Papahānaumokuākea Marine National Monument

CONSERVATION AND MANAGEMENT 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: Gregory C. Johnson (on behalf of U.S. Argo)
Affiliation: NOAA/Pacific Marine Environmental Laboratory

Permit Category: Conservation and Management
Proposed Activity Dates: ongoing, deployments Jan 2013 through Dec 2017
Proposed Method of Entry (Vessel/Plane): TBD
Proposed Locations: Floats to be deployed in gaps of Argo array coverage in water deeper than 2000 m. Argo floats will be deployed from ships already entering the Monument for permitted activities. The specific ships and track lines are not available at this time as permitting for primary activities from vessels has not occurred. Deployments from NOAA vessels (such as the Hi'ialakai or Oscar Sette) or UNOLS research vessels (such as the Kilo Moana) are anticipated.

Estimated number of individuals (including Applicant) to be covered under this permit: Deployments would occur from vessels already permitted for work within the Monument by personnel already working on those vessels. Actual float deployments typically use two people to maneuver the float on deck and lower the float into the water.
Estimated number of days in the Monument: No additional personnel days, instruments will remain in Monument unless currents carry them out.

Description of proposed activities: (complete these sentences):

a.) The proposed activity would…
deploy autonomous profiling CTD instruments as part of the Argo project. These instruments would report temperature, salinity profiles along with drift (current) information every 10 days. Data would be available freely worldwide within 24 hours of collection.

b.) To accomplish this activity we would ….
locate vessels permitted for activity within the Monument and request that they deploy floats along their routes in areas of low coverage that are deeper than 2000 m. When such opportunites are found, we would train personnel in deployment procedures.

c.) This activity would help the Monument by …
providing temperature, salinty and current data for the ocean from the surface to 2000-m depth within the Monument. Because Argo data are available freely and in near-real time, they can be quite useful, even vital, for accurate monitoring and forecasting of conditions. Argo floats can be used to assess conditions in the euphotic zone, including mixed layer depths, temperatures, and salinities as well as the strength of the thermocline. Knowing the temperature, salinity, and current structure can help managers monitor conditions within the Monument and thus better manage activities.

Other information or background:
The Argo project is an international effort to measure the temperature, salinity, and currents in the upper 2000 m of the ocean globally. Autonomous floats at 3 degree latitude/longitude spacing are utilitzed for this purpose. These floats are typically deployed by a line from vessels moving slowly (at 1-3 knots). Floats adjust their buoyancy, allowing them to sink or rise at a rate of about 8 cm/s when profiling. The standard Argo mission using iridium communications is to drift for 10 days at 1000 m, descend to 2000 m, then ascend to the surface collecting temperature and salinity data. The floats then spend approximately 15 minutes on the surface to obtain a position fix and return data. Data are available freely within 24 hours of collection. Floats have a target lifetime of 4 years, but advances in the design mean that floats covered by this permit should return data for 6 or more years. When floats run out of energy (which typically occurs at 2000 m where the highest energy load demands occurs) they will remain at depth until corrosion breaches their hulls and sends them to the bottom. Please see www.argo.net for more information about the project.

Floats covered under this application will be approximately 65 inches long, 5.5 inches in diameter (with a 9.5 inch diameter stability disk), and weigh about 45 lbs. They are powered with lithium batteries and use Iridium communications.

This application seeks to obtain a permit to deploy floats into the Monument as deployment opportunities arise and as holes in the Argo array open. This permit does not specify locations or a ship as we seek to utilize vessels permitted for other work in the Monument. A recent cruise by the NOAA ship Oscar Sette would have provided an excellent chance to deploy six floats, however until the Sette obtained its permit for its primary mission, they could not know their cruise track and we could not know if they were crossing gaps in the array in water deeper than 2000 m.

Argo data has proven its worth for a variety of operational purposes (see http://www.argo.ucsd.edu/Use_by_Operational.html). Ensuring that there is not a hole in data within the Monument seems likely to have substantial value for the conservation of the Monument

There are currently three Argo floats reporting on schedule and a total of six Argo floats whose last reported locations were within the Monument. Their transmission dates and

locations are shown in the following table. Because we do not receive location information unless the floats are able to transmit on the surface, we cannot know the locations of floats that have run out of energy and are drifting at depth.

WMO number	last transmission date	last lat	last lon
5900710	9/20/12	28.21	-176.638
1901379	9/23/12	24.1	-165.03
5902158	7/8/12	22.96	-164.27
5903272	9/23/12	23.7	-161.36
2900179	5/14/04	28.07	-175.12
4900909	3/27/11	25.63	-174.59
5900661	11/14/08	25.35	-172.88
5901336	12/14/10	23.31	-163.12
5900125	12/28/02	23.33	-162.72

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial):

Johnson, Gregory C.

Title: Oceanographer

1a. Intended field Principal Investigator (See instructions for more information):
Vessels with other (primary) permitted activity in the Monument will be utilized for deployments. As an ancillary project, we cannot currently name a field principal investigator. We will ensure the field PI is trained in deployment of Argo floats.

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

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

3. Affiliation (institution/agency/organization directly related to the proposed project):
NOAA

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):
Vessels with other permitted activity inside the Monument will be utilized for deployments. Ship personnel will be utilized to deploy floats and will be trained as required. Other Argo PIs may provide floats (Dean Roemmich, Scripps Institution of Oceanography; Steve Riser, U. of Washington, W. Brechner Owens, Woods Hole Oceanographic Institution).

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

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

Location Description:

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 Argo project is a worldwide effort to measure the temperature, salinity, and currents to 2000m in real time and make that data available freely across the globe. Argo is attempting to collect data at a spacing of 3 degrees of latitude and longitude throughout the world's oceans deeper than 2000m. The Monument encompasses a significant amount of the Pacific and having a gap in the information would be undesirable both from the perspective of obtaining a global snapshot and time series of the ocean temperature and salinity in the upper 2000m, and from the perspective of monitoring ocean conditions within the Monument itself. Argo data are vital for such operational needs as accurately monitoring/forecasting sea level rise, helping provide more accurate weather forecasts, and anticipating coral bleaching events. Without deploying floats within the Monument, a hole in coverage has been developing. This permit seeks to enhance the monitoring of the Monument and provide data to users around the world seeking to obtain a better understanding of the temperature and salinity in the open ocean waters within the Monument and its interaction with the entire Pacific.

*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?
The Monument is recognized as a sacred place to Native Hawaiians. Argo floats are designed to have little effect on their surroundings and so should respect the sanctity of the place. They do not remove materials and they spend about 95% of their time floating freely with the currents at 1000-m depth (thus having no potential to disturb anything, including currents). They spend about 12 hours of every 10 days profiling between 2000 m and the surface at a very slow pace (about a mile in 6.5 hours, much slower than a slow walk) and they have a brief (15 minutes every 10 days) surface

interval to return data. Their movements are very slow and quiet as is appropriate in a sacred space. Argo floats are small (under 55 lbs) and widely spaced (target coverage is one float per thirty-thousand square miles around the Monument). Given their small size, slow motions, lack of noise, and extremely limited surface periods, impacts on the Monument, if any, are expected to be minimal and would consistent with Native Hawaiian's respect for the environment. Seabirds can be attracted to floats, as they are to any floatsam. If there is concern about attracting sea birds during the floats' brief surface period, floats can be specially programmed to only surface at night.

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?
Argo float data will provide valuable information about the temperature, salinity, and ocean currents within the Monument and thus should enhance management of the Monument. As temperatures change and sea levels rise, the Argo program will continue to provide essential data to allow global estimates of the trends. Monitoring these ocean parameters within the Monument can help managers to decide where best to dedicate resources. For example, temperature and salinity changes can have significant impacts to the fauna-- changing feeding patters, or in the case of coral reefs, putting the polyps under stress. Knowing that these changes are occuring can allow managers to target efforts at helping endagered animals threatened by these changes. Similarly, better knowing the seasonal pattern of changes can only enhance manager decisions about when and where to best dedicate conservation resources.

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.
No, there is no practical alternative to collecting temperature, salinity, and ocean current data about the Monument within the Monument.

d. How does the end value of the activity outweigh its adverse impacts on Monument cultural, natural and historic resources, qualities, and ecological integrity?
Because Argo floats spend the majority of their time at depth, well below the euphotic zone, very little (if any) impact to Monument biology is anticipated. Argo floats are very small and widely spaced. Argo floats operate in deep water only, so the historic and ecological resources on land should not be impacted at all, unless floats find their way into shallow water, which does happen, if rarely. Argo floats will provide very valuable information about conditions within the Monument and about how the Monument fits in with the Pacific -- how the ocean currents, temperature, and salinity change with the seasons and with time. Argo data are critical for estimates of sea level rise. They are also used in weather and ocean forecasting and nowcasting. Enhancing the global data set as well as obtaining direct measurements of conditions within the Monument is a substantial benefit. Argo floats are anticipated to have essentially no impact to the Monument. Over the five year extent of this permit, should it be issued, we anticipate fewer than 30 floats would be deployed within the monument.

e. Explain how the duration of the activity is no longer than necessary to achieve its stated purpose.
The Argo project is a world wide, International effort to obtain a time series of data so that existing ocean currents, temperature, and salinity and their variations can be recorded and monitored. In order to maintain the array and the time series, data must continue to be collected. As such, this application seeks to obtain permission to deploy floats into the Monument over five years as gaps in the Argo array open and as vessels (seperately permitted) provide deployment platforms to fill those gaps . In this period of climate change, continuous monitoring so that trends can be recognized and fully sampled is particularly critical.

f. Provide information demonstrating that you are qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.
The US Argo project has funding and experience deploying several hundred floats annually to help maintain the global array with the specified 3 degree by 3 degree latitude/longitude spacing. Fewer than 20 floats are needed within the monument at one time for target coverage-- well within the demonstrated capabilities of this group.
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.
This work is funded through NOAA's Climate Program Office.

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.
Argo floats operate in deep water and so should have no impact on the Monument's land resources. Because they operate in deep water, mostly below the euphotic zone, there should be little to no interaction with biology. At the end of a float's 5+ year lifetime it will have insufficient energy to ascend to the surface and so will drift at depth (usually 2000 m) until corrosion breaches its hull and sends it to the bottom. However, rarely a float will cease functioning in shallow water or on shore. Because they are so small and because they typically cease to function at depth, it is impractical to attempt to retrieve the floats at sea. In rare cases that a float has come ashore, floats have been retrieved.

i. Has your vessel has been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?
Deployments will be from vessels permitted to conduct other activity in the Monument; those vessels will comply with the Monument vessel requirements.

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.
The Argo project has successfully operated worldwide for a decade and has had floats operating in marine protected areas providing valuable data without negative impacts to those protected areas to our knowledge. We are aware of over 20 floats currently

operating in Australia's Coral Sea Conservation Zone and of several floats that have transited US West coast marine protected areas. We are not aware of any problems from float operations in marine protected areas.

8. Procedures/Methods:
Argo floats are 40-55 lb instruments that are checked for operation, then line lowered from a vessel traveling at 1-3 knots. Typically two people on the ship accomplish the deployment. The floats descend to 1000m over the course of approximately 4 hours. They maintain their depth at 1000m for 10 days. Then they descend to 2000m over the course of approximately 3 hours. They return and to the surface in approximately 7 hours. During the ascent they record temperature and salinity data with an on-board scientific instrument. They then spend approximately 15 minutes on the surface returning data via Iridium communications, after which time they descend to 1000m depth for another cycle. Typical lifetimes of floats is 5 or more years. Data are assembled at global data assembly centers and available within 24 hours of collection. Seabirds may be attracted to floats as they would be to any flotsam. If this possible attraction for 15 minutes every 10 days is deemed problematic, floats can be programmed to surface only at night.

NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding.

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:
N/A

Scientific name:
N/A

& size of specimens:
N/A

Collection location:
N/A

☐ Whole Organism ☐ Partial Organism

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

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

N/A

• General site/location for collections:
N/A

• 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?
N/A

• Will organisms be released?
N/A

10. If applicable, how will the collected samples or specimens be transported out of the Monument?
No material will be removed from the monument.

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:
Argo project data are freely available and deployments are coordinated through the Argo Information Centre to ensure that deployments are not duplicative.

12. List all specialized gear and materials to be used in this activity:
Argo Floats

13. List all Hazardous Materials you propose to take to and use within the Monument:
Lithium Batteries and CTD anti-foulant device contained within the floats; no other Hazardous Materials

14. Describe any fixed installations and instrumentation proposed to be set in the Monument:
No fixed installations are proposed. Argo floats drift freely with currents.

15. Provide a time line for sample analysis, data analysis, write-up and publication of information:
Data are available freely within 24 hours of collection.

16. List all Applicant's publications directly related to the proposed project:
See http://www.argo.ucsd.edu/Bibliography.html for a list of Argo publications.

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