Department of the Navy SBIR/STTR Transition Program

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NAVSEA ##2023-0419

Topic # N181-071
Eliminating Adverse Impact of Copper Contamination in Jet Propellant 5 (JP-5) Fuel
TDA Research, Inc.

WHO

SYSCOM: NAVSEA

Sponsoring Program: PEO Carriers

Transition Target: Onboard implementation of fuel filter close to point of use

TPOC: (215) 897-7948

Other Transition Opportunities:

Notes: Artist's conception of the U.S. Navy version of the Joint Strike Fighter to be built by Boeing. Next generation aircraft engines require higher fuel quality.

https://www.defense.gov/Multimedia/Photos/igphoto/2002016307/

WHAT

Operational Need and Improvement: Next generation aircraft engines to be implemented by 2040 require nearly undetectable copper in the jet fuel for thermal stability. Many aircraft carriers still have predominantly copper alloy piping in the fuel system, so the copper alloy must be removed from the fuel near the point of use.

Specifications Required: < 10 ppb Cu concentration in treated JP-5 without altering any other fuel properties or specifications

Technology Developed: TDA's novel sorbent-based chemical filtration system produces copper-free fuel for aircraft engines. The sorbent is packaged in a compact easy-to-use filter that can effectively remove copper with a high capacity and uptake rate from fuel at very short contact times.

Warfighter Value: Removal of copper alloy from fuel will improve thermally stability and enable earlier adoption of next generation aircraft engines

WHEN

Contract Number: N68335-19-C-0796 **Ending on:** Nov 17, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Design demonstration at scale	Low	< 10 ppb Cu in treated fuel at full scale flow velocity	6	1st QTR FY23
Full design demonstration at Navy	Medium	< 10 ppb Cu in treated fuel at full scale flow velocity	7	TBD

HOW

Projected Business Model: At the end of the Phase II work, the sorbent will be a commercial ready item that TDA can supply in small quantities 1-5 ton per year based on a Certificate of Analysis along with a system design. We plan to partner with a cartridge manufacturer for packaging of the cartridge elements.

Company Objectives: Our goal is to provide the Navy with a new fuel purification system that will enable safe operation of its aircraft.

Potential Commercial Applications: Nimitz class carriers, LHD ships, adjacent water treatment applications for metal removal

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