

WHO

SYSCOM: SSP

Sponsoring Program: Strategic Systems Program

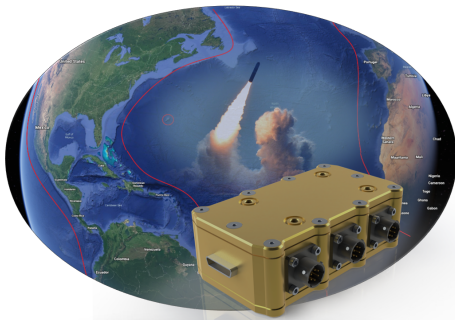
Transition Target: Trident II (D5)

TPOC: SSP.SBIR@ssp.navy.mil

Other Transition Opportunities:

- Launch Services Providers
- Hypersonic Flight Test Programs (internal / external)
- Unmanned Aerial Systems for Cargo Delivery / Precisions Monitoring

Notes: Range safety trends are moving towards removal of the command destruct capability from future FTS and replacement with an autonomous flight termination capability. A mandatory migration to autonomous operation by 2030 is in place for US Eastern and Western Ranges.



Autonomous Flight Termination Unit (AFTU)

WHAT

Operational Need and Improvement: Legacy flight termination system approach involves remote command (human-in-the-loop) destruct capability that needs significant range assets to monitor the missile's flight path. The AFSS transfers the decision function onboard the vehicle. The AFSS is responsible for either destroying or rendering a flight vehicle non-propulsive when the logic determines the vehicle is flying outside predetermined safety limits based on predetermined flight rules for a specific vehicle and mission.

Specifications Required:

- The autonomous flight safety system (AFSS) must comply with all applicable space-launch range safety requirements.
- The system shall be capable of handling mobile launch site scenarios, including a submerged environment resulting in signal loss / signal acquisition issues for sensors such as Global Positioning System (GPS).

Technology Developed: An AFTU module that can form the core of the AFSS architecture leveraging onboard sensors and termination components. It can be used for various legacy platforms, to include Trident II (D5), submarine-launched cruise missiles, and submarine-launched intermediate range missiles. It features a multi-channel architecture to separate decisions and execution functions for improved safety, reliability, and security.

Warfighter Value:

- Reduces range infrastructure while providing over-the-horizon capability.
- Improves mission assurance: repeatable, reliable, and secure.
- Improves operational weapon system capability: 24/7 and remote location launch safety capability

WHEN

Contract Number: N68335-22-C-0183

Ending on: Jul 11, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Systems/Subsystems Specifications	Low	Submission and Review	3	4th QTR FY22
Brassboard System Assembly and Demonstration	Low	Wrapper code verification; SIL testing	4	1st QTR FY23
AFTU GEN1 Prototype Build and Test	Medium	Integrated prototype unit operating with external sensors	5	3rd QTR FY23
AFTU GEN2 Prototype Build	High	Flight-ready integrated prototype completes base level of qualification testing	5	4th QTR FY23
AFTU GEN2 Prototype Flight	High	First certification flight completed	6	2nd QTR FY24

HOW

Projected Business Model: Innoveering will scale and manufacture the AFTU (and derivatives) in house, to maintain authority over build and test process. We are interested in partnering with launch service providers to provide them an RCC compliant AFSS solution that can lead to reductions in cost associated with range operations.

Company Objectives: The AFTU technology offers a state of art embedded system platform that is reliable, secure, and expandable to provide not only safety functions, but also to become a platform for smart sensors and controls for next generation high speed vehicles and/or advance propulsion systems. We seek DoD and prime contractor support to transition the technology in support of affordable flight testing programs.

Potential Commercial Applications:

- Launch service providers (small satellites; LEO platforms)
- Unmanned Aerial Systems for cargo delivery and precision monitoring