

U.S. Department of the Navy

FINDING OF NO SIGNIFICANT IMPACT/FINDING OF NO SIGNIFICANT HARM for Phase 1a of the At-Sea Testing of the Ocean of Things Program, San Diego, California

Introduction

Pursuant to Section 102(2) of the National Environmental Policy Act (NEPA) of 1969, as amended; Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508) implementing NEPA; U.S. Department of the Navy (Navy) Regulations (32 CFR § 775); Chief of Naval Operations Instruction (OPNAVINST) 5090.1; Executive Order 12114; and CEQ guidance (*The Effective Use of Programmatic NEPA Reviews*), the Navy gives notice that an Environmental Assessment (EA)/Overseas Environmental Assessment (OEA) and Finding of No Significant Impact (FONSI)/Finding of No Significant Harm were prepared for the proposed implementation of Phase 1a of at-sea testing of the Ocean of Things program. The Ocean of Things Phase 1a testing would be conducted by Naval Information Warfare Systems Command (NAVWAR), Naval Information Warfare Center (NIWC) Pacific on behalf of the Defense Advanced Research Projects Agency (DARPA). Phase 1a testing would occur in the Pacific Ocean offshore of southern California and Baja California, overlapping the Navy's Southern California Range Complex, adjacent waters of the U.S. and Mexico Exclusive Economic Zones, and high seas of the global commons.

Purpose of and Need for the Proposed Action

The purpose of the Ocean of Things program is to advance the Navy's data collection in the area of meteorology, oceanography, and sensing by developing a cost-effective, low-environmental impact program to characterize an oceanographic region by collecting and analyzing environmental and anthropogenic activity data at a scale and resolution that is currently not available. The Proposed Action is required to fill a gap in maritime situational awareness by providing a regional, multivariate, high-resolution, real-time picture from a distributed sensor network on the ocean. The primary user for Ocean of Things data would initially be the Navy, but data could also be used by other federal and state agencies and research institutions for purposes such as weather forecasting and calibrating ocean circulation models, monitoring vessel traffic, and in the management of marine protected areas.

Executive Order 13840, *Ocean Policy To Advance the Economic, Security, and Environmental Interests of the United States* (June 19, 2018) includes the goal to improve "...public access to marine data and information, efficient interagency coordination on ocean-related matters, and engagement with marine industries, the science and technology community, and other ocean stakeholders." The Ocean of Things program directly addresses this requirement by providing new, cutting edge ocean technologies and public access to the unique ocean information that will be collected by the Ocean of Things floats at higher spatial resolution than currently exists. Further, the Ocean of Things program directly addresses the requirement to "modernize the acquisition, distribution, and use of the best available ocean-related science and knowledge" by hosting and distributing this information to marine stakeholders (research institutions and government agencies) through modern cloud computing services.

The goal of Phase 1a is to use a limited number of floats (up to 1,000) in a bounded area to demonstrate: (1) float performance of three float designs over a defined duration and (2) use of cloud analytics to characterize a well-defined area. The Phase 1a Study Area would consist of predominantly deep, offshore waters, where potential impacts to coastal, shallow waters, and fisheries resources would be minimized, while still overlapping areas with sufficient opportunities to detect maritime

activity. Phase 1a would provide information on float performance - their longevity, drift patterns, data collection and transmittal, and successful programmed scuttling at the boundaries of the geofence. Success in Phase 1a is a precondition to conducting Phases 1b and 2, which would characterize larger Study Areas using greater numbers of floats for longer periods of time.

Ocean of Things Program Overview

The Ocean of Things program is a research and development effort that aims to provide expanded information capabilities for the analysis of ocean data in a cost-effective way, taking advantage of developments in cloud-based analytic techniques to assess maritime conditions and contribute to oceanographic models in near real-time. Ocean of Things is an initiative of the DARPA's Strategic Technology Office, which focuses on technologies that increase military effectiveness through the use of networks, cost leveraging, and adaptability. The objective of the program is to provide environmental sensing and maritime surveillance missions by developing new low-cost methods for detection and tracking of objects and characterization of oceanographic phenomena at a fine scale over broad areas. The inputs for these data analytics over a large ocean area would be provided by deploying small, low-cost smart floats to form a distributed sensor network.

The floats are designed to drift freely on the ocean surface with surface currents. Each smart float contains a suite of commercially available sensors to collect environmental data, such as ocean temperature, sea state, salinity, and location, which will enable analysis of conditions and activities in the area. The floats would transmit data periodically via Iridium satellite Short Burst Data to a shore-side data cloud for storage and near real-time analysis, resulting, for example, in surface current tracking, identification of vessel activity, and monitoring of changing meteorological conditions. At the end of the designated period of data collection, or if the floats lose vital capabilities such as communications, the floats would scuttle (i.e., sink to the ocean bottom). Additionally, the floats would scuttle before crossing a designated geofence (i.e., a virtual set of geographic boundaries programmed into the floats, defined using Global Positioning System [GPS] parameters, beyond which the floats would not be allowed to travel). This geofence would be located 12 nautical miles from shore to prevent floats from potentially going ashore, entering sensitive marine areas, or interacting with shallow habitats. The geofence will also minimize interaction between the floats and members of the general public, thus minimizing any potential health and safety risks. A key feature of the Phase 1a Study Area is the placement of mock islands, which are virtual islands created to demonstrate geofence performance around isolated land masses. Scuttle performance around mock islands would be used to support potential future deployments near actual islands. The floats are designed to minimize their end-of life footprint by making use of innovative, maximally degradable materials, minimizing use of plastics, and staying within a small overall volume.

To effectively develop, demonstrate, and evaluate this evolving technology, the Ocean of Things program would consist of three distinct at-sea test phases:

- Phase 1a: release of up to 1,000 floats for a 1-month period in a limited Study Area (this EA/OEA)
- Phase 1b: release of up to 3,350 floats for a 3-month period in an expanded Study Area
- Phase 2: release of up to 15,000 floats for a 9-month period in an expanded Study Area

Each subsequent phase is defined by separate requirements and broadening objectives, which may involve alterations to design, programming, data processing, location, and/or number of floats released

as the Ocean of Things program progresses. This approach results in distinct outcomes and decision points for each phase. Following the implementation of Phase 1a, in which three float designs would be tested, the Navy and DARPA would assess the demonstrated data analytics capabilities and performance of the floats. Any future proposal to implement Phase 1b would be conditional on the demonstrated success of Phase 1a. Similarly, any future proposal to implement Phase 2 would be conditional on the demonstrated success of Phases 1a and 1b. DARPA may re-evaluate and revise program objectives using lessons learned at the conclusion of Phase 1a. The suitability of the above phased approach in the waters off southern California may be re-evaluated at that time.

This EA/OEA only addresses Phase 1a of the Ocean of Things program. Contingent upon the results of Phase 1a, both Phase 1b and Phase 2 testing by the Navy would be analyzed in separate Supplemental EAs/OEAs to this EA/OEA.

Description of the Proposed Action

This EA/OEA only considers implementation of Phase 1a. Phase 1a would consist of deployment of up to 1,000 small floats of up to three different designs (ideally approximately 333 floats of each type). The floats would drift for up to one month over a limited Study Area in the Pacific Ocean off southern California and Baja California, beyond U.S. and Mexican territorial seas (12 NM), prior to scuttling near the boundaries of the geofence; under loss of GPS/communications or low battery power conditions; or at the end of the test period. Each of the three float designs would progress through test phases independently; therefore, one-month deployments of each type of float may or may not be concurrent.

Alternatives

Based on the reasonable alternative selection criteria and meeting the purpose and need for the Proposed Action, two action alternatives in addition to the No Action Alternative were identified and will be analyzed within this EA/OEA.

Alternative 1. Under Alternative 1, up to 1,000 floats would be initially deployed in the Navy's Southern California Range Complex and allowed to drift for one month, or until they approach a geofence where they would scuttle seaward of 12 NM of any shoreline, at the boundaries of the Study Area, or at the mock islands. Floats would drift through areas with higher levels of maritime and military activity, providing increased opportunities to obtain data to meet the goals of the Ocean of Things program. In addition, the surface currents and environmental conditions would be more complex across the Southern California Bight, allowing for improvements in data analytics and regional characterization. The size of the area would allow for both fine scale and large scale characterization of oceanographic phenomena. Existing surface drift models and available contemporaneous oceanographic data have been used to inform Phase 1a deployment patterns to maximize data collection while minimizing loss of floats through scuttling. Drift patterns of floats in Phase 1a would further inform future deployments in Phase 1b and Phase 2.

Alternative 2. Alternative 2 would be the same as Alternative 1 except the Study Area would be located farther west of the continental shelf and only include the southwestern portion of the Alternative 1 Study Area. The eastern boundary was located to limit the Alternative 2 Study Area to being seaward of 3500 meter depth and outside of essential fish habitat (EFH) for groundfish. Under Alternative 2, floats would be initially deployed westward of the 3,500 meters bathymetric contour and different mock island locations would be used. Under Alternative 2, the predominant float surface drift would be to the south and southeast, with more limited opportunities to characterize complex surface conditions. In

addition, floats would be outside of more heavily trafficked waters nearer the coast, limiting opportunities for maritime activity identification and tracking.

No Action Alternative. The No Action Alternative represents the status quo, in which floats under the Ocean of Things program would not be deployed at sea. Implementing the No Action Alternative would impede development of cost-effective methods to fill a gap in regional high resolution and quality data that can be used to obtain near real-time situational awareness and calibrate and improve oceanographic models.

Several alternatives were considered but not carried forward including:

Limited Geographic Area. This alternative considered limiting floats to within specifically set boundaries over a small area (e.g., within the Navy's Southern California Range Complex) but would artificially constrain data gathering; limit the potential value of the program, without providing a corollary advantage; and not provide a large enough Study Area to allow floats to persist for the proposed one-month test duration.

Study Areas in Other Geographic Locations. For this initial proposed test of the Ocean of Things floats by NIWC Pacific, the Pacific Ocean off southern California and Baja California was identified as the optimal location. This is due to its diversity of environments; likelihood of obtaining quality data to test the Ocean of Things programmatic requirements; and proximity to NIWC Pacific research, development, test, and evaluation facilities in San Diego and to other Navy support facilities (e.g., San Clemente Island). Other geographic locations proximate to naval support facilities within or adjacent to the U.S. were considered, including areas in the Pacific Ocean, the Atlantic Ocean, and the Gulf of Mexico. Due to distance from the supporting NIWC Pacific research, development, test, and evaluation facilities, these locations are considered impracticable for this phase of testing.

Alternatives with other Technologies and Methods. The following technologies were considered but determined not to meet the purpose of and need for the project for the identified reasons:

- Satellite sensors are high cost and low resolution in terms of detecting objects on the ocean or for sensing oceanographic data.
- High frequency radar is limited to only collecting nearshore data because it is land based and must be stationary so this technology cannot be deployed on buoys or vessels.
- Fixed arrays are installed on the ocean floor, which gives them a limited area of coverage and types of environmental data that can be collected.
- Manned or unmanned vessels or vehicles are capable of deploying similar types of sensors as those that would be deployed in the floats described under the Proposed Action. However, the spatial coverage would be limited to substantially fewer locations (e.g., tens of vessels vs. thousands of floats) with manned vessels because they are substantially more expensive to operate and are limited in coverage to the area where the vessel is located at any given time.
- Existing buoy or float programs have deployed limited number of buoys/floats that utilize cabled, moored, boat- or shore-based instrumentation instead of the large numbers and low cost of free-drifting floats proposed under the Ocean of Things program.

Environmental Impacts of the Proposed Action

The Navy has carefully designed Phase 1a of the Ocean of Things program to avoid and mitigate potential impacts to the marine environment. The following measures that have been incorporated into the Proposed Action include:

- The action is testing competing systems with a minimum number of floats needed to evaluate program goals.
- The floats are designed to exert minimal physical and chemical risks during operation and degradation by including:
 - Minimal use of hazardous or toxic materials and coatings.
 - Use of biodegradable packing materials/floats and negatively buoyant components to extent possible.
 - Reduction of non-degradable components and minimization of the use of plastics.
- The study area has been carefully selected to avoid particularly sensitive habitats and the shoreline, where the potential consequences of any impact are greater.
- Implementation of the geofence and floats' scuttling mechanisms has been tested and validated to ensure floats do not drift and/or scuttle near or in sensitive habitats and the shoreline.
- The discharge of oil, fuel, or chemicals to the marine environment is prohibited.

No significant direct, indirect, or cumulative environmental impacts will occur as a result of implementing Phase 1a under of Alternative 1. Potential impacts on the human environment will be minor.

Marine Biological Resources. There would be no significant impact or harm to marine biological resources. Localized, minor, temporary disturbances to small areas of marine habitat would occur, with no overall effect on quality and/or quantity of EFH. There would be a temporary behavioral avoidance of deployment vessel by fish, sea turtles, seabirds, and marine mammals. During deployment, on-board observers would be aware of and ensure avoidance of risks to sea turtles and marine mammals. Scuttle floats would result in potential localized and temporary disturbance or harm to benthic invertebrates.

Sediment and Water Quality. There would be no significant impact or harm to sediment and water quality. The gradual disintegration of floats would add trace amounts of metals and plastics to small areas of sediment and water, without measurable change in sediment and water quality.

Public Health and Safety. There would be no significant impact or harm to public health and safety. Precautions would be taken as needed to minimize hazards during deployment; Local Notice to Mariners would alert public to float deployment; floats would be labeled to identify proper handling if encountered; deployment vessel would standard maritime navigational and operational rules and regulations to avoid risks to public.

Conservation Measures

The Navy consulted with National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) as required by the Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act. The following conservation measures will be implemented as part of Alternative 1 and reflect the outcome of section 7 ESA and Magnuson-Stevens Fishery Conservation and Management Act consultation with the NMFS.

1. The Navy will expand the San Clemente Island Sandy Beach project to include debris characterization and removal. In fiscal year 2020, the Navy will dedicate \$24,000 on contract through the California Cooperative Ecosystem Studies Unit process to implement these efforts. The primary Principal Investigator for the study will be an academic scientist that specializes in sandy beach ecology within southern California. Navy personnel will also participate in this project to address unexploded ordnance (UXO) safety concerns and the ability to handle and remove any debris found. These conservation measures will also have beneficial consequences to listed species by removing potential threats in the ocean, specifically marine debris that could be, for example, ingested by or entangle animals. The Navy will provide NMFS the final survey report developed during this project, including a description of debris removed from the survey site(s).
2. The Navy will provide NMFS the total number of floats released under Alternative 1, which will be limited to 1,000 or less.
3. The Navy will implement the following measures to reduce the likelihood of collisions with marine mammals and sea turtles:
 - a. During vessel operations, constant vigilance shall be kept for the presence of marine mammals and ESA-listed species.
 - b. When piloting vessels, vessel operators shall alter course to remain at least 500 meters from whales, and at least 100 meters from other marine mammals and sea turtles.
 - c. Reduce vessel speed to 10 knots or less when piloting vessels in the proximity of marine mammals.
 - d. If approached by a marine mammal or sea turtle, put the engine in neutral and allow the animal to pass.
 - e. All work (i.e., equipment deployment or retrieval) would be postponed when whales are within 500 meters, or other protected species are within 100 meters. Activity would commence only after the animal(s) depart the area.
 - f. Continuing to observe an Awareness Notification Message Area in at-sea areas off southern California for blue whales (June – October), gray whales (November – March), and fin whales (November – May). The Navy issues seasonal awareness notification messages to alert ships and aircraft operating in the area to the possible presence of concentrations of these large whales. To maintain safety of navigation and to avoid interactions with large whales during transits, the Navy instructs vessels to remain vigilant to the presence of large whale species, that when concentrated seasonally, may become vulnerable to vessel strikes.

Public Outreach

The Navy published a Notice of Availability for the Draft EA/OEA in the *San Diego Union Tribune* on February 14, 15, and 16, 2020. The Notice of Availability described the Proposed Action and Alternatives, solicited public comments on the Draft EA/OEA, provided dates of the 15-day public comment period (February 14 to March 2, 2020), and announced that the EA/OEA was available for review on CD at the San Diego Central Library and via the Navy Region Southwest website. The Navy did not receive any public comments on the Draft EA/OEA.

Finding

After review of this EA/OEA, which has been prepared in accordance with the requirements of NEPA and Navy regulations for implementing NEPA (32 CFR 775), the Navy finds that the implementation of Phase 1a under Alternative 1 will not significantly affect the quality of the human environment, and will not cause significant harm to the global commons under EO 12114. Therefore, preparation of an Environmental Impact Statement/Overseas Environmental Impact Statement is not necessary.

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Date



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