estimated number of days in the Monument: 72

Description of proposed activities: (complete these sentences):

a.) The proposed activity would…

map the seafloor of the monument using multibeam sonar and simultaneously collect both gravity and magnetic field data.

b.) To accomplish this activity we would ….

These two 36 day cruises will attempt to map as much of the presently unmapped seafloor in the monument as possible using the Schmidt Ocean Institute vessel, R/V Falkor, and their Simrad EM 302 and 710 multibeam sonar mapping systems. The mapping plan has several focus areas that include seamounts and rift zone ridges, drowned reef terraces around Gardner Pinnacles, the mesophotic zone (50-150 m), completing the coverage of the ridge east of French Frigate Shoals (an important site for internal tide generation), and filling as many of the monument data gaps as possible above 3000 m depth. We will also use a gravimeter installed inside the ship's hull to passively collect gravity data and will tow a magnetometer 150 ft behind the ship to passively collect data on the magnetic field in the monument waters.

c.) This activity would help the Monument by …

The acquisition of high-resolution seafloor mapping data is an essential precursor to making significant biological, geological, and oceanographic discoveries in the monument. To date, four dedicated mapping cruises have taken place in the monument (Kilo Moana 0206, Hi'ialakai 0501, 0508, and 0610). The first, which took place in 2002, was the only major one (Evans et al., 2004), a fact that has clearly restricted the pace by which discoveries are being made. Subsequent mapping that also took place on fishery and submersible cruises over the past ten years have added to the existing multibeam coverage during transits and in areas of specific interest. Even so, only 48% of the 366,631 km2 of monument waters have been mapped, much of it as simple transit lines by a multitude of ships, and with the different mapping systems yielding data of varying quality. Approximately 190,000 km2 of monument waters are yet to be mapped, which does not include the lower quality transit data, some of which should be re-mapped.

The acquisition of gravity and magnetics data are intended to gain a greater understanding of the geologic history of the monument and more broadly the entire Hawaiian Archipelago. This activity was added on at the last moment once it was certain we would have the funding for the instruments. Because many volcanoes in the archipelago are covered with old reef structures, their centers and shapes are masked under layers of carbonate. The gravimeter data will allow researchers to determine exactly where the original volcano is located under these secondary layers. They will help answer whether large platforms such as those of Gardner and the Rogatiens were created from one volcano or more than one volcano whose flows overlapped. The magnetics data will be used to obtain more accurate ages of the volcanos in the monument and will furthermore help determine which are of Hawaiian hotspot origin and which are not, the latter being Cretaceous (i.e., > 60 million years) and having rafted to the vicinity of the archipelago on the Pacific plate.

These data are both expensive and difficult to acquire in remote regions such as PMNM, generally costing upwards of $35,000/day. The cost of each cruise is estimated to exceed $2 million, of which the monument will be paying for only [redacted] through NOAA's Office of National Marine Sanctuaries.

Other information or background:
The research involves non-invasive sonar, gravimeter, and magnetometer surveys that will neither remove nor add anything to the monument waters. The multibeam systems on the R/V Falkor are new and have only recently been used on cruises in the Atlantic and along the west coast. The data from these systems have been found to be of outstanding quality. The

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Kelley, Christopher, D

Title: Program Biologist for HURL

1a. Intended field Principal Investigator (See instructions for more information):
Christopher Kelley

2. Mailing address (street/P.O. box, city, state, country, zip): [redacted]

For students, major professor's name, telephone and email address: n/a

3. Affiliation (institution/agency/organization directly related to the proposed project):
Hawaii Undersea Research laboratory, University of Hawaii

4. Additional persons to be covered by permit. List all personnel roles and names (if known at time of application) here (e.g. John Doe, Research Diver; Jane Doe, Field Technician):
John R Smith, Multibeam processing team, [redacted]

Joyce Miller, Multibeam processing team, [redacted]

Randall Kosaki, Multibeam watch stand team, [redacted]

Daniel Wagner, Multibeam watch stand team, [redacted]

Belinda Dechnik, Multibeam watch stand team, [redacted]

Jeremy Taylor, Multibeam processing team, [redacted]

Frances Lichowski, Multibeam processing team, [redacted]

Rachel Orange, Multibeam watch stand team, [redacted]

Jonathan Tree, Multibeam water stand & processing team, [redacted]

Brian Boston, Multibeam watch and processing teams, [redacted]

Kim Binsted, Multibeam watch and processing teams, [redacted]

Brian Shiro, Multibeam watch and processing teams, [redacted]

Harrison Togia, Multibeam watch and processing teams, [redacted]

Alex Rice, Multibeam watch and processing teams, [redacted]

Katie Taladay, Multibeam watch and processing teams, [redacted]

Lauren Harrison, Multibeam watch and processing teams, [redacted]

Shellie Linn Habel, Multibeam watch and processing teams, [redacted]

Anne Madhavi Patterson, Multibeam watch and processing teams, [redacted]

Stephanie Jane Duce, Multibeam watch and processing teams, [redacted]

Nicky Margaret Wright, Multibeam watch and processing teams, [redacted]

Additional Multibeam watch stand and processing team members TBD.

Section B: Project Information

5a. Project location(s):

		Ocean Based	
☒ Nihoa Island	☐ Land-based	☒ Shallow water	☒ Deep water
☒ Necker Island (Mokumanamana)	☐ Land-based	☒ Shallow water	☒ Deep water
☒ French Frigate Shoals	☐ Land-based	☐ Shallow water	☒ Deep water
☒ Gardner Pinnacles	☐ Land-based	☒ Shallow water	☒ Deep water
☒ Maro Reef			
☒ Laysan Island	☐ Land-based	☒ Shallow water	☒ Deep water
☒ Lisianski Island, Neva Shoal	☐ Land-based	☐ Shallow water	☒ Deep water
☒ Pearl and Hermes Atoll	☐ Land-based	☐ Shallow water	☒ Deep water
☒ Midway Atoll	☐ Land-based	☐ Shallow water	☒ Deep water
☒ Kure Atoll	☐ Land-based	☐ Shallow water	☒ Deep water
☒ Other			

☐ Remaining ashore on any island or atoll (with the exception of Midway & Kure Atolls and Field Camp staff on other islands/atolls) between sunset and sunrise.

NOTE: There is a fee schedule for people visiting Midway Atoll National Wildlife Refuge via vessel and aircraft.

Location Description:
Shallowest mapping depth will be 50m around Necker, Gardner Pinnacles, and Laysan. All other mapping will take place in depths greater than 150m.

5b. Check all applicable regulated activities proposed to be conducted in the Monument:

☐ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving Monument resource

☐ Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands

☐ Anchoring a vessel

☐ Deserting a vessel aground, at anchor, or adrift

☐ Discharging or depositing any material or matter into the Monument

☐ Touching coral, living or dead

☐ Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the Monument

☐ Attracting any living Monument resource

☐ Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)

☐ Subsistence fishing (State waters only)

☐ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

6. Purpose/Need/Scope ***State purpose of proposed activities:***
The overarching goal of the project is the complete mapping of the monument's seafloor. A significant amount of that goal will be realized during these two 36 day cruises. Of particular note are the syntheses that will be created from this project by merging the new data with existing data collected on previous cruises. These syntheses will better define existing features and locate new ones to inspire ideas for future research projects, and as a guide of existing coverage that could be shared and updated. They will generate interest for other uses such as physical oceanographic modeling of internal tides, investigation of reef evolution, subsidence and sea level changes using fossil reef terraces, and identify geological features such as seamounts and rift zone ridges that likely harbor extensive biological communities.

*Considering the purpose of the proposed activities, do you intend to film / photograph federally protected species? Yes ☐ No ☒

For a list of terrestrial species protected under the Endangered Species Act visit:
http://www.fws.gov/endangered/
For a list of marine species protected under the Endangered Species Act visit:
http://www.nmfs.noaa.gov/pr/species/esa/
For information about species protected under the Marine Mammal Protection Act visit:
http://www.nmfs.noaa.gov/pr/laws/mmpa/

7. Answer the Findings below by providing information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Monument:

The Findings are as follows:

a. How can the activity be conducted with adequate safeguards for the cultural, natural and historic resources and ecological integrity of the Monument?
This project only involves multibeam mapping sonar and collecting gravity and magnetics data, therefore will have no effect on the cultural, natural, and historic resources and ecological integrity of the monument. Multibeam mapping has already taken place in the monument with no detected effects on the monument resources. The majority of the mapping will take place in deep water and at considerable distance from emergent land. The RV Falkor's two multibeam systems use 30 kHz and 70-100 kHz frequencies. These frequencies have not been directly attributed to mammal strandings. The higher frequency Kongsberg EM710 system should be virtually inaudible to nearly all cetaceans species while the frequency of the Kongsberg EM302 system is at the very upper limit of the optimal range for many species. Both of the Falkor's multibeam systems have a special flexible "soft start" mode which are used

when entering areas of known cetacean activity. The soft start mode is a delay function, starting the sonar transmissions at a low output level and then gradually increasing to the level required for optimal bathymetry data collection. The soft start modes can either be set at -10 or -20 decibels with a 0 to 15 minute ramp up time to the desired power. We can select -10 dB, -20 dB or maximum transmit power. Maximum transmit power is recommended by Kongsberg for maximizing the mapping swath coverage. In the deepest operating mode the EM302 is 237 dB while the EM710 is 229 dB. When operating in shallow modes the decibels are 232 dB and 225 dB respectfully. The multibeam systems can also be operated with less than maximum power if required. We believe that the Falkor's multibeam systems pose minimal risk to cetaceans in the Monument. Both multibeam systems will be turned on before the ship enters into the Monument and will remain on for the duration of the mapping cruise as a precautionary measure to avoid possible startling of the animals. In addition to utilizing the systems' soft start operating modes we will create a plan whereby as much of the shallow water mapping as possible will be conducted during daylight hours. Observers in the Falkor's bridge, or on the mammal observation deck, will be on the lookout for the presence of cetaceans in the vicinity of the ship. If cetaceans are spotted ahead along the track the ship will stop and wait for the animals to pass. The following are specifications for the two multibeam systems that will be used during this project:

The specifications of the Kongsberg EM302 system are:
Operating frequency .....30 kHz
Depth range ..... 10-7000 m
Swath width .....5.5xDepth, to approx 8 km
Pulse forms.....CW and FM chirp
Swath profiles per ping .....1 or 2
Motion compensation:
- Yaw ..... ± 10 degrees
- Pitch ..... ± 10 degrees
- Roll ..... ± 15 degrees
Sounding pattern .....Equi-distant /equiangular
Depth resolution of soundings .....1 cm
High resolution mode .....High Density processing
Sidelobe suppression .....> 25 dB
Suppression of sounding artefacts.....9 frequency coded transmit sectors
Beam focusing ..... On transmit (per sector) and on reception (dynamic)
Beamforming method .....Time delay
Gain control .....Automatic
Swath width control ....Manual or automatic, soundings intact when reduced swath width
Seabed imagery/sidescan sonar image .....Standard
Water column display.....Standard
Mammal protection .....Standard
Multi frequency operation .....Yes, by integration with EM 3002 and/or EM 710
Sub bottom profiling ..... Yes, by integration with SBP 300
Transmit array (deg).....150 x 1

Recevei array (deg).....1 x 30
Number of beams per swath.....288
Maximum number of sounding per swath.....432
Maximum number of swaths per ping.....2
Maximum number of soundings per ping.....864

The specifications of the Kongsberg EM710 system are:
Frequency range.....70 to 100 kHz
Max ping rate.....30 Hz
Swath coverage sector.....Up to 140 degrees
Min depth.....3 m below transducer
Max depth.....2000 m
CW transmit pulses.....0.2 to 2 ms
FW sweep pulse.....Max 120 ms
Roll stabilized beams.....Yes, ±15°
Pitch stabilized beams.....Yes, ±10°
Yaw stabilized beams.....Yes, ±10°
Sounding patterns.....Equiangular, Equidistant, High Density
Mammal protection .....Standard
Max number of soundings per ping.....800

The multibeam mapping activity is planned to occur around-the-clock. To reiterate, while operating during periods of darkness and when entering all areas of the monument the multibeam systems' "soft start" mode will be utilized. The sonar transmissions will start at a low output level and then gradually increasing to the level required for optimal bathymetry data collection. Furthermore, we will try as much as possible to work further offshore at night. It is our understanding that the only report of a whale grounding event that could possibly have been caused by multibeam mapping took place close to shore, where the animals may have been startled by a sudden full start of the system. They made a wrong turn, wound up in a lagoon system that they were unable to find their way out of. Using a soft start mode, if and when the systems need to be turned on and off, and conducting most if not all mapping activities at night well offshore should ensure that our activities do not result in a similar incident.

With respect to the gravimeter and magnetometer, the former is being leased for the duration of the cruise. Once it arrives, it will be installed inside the hull of the ship and will never come in contact with monument waters. It will be turned on as soon as the ship departs Honolulu Harbor and will be left on throughout the duration of the cruise. It is only a passive data collector that does not emit anything and therefore will have absolutely no impact on the monument resources. The magnetometer is a similar device in the sense that it is also a passive data collector that does not emit anything that could potentially effect the monument resources. However, unlike the gravimeter, the magnetometer is a tow fish connected to a cable fastened to the ship. The tow fish is a cylinder, approximately 49 inches in length, 5 inch in diameter, weighing about 35 lbs that measures very subtle variations in the strength of the Earth's magnetic field.

While it could be operated on the ship, the ship itself creates a noisy magnetic field environment that interferes with the more subtle signal of the Earth it aims to detect. Therefore it is towed some 150 ft behind the ship, and about 5 meters below the surface. It imposes a negligible disturbance to the water column and certainly much less than the ship itself.

b. How will the activity be conducted in a manner compatible with the management direction of this proclamation, considering the extent to which the conduct of the activity may diminish or enhance Monument cultural, natural and historic resources, qualities, and ecological integrity, any indirect, secondary, or cumulative effects of the activity, and the duration of such effects?
We are aware of the significance and cultural importance of the NWHI to Native Hawaiians. As a sacred place, and especially in the realm of Po (beyond Mokumanamana), our hope is to tread lightly and leave no footprint from our activities. Recognizing that natural resources are, in fact, cultural resources for Native Hawaiians, it is our hope that the information and data generated by this project will assist PMNM by providing a base map which may then be populated with what is known about the rich and unique biological resources of this region. This knowledge will contribute directly to the documentation of these natural/cultural resources, and it is this understanding that allows for enhanced protection of these resources. No specimen collections are requested under this permit, and all proposed activities are non-invasive. Thus, there are no anticipated impacts to the cultural resources or the integrity of NWHI ecosystems. We believe this proposed activity is consistent with the spirit of Proclamation 8031, and specifically with Finding 1.b.

c. Is there a practicable alternative to conducting the activity within the Monument? If not, explain why your activities must be conducted in the Monument.
Multibeam sonar mapping is the current state of the art technique used to map in depths below 50m. No better alternative methods exist to acquire high resolution imagery of the seafloor. A major objective of the project is to benefit the management of the monument by revealing the nature of the seafloor within its boundaries. Of the many individual islands, seamounts, atolls, ancient volcanic ridges, isolated pinnacles, and submerged banks within and crossing the PMNM boundaries, some are delineated only by the low resolution global dataset, others are sparsely mapped with just postage stamp-sized dive site summit surveys over them, while numerous other features are simply incomplete in coverage with gaping holes. Much of the existing data came from the transit swaths of opportunity which lack quality, resolution, and the proper acquisition orientation for the features being surveyed. In addition, the sidescan backscatter component is missing from many of the older systems. The project will result in new higher quality data useful to both the monument and to ongoing research efforts. There is no other way to acquire the gravity and magnetics data than with the use of the gravimeter and magnetometer.

d. How does the end value of the activity outweigh its adverse impacts on Monument cultural, natural and historic resources, qualities, and ecological integrity?

The information gathered will directly contribute to a better understanding of marine habitats and geologic history of the NWHI, thereby improving our understanding of NWHI habitats and ecosystems. The potential value of this information on previously unmapped habitats is tremendous. As noted in 7.b. (above), there are no anticipated impacts to PMNM cultural, natural, or historic resources. No specimens will be collected, no project gear will touch the benthos, and no shore access is required. In our estimation, the end value of this activity far outweighs any potential impacts (which are assumed to be negligible/nonexistent), thus meeting the criteria noted under Finding 1.d. in Proclamation 8031.

e. Explain how the duration of the activity is no longer than necessary to achieve its stated purpose.
Even with 72 ship days, this project cannot complete the huge task of mapping the entire seafloor within the monument boundaries. However, this is long enough to map most of the seamounts and much of the volcanic platforms of the islands and therefore will provide a significant contribution to achieving the task.

f. Provide information demonstrating that you are qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.
I have been the Principal Investigator and Chief Scientist of numerous multibeam mapping cruises within the main Hawaiian Islands and therefore am very experienced in planning and executing this type of project. I have furthermore assembled a very competent team who likewise have considerable experience in collecting and processing multibeam sonar data. Among them is Dr. John Smith who was the chief scientist on the first and most significant mapping cruise that has taken place within the monument to date. I also have considerable experience in working with multibeam data in ArcGIS software, have been contracted to produce numerous GIS projects for both government and private entities, and am currently working on a project for the dean of SOEST at UH that involves merging multibeam backscatter data for the entire main islands. I have also been the PI and chief scientist for other cruises in the monument since 2000 and am familiar with the permit process and need to minimize impacts to the monument resources.

g. Provide information demonstrating that you have adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.
The Schmidt Ocean Institute (SOI) has agreed to provide the ship, the multibeam systems, and their own multibeam technicians required for this cruise. This was a result of a competive grant process directly from SOI. I have requested the monument provide [redacted] of salary support for three of the participants, John Smith, Joyce Miller, and myself, which the University of Hawaii required. This has been approved and the funds are currently in process to be passed from NOAA's Office of National Marine Sanctuaries to UH. NSF will be providing funding for the lease of the gravimeter from the Woods Hole Oceanographic Institute and to cover 4 stipends for students participating on the second leg of the cruise. All other participants have agreed to arrange for their own salary and travel support through their respective employers.

h. Explain how your methods and procedures are appropriate to achieve the proposed activity's goals in relation to their impacts to Monument cultural, natural and historic resources, qualities, and ecological integrity.
Multibeam mapping is the state of the art technique for mapping seafloor deeper than 50m. The Falkor multibeam systems are the most up to date systems being produced and sold by SIMRAD. The magnetometer and gravimeter are the standard instruments used to collect these types of data.

i. Has your vessel been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?
No, but arrangements have been made to borrow a transceiver from the monument and install it on the Falkor when it arrives in the Hawaiian Islands later this fall.

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.
There are no other factors that would make the issuance of a permit for the activity inappropriate.

8. Procedures/Methods:
A complete track plan of all of the survey lines will be created and installed into the ship's navigation computers and multibeam systems. All data from previous cruises will also be incorporated into their real time multibeam displays to provide guides for minimizing seams between old and new data. The survey lines will be numbered in the order in which they should be done and the ship will run each line at 7 nm/hr. Multibeam mapping and collecting gravity and magnetics data are carried out around the clock and as a result, participants will man the processing and watch stand computers in two person teams for 8 hr shifts. The processing teams hope to finish with all or almost all of the data processing prior to the ship returning to Honolulu Harbor. Whatever raw data remains will be processed back in port as quickly as possible. A synthesis of the old and new data will be created by the PI after the cruises.

NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, contact the Monument office on the first page of this application.

9a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):

Common name:

Scientific name:

& size of specimens:

Collection location:

☐ Whole Organism ☐ Partial Organism

9b. What will be done with the specimens after the project has ended?

9c. Will the organisms be kept alive after collection? ☐ Yes ☐ No

• General site/location for collections:

• Is it an open or closed system? ☐ Open ☐ Closed

• Is there an outfall? ☐ Yes ☐ No

• Will these organisms be housed with other organisms? If so, what are the other organisms?

• Will organisms be released?

10. If applicable, how will the collected samples or specimens be transported out of the Monument?

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:
We have assembled all of the existing multibeam data for the monument and have created a mapping plan that avoids duplication, except where the previous data is of poor quality and the area is interesting enough to redo. Regarding future mapping work in the monument, Schmidt Ocean Institute requires that the data be made available immediately after we have finished processing it. They also require that it be distributed as widely as possible. This should ensure that there will be no duplication of this research in the future. The monument (specifically the Data Integration Group

Coordinator, Mr. David Graham) will receive a copy of all raw and processed data including syntheses with existing data on an external drive.

12a. List all specialized gear and materials to be used in this activity:
SIMRAD EM 302 and 710 multibeam sonar systems and sound velocity profilers for calibrating the systems at different locations within the monument.

12b. List all Hazardous Materials you propose to take to and use within the Monument:
none

13. Describe any fixed installations and instrumentation proposed to be set in the Monument:
none

14. Provide a time line for sample analysis, data analysis, write-up and publication of information:
Every effort will be made to complete the data processing by the end of the cruises. Once that is completed, the data products will be distributed to the monument, UH-SOEST, SOI, MBARI, and other interested parties for publication on their websites.

15. List all Applicants' publications directly related to the proposed project:
Kelley, C.; R. Moffitt; & J.R. Smith. 2006. Description of bottomfish essential fish habitat on four banks in the Northwestern Hawaiian Islands. Atoll Research Bulletin. No. 543, 319-332. (Note: utilized multibeam sonar mapping data from the monument)

Kelley, C. & W. Ikehara. 2006. The impacts of bottomfishing on Raita and West St. Rogatien Banks in the Northwestern Hawaiian Islands. Atoll Research Bulletin. No. 543, 305-318. (Note: utilized multibeam sonar mapping data from the monument)

Miller, J.E., S. Vogt, R. Hoeke, S. Ferguson, B. Appelgate, J.R. Smith, and M. Parke, Bathymetric Atlas and Website for the Northwestern Hawaiian Islands, Atoll Research Bulletin, 543, p. 409-422, 2006.

Evans, B.K., J.R. Smith, J.E. Miller, Collaborative Nautical Charting and Scientific Seabed Mapping Missions: NOAA and the University of Hawaii Conduct a Case Study in the Northwestern Hawaiian Islands, Sea Technology, v. 45, no. 6, pp. 14-22, (2004).

With knowledge of the penalties for false or incomplete statements, as provided by 18 U.S.C. 1001, and for perjury, as provided by 18 U.S.C. 1621, I hereby certify to the best of my abilities under penalty of perjury of that the information I have provided on this application form is true and correct. I agree that the Co-Trustees may post this application in its entirety on the Internet. I understand that the Co-Trustees will consider deleting all information that I have identified as "confidential" prior to posting the application.

Signature Date

SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE BELOW:

Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?

☒ Applicant CV/Resume/Biography
☒ Intended field Principal Investigator CV/Resume/Biography
☒ Electronic and Hard Copy of Application with Signature
☐ Statement of information you wish to be kept confidential
☐ Material Safety Data Sheets for Hazardous Materials

Papahānaumokuākea Marine National Monument
Compliance Information Sheet

1. Updated list of personnel to be covered by permit. List all personnel names and their roles here (e.g. John Doe, Diver; Jane Doe, Field Technician, Jerry Doe, Medical Assistant):

Christopher Kelley, Chief Scientist & Multibeam processing team, Hawaii Undersea Research Laboratory (HURL), ckelley@hawaii.edu, 808-956-7437

John R Smith, Co-Chief Scientist & Multibeam processing team, Hawaii Undersea Research Laboratory (HURL), jrsmith@hawaii.edu, 808-956-9669

Joyce Miller, Multibeam processing team, UH Mapping Research Group (HMRG), joycemil@hawaii.edu, 808-956-9395

Jason Leonard, Multibeam watch stand team, Papahānaumokuākea Marine National Monument (PMNM), jason.leonard@noaa.gov, 808-469-1148

Daniel Wagner, Multibeam watch stand team, Papahānaumokuākea Marine National Monument (PMNM), Daniel.Wagner@noaa.gov, 808-694-3961

Jeremy Taylor, Multibeam processing team, Pacific Islands Fisheries Science Center,
Kewalo Research Facility, 1125B Ala Moana Blvd, Honolulu, HI 96814,
jeremy.taylor@noaa.gov, 983-3776

Frances Lichowski, Multibeam processing team, Pacific Islands Fisheries Science Center, Kewalo Research Facility, 1125B Ala Moana Blvd, Honolulu, HI 96814, frances.lichowski@noaa.gov, 983-3776

Belinda Dechnik, Multibeam watch stand team, Geocoastal Research Group, School of Geosciences, The University of Sydney,
bdec4339@uni.sydney.edu.au, 61 407 396 861

Jonathan Tree, Multibeam water stand & processing team, Dept of Geology and Geophysics, UH, , jtree@hawaii.edu, 719-510-1896

Rachel Orange, Multibeam watch stand team, Hawaii Undersea Research Laboratory (HURL), rachel.orange@hawaii.edu, 808-956-6183

ITEM F-1b

Brian Boston, Multibeam watch and processing teams, Dept of Geology and Geophysics, UH, bboston@hawaii.edu, 423-432-2224

Kim Binsted, Multibeam watch and processing teams, Geology & Geophysics and Information & Computer Science Depts, UH, binsted@hawaii.edu, 808-398-1300

Brian Shiro, Multibeam watch and processing teams, Dept of Geology and Geophysics, UH, bshiro@hawaii.edu, 808-265-1415

Harrison Togia, Multibeam watch and processing teams, Dept of Geology and Geophysics, UH, togiah@hawaii.edu, 253-208-8162

Lauren Harrison, Multibeam watch and processing teams, Dept of Earth, Ocean, Atmospheric Sciences, 2020-2207 Main Mall, Vancouver, BC V6T-1Z4 Canada, lharriso@eos.ubc.ca, 307-760-6582

Shellie Linn Habel, Multibeam watch and processing teams, Dept of Geology and Geophysics, UH, 808-286-2586, skey@hawaii.edu

Anne Madhavi Patterson, Multibeam watch and processing teams, School of Geosciences, University of Sydney, 0405 732 015, apat4516@uni.sydney.edu.au

Stephanie Jane Duce, Multibeam watch and processing teams, School of Geosciences, University of Sydney, 0422251377, stephanie.duce@sydney.edu.au

Nicky Margaret Wright, Multibeam watch and processing teams, School of Geosciences, University of Sydney, 0405 335 423, nwri5277@uni.sydney.edu.au

2. Specific Site Location(s): (Attach copies of specific collection locations):

We will be mapping throughout the monument, targeting depths between 50-4000 m (please see the attached map). Our goal is to complete the multibeam coverage of monument waters within that depth range. The highest priority areas that we want to be sure to complete are:

1) Deep Water Priorities

a) The entire northern end of the monument from south of Pearl & Hermes to the end of the NW boundary.

b) Rift zone ridges extending off the platforms of Lisianski, Pioneer, and North Hampton

c) Seamounts throughout the monument, particularly northern half
d) The Gardner Pinnacle Platform

2) Shallow Water (50-150 m) Priorities
a) 50-150 m around Pearl and Hermes Atoll
b) 50-150 m in the south of FFS

3. Other permits (list and attach documentation of all other related Federal or State permits): ITAR (International Traffic in Arms Regulations) Permit for gravimeter (pending).

3a. For each of the permits listed, identify any permit violations or any permit that was suspended, amended, modified or revoked for cause. Explain the circumstances surrounding the violation or permit suspension, amendment, modification or revocation. N/A

4. Funding sources (Attach copies of your budget, specific to proposed activities under this permit and include funding sources. See instructions for more information): Schmidt Ocean Institute is providing 72 days of shiptime on Falkor and the monument itself through NMSP is providing $50,000 in salary support for 3 of the UH participants (Kelley, Smith, and Miller). The salaries, benefits, and overhead costs for all other participants will be covered by their respective institutions. All travel costs for Australian and Canadian participants will also be covered by their respective universities.

5. Time frame:
Activity start: March 7, 2014
Activity completion: June 6, 2014

Dates actively inside the Monument:
From: March 7, 2014
To: April 11, 2014

From: May 2, 2014
To: June 6, 2014

Describe any limiting factors in declaring specific dates of the proposed activity at the time of application: R/V Falkor schedule

Personnel schedule in the Monument:

The first 9 participants listed above will be in the monument from March 7 to April 11, 2014 during the first leg of this cruise. Three of these (Kelley, Smith, and Tree) will also be in the monument on the second leg from May 2 to June 6, 2014. All of the other participants (the remaining 11) will be only in the monument during the second leg of the cruise from May 2 to June 6, 2014.

6. Indicate (with attached documentation) what insurance policies, bonding coverage, and/or financial resources are in place to pay for or reimburse the Monument trustees for the necessary search and rescue, evacuation, and/or removal of any or all persons covered by the permit from the Monument: All but 2 of the participants affiliated with Universities who will cover them in the event of an emergency. The remaining two are NOAA employees and will be covered by that federal agency.

7. Check the appropriate box to indicate how personnel will enter the Monument:

X☐ Vessel
☐ Aircraft

Provide Vessel and Aircraft information: R/V Falkor

8. The certifications/inspections (below) must be completed prior to departure for vessels (and associated tenders) entering the Monument. Fill in scheduled date (attach documentation):

☐ Rodent free, Date:
☐ Tender vessel, Date:
☐ Ballast water, Date:
☐ Gear/equipment, Date:
☐ Hull inspection, Date:

9. Vessel information (NOTE: if you are traveling aboard a National Oceanic and Atmospheric Administration vessel, skip this question):
Vessel name: Falkor
Vessel owner: Schmidt Ocean Institute
Captain's name:
IMO#:

Vessel ID#:
Flag:
Vessel type:
Call sign:
Embarkation port: Honolulu
Last port vessel will have been at prior to this embarkation: Honolulu
Length:
Gross tonnage:
Total ballast water capacity volume (m3):
Total number of ballast water tanks on ship:
Total fuel capacity:
Total number of fuel tanks on ship:
Marine Sanitation Device:
Type:

Explain in detail how you will comply with the regulations regarding discharge in the Monument. Describe in detail. If applicable, attach schematics of the vessel's discharge and treatment systems:

Other fuel/hazardous materials to be carried on board and amounts:

Provide proof of a National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement-approved Vessel Monitoring System (VMS). Provide the name and contact information of the contractor responsible for installing the VMS system. Also describe VMS unit name and type:

VMS Email:
Inmarsat ID#:

* Individuals MUST ENSURE that a type-approved VMS unit is installed and that its automatic position reports are being properly received by the NOAA OLE system prior to the issuance of a permit. To make sure your VMS is properly configured for the NOAA OLE system, please contact NOAA OLE at (808) 203-2503 or (808) 203-2500.

* PERMITS WILL NOT BE ISSUED TO INDIVIDUALS ENTERING THE MONUMENT VIA VESSEL UNTIL NOAA OLE HAS CONTACTED THE MONUMENT PERMIT COORDINATOR WITH A 'POSITIVE CHECK' READING.

10. Tender information:

On what workboats (tenders) will personnel, gear and materials be transported within the Monument? List the number of tenders/skiffs aboard and specific types of motors:

Additional Information for Land Based Operations

11. Proposed movement of personnel, gear, materials, and, if applicable, samples:

12. Room and board requirements on island:

13. Work space needs:

DID YOU INCLUDE THESE?
X☐ Map(s) or GPS point(s) of Project Location(s), if applicable
☐ Funding Proposal(s)
☐ Funding and Award Documentation, if already received
☐ Documentation of Insurance, if already received
☐ Documentation of Inspections
☐ Documentation of all required Federal and State Permits or applications for permits

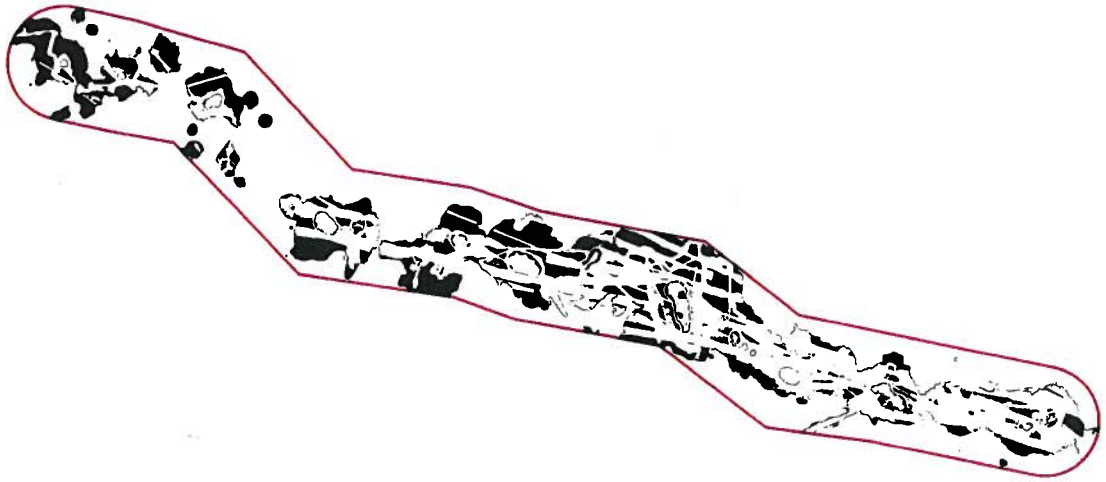

Fig 1: Map showing multibeam 50-4000m mapping targets (black polygons) inside the monument.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 330
HONOLULU, HAWAII 96813
Telephone: 587-0100

February 28, 2014

TO: Division of Aquatic Resources File

THROUGH: William J. Aila Jr., Chairperson

FROM: Frazer McGilvray
Division of Aquatic Resources

DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT RESEARCH PERMIT TO DR. CHRISTOPHER KELLEY, UNIVERSITY OF HAWAI'I, HAWAI'I UNDERSEA RESEARCH LABORATORY, FOR ACCESS TO STATE WATERS TO CONDUCT BATHYMETRIC MAPPING ACTIVITIES UNDER PERMIT PMNM-2014-002

The following permitted activities are found to be exempted from preparation of an environmental assessment under the authority of Chapter 343, HRS and Chapter 11-200, HAR:

Project Title:
Papahānaumokuākea Marine National Monument Research Permit to Dr. Christopher Kelley, University of Hawai'i, Hawai'i Undersea Research Laboratory, for Access to State Waters to Conduct Bathymetric Mapping Activities

Permit Number: PMNM-2014-002

Project Description:
The research permit application, as described below, would allow entry and activities to occur in Papahānaumokuākea Marine National Monument (Monument), including the NWHI State waters between March 1, 2014 and February 28, 2015.

The primary purpose of the proposed project is to map the seafloor (i.e. produce bathymetric maps) of the Monument using multibeam sonar and simultaneously collect both gravity and magnetic field data. The applicant would attempt to map presently unmapped portions of the seafloor in the Monument and these data would be merged with existing bathymetric mapping data to create an updated synthesis of the seafloor in the Monument which would be available on various web venues.

Bathymetric data collection would be done via two multibeam sonar systems while gravity and magnetics data would be collected using a gravimeter and a magnetometer, respectively. Up to twenty-four (24) individuals would enter the Monument during two thirty-six (36) day cruises between March 7 and June 7, 2014. The proposed activities would take place in waters deeper than 50 m around Nihoa Island, Necker Island

(Mokumanamana), French Frigate Shoals, Gardner Pinnacles, Maro Reef, Laysan Island, Lisianski Island, Pearl and Hermes Atoll, and Kure Atoll. The two multibeam sonar systems on board the vessel would be turned on in waters outside the Monument and would be operating around-the-clock. The two multibeam sonar systems would operate within different frequency ranges with the higher frequency system (70 to 100 kilohertz (kHz)) operating in shallow water (less than 500 m) and the lower frequency system (30 kHz) operating in deep water (greater than 500 m). The gravimeter is contained within the vessel, never touching Monument waters. The magnetometer is connected to the vessel via a cable and is towed 150 ft behind the vessel to minimize interaction with the vessel's magnetic field. This cylindrical instrument measures 49 inches in length and 5 inches in diameter and rests about 5 m below the surface while the vessel is in operation. If the vessel stops, the magnetometer will be retrieved.

No negative effects of instrumentation involved in the proposed activities have been observed. The multibeam sonar systems would be left on throughout the duration of the cruise so as not to startle protected species and provide advanced warning of the vessel. Protected species would be more likely to be encountered in and around the islands and atolls and observers would be on watch throughout daylight hours for the presence of protected species. Therefore these mapping activities would be conducted during daylight hours as much as possible when observers are present. If any protected species are observed during daylight hours in the vicinity of the vessel, then the ship would stop 200 m from the protected species and wait for them to pass. At night, multibeam sonar systems would be set to operate on a soft start function. When in soft start mode, the sonar transmissions will start at a low output level and gradually increase to a level required for optimal bathymetric data collection, providing warning to protected species of the vessel. If the vessel stops, the magnetometer would be retrieved to avoid entanglement. Both the gravimeter and magnetometer are passive data collectors and do not emit anything that could potentially harm monument resources.

The activities proposed by the applicant directly support the Monument Management Plan's priority management need under the Marine Conservation Science Action Plan (MCS) Activity MCS-1.3: Map and characterize deep-water habitat (defined as waters more than 30 m depth). Activities to support coordinated field operations in the NWHI are addressed in the Monument Management Plan Environmental Assessment (December 2008) which resulted in a FONSI, or a Finding of No Significant Impact. This EA recognizes that sidescan sonar and other methods would be used to collect data needed to continue mapping and characterizing deepwater habitats in the Monument. (PMNM MMP Vol 2, p.8, 28, and 185).

Consulted Parties:
The permit application was sent out for review and comment to the following scientific and cultural entities: Hawaii Division of Aquatic Resources, Hawaii Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application was posted on the Monument Web site on November 5, 2013 and revised application was posted on November 18, 2013, giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

Exemption Determination:
After reviewing HAR § 11-200-8, including the criteria used to determine significance under HAR § 11-200-12, DLNR has concluded that the activities under this permit would have minimal or no significant effect on the environment and that issuance of the permit is categorically exempt from the requirement to prepare an environmental assessment based on the following analysis:

1. All activities associated with this permit; including bathymetric mapping activities involving the use of multibeam sonar systems, gravimeter, and magnetometer; have been evaluated as a single action. As a preliminary matter, multiple or phased actions, such as when a group of actions are part of a larger undertaking, or when an individual project is precedent to or represents a commitment to a larger project, must be grouped together and evaluated as a single action. HAR § 11-200-7. Since this permit involves an activity that represents a commitment to a larger project, i.e. conducting bathymetric mapping activities of the seafloor within the Monument, the categorical exemption determination here will treat all planned activities as a single action, to the extent possible.

2. The Exemption Class for Scientific Research with no Serious or Major Environmental Disturbance Appears to Apply. Chapter 343, HRS, and § 11-200-8, HAR, provide for a list of classes of actions exempt from environmental assessment requirements. HAR §11-200-8.A.5. exempts the class of actions which involve "basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource." The proposed activities appear to fall squarely under the exemption class #5, exempt item #2 as described under the division of Forestry and Wildlife exemption list published on June 12, 2008. This exemption class has been interpreted to include "new transect lines, recording...", such as those to be supported by the proposed activities. It has also been interpreted to include vessel transiting transect lines and multibeam sonar systems, gravimeter, and magnetometer in the collection of bathymetric mapping data. As discussed below, no significant disturbance to any environmental resource is anticipated in the sampling of Monument resources. Thus, so long as the below considerations are met, an exemption class should include the action now contemplated.

To mitigate any potential impacts on protected species, the multibeam sonars would be kept on for the duration of the cruise so as not to startle protected species and avoid potential collisions. Observers would stand watch during daylight hours looking for protected species in the vicinity of the vessel. Any mapping activities occurring in the vicinity of land would be done during the day. If any protected species are observed, then the vessel would stop 200 m from the protected species. Also, the magnetometer would be retrieved to avoid entanglement. At night, the soft start function would be used to provide advanced warning to protected species of the vessel.

3. Cumulative Impacts of Actions in the Same Place and Impacts with Respect to the Potentially Particularly Sensitive Environment Will Not be Significant. Even where a categorical exemption appears to include a proposed action, the action cannot be declared exempt if "the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment." HAR § 11-200-8.B. To gauge whether a significant impact or effect is probable, an exempting agency must consider every phase of a proposed action, any expected primary and secondary consequences, the long-term and short-term effects of the action, the overall and cumulative effect of the action, and the sum effects of an action on the quality of the environment. HAR § 11-200-12. Examples of actions which commonly have a significant effect on the environment are listed under HAR § 11-200-12.

Similar activities of this type, to conduct bathymetric multibeam sonar mapping activities, have been permitted and undertaken in the past. In 2008, Joyce Miller was issued permit PMNM-2008-011 for bathymetric multibeam mapping activities in deep and shallow water around French Frigate Shoals, Nihoa Island, and Pearl and Hermes Atoll. Dr. Christopher Kelley (the Applicant) was issued permit PMNM-2009-052 in 2009 for multibeam mapping activities in deep and shallow water around Nihoa Island. In 2011, Dr. James Garner was issued permit PMNM-2011-013 for bathymetric mapping in deep water around Mokumanamana. Since bathymetric mapping within the Monument is not complete, it is reasonable to expect future permit requests for

similar work. No deleterious impacts to the environment resulted from similar previous activities. With this in mind, significant cumulative impacts are not anticipated as a result of this activity, and numerous safeguards further ensure that the potentially sensitive environment of the project area will not be significantly affected.

The proposed project would be supported by proposed permit PMNM-2014-004 from Eric King, Schmidt Ocean Institute for the RV FALKOR. The proposed cruise dates for this project are March 7 to April 11, 2014 and May 2 to June 7, 2014 totaling seventy-two (72) days in the Monument. It is anticipated that activities on these cruises would occur throughout the Monument. It is anticipated that activities on these cruises would occur throughout the Monument. The National Marine Fisheries Service plans to deploy monk seal field camps and personnel on Laysan Island, French Frigate Shoals, Kure Atoll, and Midway Atoll starting June 2014 for the field season. At this time, no other concurrent activities are known. The culmination of this permit, occurring throughout the Monument over several months, is not anticipated to have significant cumulative impacts.

Since no significant cumulative impacts or significant impacts with respect to any particularly sensitive aspect of the project area are anticipated, the categorical exemptions identified above should remain applicable.

4. Overall Impacts will Probably be Minimal and Insignificant Any foreseeable impacts from the proposed activity will probably be minimal, and further mitigated by general and specific conditions attached to the permit. Specifically, all conservation and management activities covered by this permit will be carried out with strict safeguards for the natural, historic, and cultural resources of the Monument as required by Presidential Proclamation 8031, other applicable law and agency policies and standard operating procedures.

Conclusion. Upon consideration of the permit to be approved by the Board of Land and Natural Resources, the potential effects of the above listed project as provided by Chapter 343, HRS and Chapter 11-200 HAR, have been determined to be of probable minimal or no significant effect on the environment and exempt from the preparation of an environmental assessment.

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William J. Aila Jr. Date
Chairperson, Board of Land and Natural Resources