

SUCCESS STORY

TOPIC NUMBER: N04-138

SBIR INVESTMENT: \$3,482,475

PHASE III FUNDING: \$20,785,064



AN/BPS-17 SUBMARINE RADAR MODERNIZATION KITS, ON-BOARD REPAIR PARTS, AND INSTALLATION AND CHECKOUT SUPPORT

Ultra Electronics designed, developed, tested, and integrated technology insertion and system support of the AN/BPS-17 radar software management system.

3 Phoenix, Inc. (now Ultra Electronics Ocean Systems)

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THE CHALLENGE

The initial challenge of this topic was to develop an interactive, user-configurable command and control system that records, monitors, fuses, and displays real-time data from multiple airborne payloads, and disseminates graphs and tabular data to remote users via SATCOM and the internet, while focusing on developing technologies that enhance system performance and availability, and reduce cost.

THE TECHNOLOGY

Ultra Electronics designed, developed, tested, integrated, and provided the technology insertion/refreshment and system support of the AN/BPS radar software management system on new construction and in-service submarines. The Navy's AN/BPS radars are equipped with radio frequency generation, video signal processing, transmission, reception and other interface features that support navigation and routine surface detection.

THE TRANSITION

3 Phoenix, which was acquired by Ultra in 2014, was awarded Phase III contracts on this topic from NAVSEA PMS 450 VIRGINIA Class Program Office starting in FY2006, and ONR via the Naval Surface Warfare Center (NSWC) Port Hueneme Division, for assembling, integrating, testing and delivering multiple units and spares in support of the Radar Data Processor (RDP) Periscope Detection Radar (PDR) sub-system. The funds helped to improve designs to support program preliminary design reviews (PDRs) and critical design reviews (CDRs). The technology has been successfully transitioned to a number of Navy sonar, radar and imaging applications. In 2019, Ultra was awarded a \$45,161,439 indefinite-delivery/indefinite quantity, cost-plus-fixed-fee and firm-fixed-price contract for technology insertion/refreshment and system support of the AN/BPS radar software management system on new construction and in-service submarines. With all options exercised, the contract has the potential to reach a total value of over \$100 million with completion by May 2026.

THE NAVAL BENEFIT

With the continued increase in global maritime traffic, the demand for safe surfaced navigation of the Navy's submarine fleet has never been greater. Processing high bandwidth, wideband radar signals in real-time situational awareness environments presents many technical challenges. To address these complex technical problems, Ultra has exploited hardware and software data fusion technologies to develop robust real-time data aggregation and synchronization architecture to rapidly produce an affordable, operationally effective radar data processor to detect and classify targets with high probability while maintaining a low probability of false alarm. Ultra's AN/BPS radar software management system for submarine radar provides navigational safety, situational awareness and limited surveillance of low flying aircraft and helicopters.

THE FUTURE

Ultra's continued role providing new and improved radar processing and for the Navy's submarine forces will bring about modern navigational displays, improved situational awareness to the operators, and safety to the fleet. Ultra's contract for the AN/BPS-17 submarine radar modernization kits and support extends to 2024. Additionally, under this topic, Ultra transitioned technology to support AN/SPS-74 anti-submarine surface radar that will be expanded to next generation systems, as well as NGSSR (Next Generation Surface Search Radar), which will be installed on Navy platforms. NGSSR offers ship defense against surface and limited low altitude air threats and addresses risks inherent in operating in littoral waters and vulnerabilities such as submarine attacks.