

Topic: N151-011

## Systems & Technology Research

### Compact Deep Vector Sensor Array

The Navy has a need for a low cost, air deployable A-size persistent, passive cuing sensor that when fully deployed can reach an operational depth of 14000 feet. During this program Systems & Technology Research (STR) will design and prototype a next generation passive sonobuoy sensor that has: Full ocean depth operation Low noise vector sensor Compact form factor Long endurance operations Low cost manufacture for future procurements. During Phase II, STR will refine the existing sonobuoy design, demonstrate a sensor that meets the low noise requirements, and validate the low power characteristics of the design. STR specializes in the design and development of deep ocean sensors and other maritime applications. Our goal is to transition this technology to a sonobuoy manufacturer for large scale production and fleet use.

### Technology Category Alignment:

Power Control and Distribution

Acoustic, Seismic and Magnetic

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**SYSCOM:** NAVAIR

**Contract:** N68335-17-C-0129

 Corporate Brochure: [https://navystp.com/vtm/open\\_file?type=brochure&id=N68335-17-C-0129](https://navystp.com/vtm/open_file?type=brochure&id=N68335-17-C-0129)

# Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2017-754

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Compact Deep Vector Sensor Array  
Systems & Technology Research

## WHO

**SYSCOM:** NAVAIR

**Sponsoring Program:** PMA-264

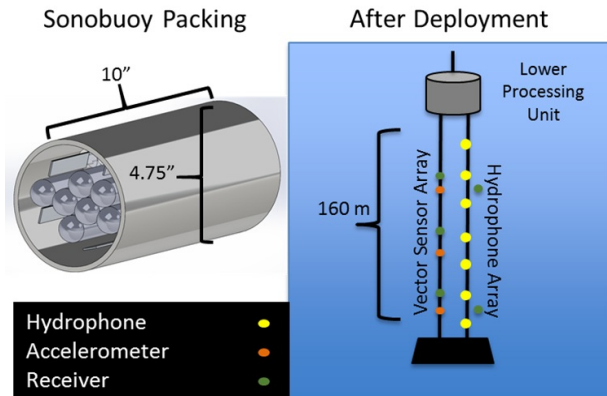
**Transition Target:** Next Generation  
Airborne Passive System (NGAPS)

**TPOC:**

(301)757-3694

**Other transition opportunities:**  
None

**Notes:** Currently the NGAPS is being developed as a FNC by ONR, but that program is over at end of FY19. At that point, all development efforts will move to PMA-264. Currently, the Program of Record for this is not in place, but that will be established next year. This effort in addition to three other SBIR efforts are risk reduction efforts to address the highest risk technologies and ensure successful transition.



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## WHAT

**Operational Need and Improvement:** An array of vector sensors provides major system gains over legacy array of omnidirectional hydrophones.

**Specifications Required:** The CDVSA will be a portion of a long life, A-sized sonobuoy and must meet the following requirements: Less than 10" in height, less than 4.5" in diameter, less than 15 pounds in weight, and draw less than 350 mW.

**Technology Developed:** STR and its partner GD-APS have developed a novel approach that combines two vertical line arrays to provide increased capability at reduced power usage and smaller size. This unique design allow the sensor to meet the noise floor requirements while maintaining a system that can be easily constructed. The latest generation of COTS microcontrollers are used to reduce power usage while maintaining a low unit cost for each CDVSA.

**Warfighter Value:** The CDVSA will be a vital part of future advanced sonobuoys. This sensor will be part of a persistent passive acoustic capability which is rapidly deployable is a standard A-size sonobuoy form factor.

## WHEN

**Contract Number:** N68335-17-C-0129 **Ending on:** November 30, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Prototype Sensor Field Testing	Low	Sensor noise floor measurements	4	October 2017
Compact Array Design Review	Low	Design review	4	November 2017
EDM Array Integration and Testing	Med	Correct operation in relevant environment	5	October 2018
Ocean Testing of EDM Array	Med	Correct operation in operational environment	6	May 2019

## HOW

**Projected Business Model:** STR and our partner GD-APS are looking for an opportunity to license the array technology along with the vector sensor technology to a qualified sonobuoy manufacturer such as USSI or Spartan. Additionally STR would like to be involved in future pre-planned product improvements to either the array design, processing approach for managing power, or reductions in size and weight. These follow-on design activities would be conducted in partnership with GS-APS where the relevant expertise will be utilized as appropriate.

**Company Objectives:** STR's primary objective with this SBIR effort is to become a trusted performer in the design and development of future sensor capabilities for NAVAIR. A secondary objective is to become a licensed technology provider for US sonobuoy manufacturers.

**Potential Commercial Applications:** These type of deep vector sensor array have a wide variety of commercial applications including use in monitoring deep water oil and gas infrastructure; changing geo-physical properties of the ocean due to climate change or commercial exploitation of deep ocean environments.

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