

# Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2019-842

Topic # N171-018

Low Cost In-Flight Bladder Relief  
TRITON SYSTEMS, INC.

## WHO

**SYSCOM:** NAVAIR

**Sponsoring Program:** PMA-202, Aircrew Systems

**Transition Target:** Fixed-wing and Rotary-wing aircrew

**TPOC:**  
(610)746-3599

**Other transition opportunities:**  
All high performance fighter aircraft aircrew as well as rotary wing aircraft aircrew who could benefit from our affordable In-Flight Bladder Relief technology.



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**Notes:** Image depicts Triton's low cost in-flight bladder relief Gen 2.1 prototype system. Aircrew are able to dispose of low cost wetted components after every flight. Meanwhile, our non-disposable, maintenance-free extraction unit stays completely dry and clean.

## WHAT

### Operational Need and Improvement:

Develop a low cost solution that provides female and male aircrew bladder relief during flight.

### Specifications Required:

To be most effective for aircrew in-flight use, the system must provide the following capabilities:

- Cost less than \$50 per flight
- Provide bladder relief for both male and female aircrew with flow rate of 1.5L per minute
- Collect 800cc per use, not restrict movement of aircrew at any time, hands-free urine collection
- Compatible with all aircraft ejection seats, does not weigh more than 1lb
- Operate in an aircraft environment in conjunction with flight uniform, anti-G suit while restrained
- Compatible with Life Support Systems flight gear and be discreet in appearance when worn
- Device should have no special disposal requirements
- Next to skin component should not be reusable

### Technology Developed:

Triton Systems has developed a low-cost bladder relief system that meets Navy requirements:

- Compatible for female and male aircrew
- All human interfacing components are low cost, reliable, comfortable, ergonomic, and disposable
- Our solution is a "no-clean," sanitary system that does not require cleaning or maintenance

### Warfighter Value:

- Easy to use w/o interfering with in-flight operations
- Eliminates need for "tactical" dehydration
- Improves physical, cognitive performance and situational awareness
- Reduces distraction of a "full bladder"
- Eliminates need to remove restraint systems and life support equipment
- Cost less than \$50 per flight

## WHEN

**Contract Number:** N68335-19-C-0003

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Functional Prototype Demonstration with NAVAIR	Med	Demonstrate satisfactory functionality of human interface and extraction system with Navy aircrew	5	November 2019
Aircrew Ground Testing	Med	End user verification of system requirements such as comfort, reliability, nonrestrictive integration with aircrew equipment, compatibility with Life Support Systems, etc.	5	September 2020
System Verification and Validation Testing	Med	Candidate prototype system passes qualification testing, i.e., system performance, reliability, and environmental resistance	5	January 2021
Aircrew In-Flight Testing	Med	End user verification of full system requirements while in-flight	6	September 2021
Certification for Safe-to-Fly	Med	Candidate system passes NAVAIR qualifications to be considered safe to use in flight on both fixed-wing and rotary-wing aircraft	7	December 2021

## HOW

### Projected Business Model:

Triton's plan is to integrate and transition this technology into government and commercial markets by licensing our Intellectual Property to manufacturing partners.

### Company Objectives:

Triton Systems, Inc. develops advanced human systems technologies for commercial, industrial, and Government use. Through our participation in the SBIR/STTR Transition Program (STP) we hope to further our connections with Government and industry decision-makers invested in bringing superior relief options to their constituents. In the short-term, Triton's objective is to bring to market a solution designed to integrate with the aircraft environment. Our Longer-term objective includes design modifications to provide a superior low-cost, portable, disposable urinary relief device in a variety of applications.

### Potential Commercial Applications:

Our technology will find many applications in other communities. This includes a broad range of mission critical department of defense systems such as transport outside of aircraft (e.g., tank operators) and hazardous environments. Additional civilian applications include commercial transportation, first responders, chem/bio/clean labs, and medical.

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