

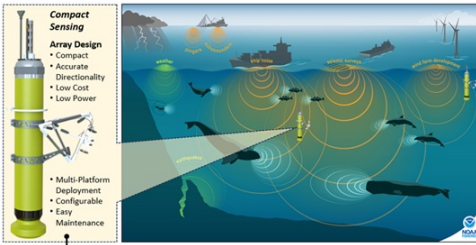
WHO

SYSCOM: ONR
Sponsoring Program: ONR Code 32
Transition Target: Naval Oceanographic Office (NAVO)
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Other Transition Opportunities: National Oceanographic and Atmospheric Administration (NOAA), PMS 485 Mobile Surveillance Systems, PMS 485 Deployable Surveillance Systems, PMA 264 Naval Air ASW

Notes: Triton's Ambient Sound Directional Acoustic Receiver (ASDAR) conducts lightweight, low-power processing of acoustic data to extract key metrics that characterize the soundscape and its directionality and transmit these periodically over low-data rate radio links. These metrics are also quickly interpreted by human observers or by event detectors and classifiers based on machine learning techniques. They are also suitable for incorporation into large oceanographic databases and prediction models. The soundscape metrics paradigm and the low power, real-time data stream it enables, is key to the ability to field large numbers of low-cost, autonomous sensors that can gather this data and put it to use. ASDAR has three key advantages versus competing approaches:

- Best Characterization of Soundscape per Byte.
- Widely Scalable Directionality and Power Consumption to Enable Long Durations.
- Modular Design for Versatile Platform Deployment.



Ambient Sound Directional Acoustic Receiver (ASDAR) System Overview

WHAT

Operational Need and Improvement: There is significant commercial need for acoustic monitoring. In traditional offshore oil exploration, there is a need to monitor for marine mammals during many phases of exploration and development. Similar requirements exist in offshore wind. Acoustic monitoring for METOC is also in demand from commercial and civilian government customers. Following successful defense sales, our technology will be transitioned into these commercial markets. Triton's R&D group is co-located with a recent spin-off, Triton Anchor, LLC, which focuses on the offshore wind technology market and has an extensive business development network with this customer base from developers down to service providers.

Specifications Required: ASDAR addresses the key requirements the customer has defined. Sound waves generated by natural and anthropogenic sources convey information about both the source and the environment. Underwater recordings of ambient sound have been previously used to estimate local weather, identify the presence/absence of marine organisms, and, particularly when directional information is included, to characterize the undersea environment. These systems, however, have not found widespread usage in the near-real-time reporting systems that currently exist in ocean observing networks due to challenges in their size, weight, and power (SWAP) and constraints on power of onboard processing.

Technology Developed: The ultimate product for the use by the Navy will be an Ambient Sound Directional Acoustic Receiver (ASDAR). This system provides an autonomous, long-duration, directional ambient sound sensing system capable of being integrated into a variety of platforms including floats, gliders, and ocean observation buoys. Triton intends to develop ASDAR and then commercialize it for use in ongoing Navy operations. We will support technology maturation by collaborating with manufacturers delivering relevant ocean monitoring platforms to key Navy programs.

Warfighter Value: Low-SWaP ability to characterize the undersea environment, estimate local weather, and identify the presence/absence of marine organisms with directionality, using underwater recordings of ambient sound

WHEN

Contract Number: N68335-25-C-0159 **Ending on:** Mar 03, 2027

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Core Use Cases Defined	Low	SME/TPOC agreement	2	2nd QTR FY26
In-Water Performance Assessment	Medium	Testing data collected	2	2nd QTR FY27
Algorithm Embedding	Low	Bench-level operation	4	2nd QTR FY28
At-Sea Deployment	Medium	Test data collected	6	2nd QTR FY29

HOW

Projected Business Model: The anticipated initial customer base is US Navy oceanography and marine monitoring efforts. End users such as the Naval Oceanographic Office (NAVO) will benefit from this sensor in their mission to characterize the ocean environment in support of operational models and forecasts of meteorology and oceanography (METOC) conditions. Other end user are the US Navy's Marine Species Monitoring program in support of the Navy's environmental compliance and permitting processes. These programs make wide use of diverse scalable platforms such as ARGO floats (~3800 deployed currently) and Slocum gliders (~300 in NAVO service). Beyond those known platforms ASDAR could be adapted to buoys, UUVs, USVs and diverse operating platforms including crewed vessels.

Company Objectives: In Phase II we will develop a prototype and conduct initial testing as described to validate our technology against current observations systems so that output from ASDAR is a known quantity for users. After Phase II, we envision an adoption period during which ASDAR will be transitioned to use on an actual representative platform, such as an ocean drifter. Our project team including Pacific Gyre and UNH have numerous test platforms and commercial products available for testing. We have the necessary expertise to rapidly advance the solution, scale up the number of devices, and support integration of data products with Navy operations centers – bringing the system into practical use with the US Navy. We plan to use this team to support the initial transition period.

Potential Commercial Applications: There is significant commercial need for acoustic monitoring. In traditional offshore oil exploration, there is a need to monitor for marine mammals during many phases of exploration and development. Similar requirements exist in offshore wind. Acoustic monitoring for METOC is also in demand from commercial and civilian government customers.

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