Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2021-93

Topic # N102-132
Heat Resistant Visual Landing Aid (VLA) Lighting Fixtures for Ship Flight Decks and Expeditionary Air Field (EAF) Matting
Breault Research Organization

WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA-251 Aircraft Launch and Recovery Equipment

Transition Target: The legacy Converter Assembly in existing Centerline and Tramline light fixtures.

TPOC:
732-674-4993

Other transition opportunities: Carrier Construction PMS 378; Carriers In service PMS 312 and PMS 379; Amphibious Warfare Program Office PMS 377; Amphibious In Service PMS 470; Retro fitters and Energy saving applications

Notes: PICTURES
LEFT: Breault's 58197A13001 - CONVERTER ASSEMBLY, which is a form fit function replacement for the legacy Converter Assembly
RIGHT TOP: Breault's 58197A13001 - CONVERTER ASSEMBLY installed in Fiber Optic Deflector
RIGHT BOTTOM: Breault's 58197A13001 - CONVERTER ASSEMBLY underneath the Guard Assembly

Pictures courtesy of Breault Research Organization

WHAT

Operational Need and Improvement: Visual Landing Aids (VLAs) on air capable ships, aircraft carrier flight decks and Expeditionary Airfield matting are required for night and/or low visibility aircraft operations for general lighting, navigation, flight deck, and special purposes. Future aircraft are expected to have hotter exhaust that could threaten the integrity of the legacy lighting fixtures while recovering or taxiing. The Navy seeks an in-deck/Airfield Flush-Deck lighting fixture that can be subjected to aircraft exhaust nozzle indirect temperatures in the range of 600-700 F for long dwell periods as well as near-direct temperatures in the range of 1500-1700 F for relatively short duration.

Specifications Required: Conformal to the skin of existing ships' structure and Expeditionary Air Field (EAF) AM2 matting, with a fixture design that is form, fit, function compatible with existing shipboard/airfield lighting configurations, Night Vision Device (NVD) compatible and heat resistant to existing and future aircraft exhaust.

Technology Developed: Breault's innovative VLA solid-state fixture is a form/ fit/function replacement for legacy Marine Corps and Navy VLA systems. It is NVD compatible, capable of operating from existing power feeds and meets shipboard environmental and electromagnetic (EMI) requirements. As such, it is easily integrated into existing VLA systems. Breault's VLA fixture design replaces existing 100W MR 16 lamps and fiber optic bundles in legacy fixtures with low power LEDs, custom optics and drive electronics, and packaged within Breault's 58197A13001 - Converter Assembly. It emits equal or greater luminous intensity than current systems and is constructed of corrosion resistant materials to eliminate galvanic corrosion. In addition, the electrical power consumption is less than 15 watts.

Warfighter Value: Breault's VLA fixture emits the same luminous intensity and beam pattern, and maintains the visual cues required for night and/or low visibility aircraft operations for general lighting, navigation, flight deck, and special purposes as legacy light fixtures. Use of corrosion resistant material eliminates galvanic corrosion, increases durability, and reduces maintenance actions – increasing readiness and enhancing the capability to support high tempo operations. Use of long-life LEDs reduces maintenance actions, increases reliability, and reduces power consumption by 90 percent – significantly lowering life cycle and operating costs.

WHEN

Contract Number: N68335-19-C-0503 **Ending on:** September 11, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Detailed Design Review	Low	Successful design review	- -	June 2021
Assemble and Functional Test Prototype Units	Low	Validate luminous intensity is equal to or greater and beam pattern is similar to legacy system. Pass in-house leak test	6	September 2021
Conduct Environmental and EMI Testing	Low	Successful completion of Environmental and EMI Testing	6	May 2022
Photometrics Lab Testing	Low	Passes brightness at range requirements. Passes night vision device compatibility	6	June 2022
Shipboard Test	Low	Functional test aboard a carrier using ship's controllers – success on, off, dimming	7	August 2022

HOW

Projected Business Model: Our business model is to transition the new light fixtures from development to in-house manufacturing. Through our Phase 2.5 contract, we plan to validate the functional and environmental performance to demonstrate the deck lamp is ready for transition to the fleet.

Company Objectives: Assuming the unit meets technical performance requirements, achieves cost goals that demonstrate the required ROI and is selected by NAVSUP Weapon Systems Support (NAVSUP WSS) and PMA-251 for transition into the fleet, our goal is to find a sponsor that will support and fund the Logistics Engineering Change Proposal (LECP) process.

Potential Commercial Applications: Our target application is to supply new light fixtures to ship construction and to the Navy's logistic channels as replacement lights to existing Centerline and Tramline light fixtures. We are also interested in supplying custom or specialty light fixtures (non-off the shelf lights) to airfields, buildings, or facilities.

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