Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2021-0377

Topic # N181-035
Network Traffic Analysis for Cybersecurity for Navy Industrial Control Systems
Mission Secure, Inc.

WHO

SYSCOM: NAVSEA
**Sponsoring Program:**
Transition Target:
TPOC:
(202)781-2072
Other transition opportunities: • Naval Surface Warfare Center (Philadelphia) – laboratory/operational testing platform's ability to protect multi-PLC network in 2021
• NAVSEA PMs – research-based, STP-assisted discussions in 2022
• Near targets: USCG, Military Sealift Command, NOAA, FAA, JSOC, SOCOM Remote Systems
• MSi's commercial offering lends perfectly to DoD installation cybersecurity requirements for critical infrastructure (e.g., potable water, fuel distribution, electricity)
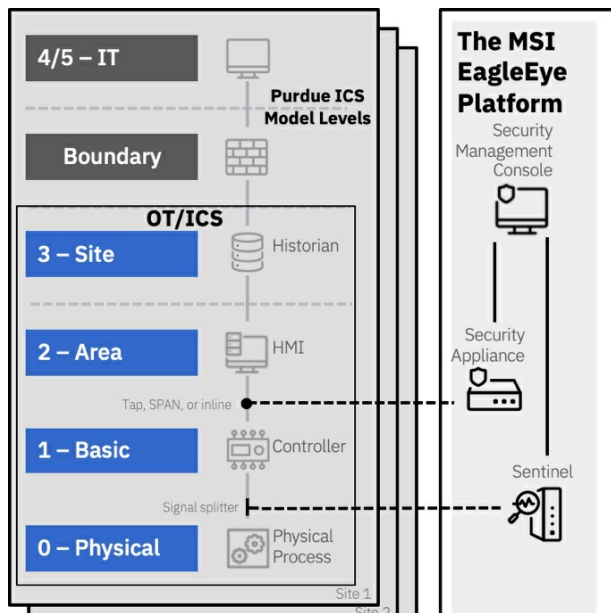
Mission Secure, Inc. 2021

WHAT

Operational Need and Improvement: OT Cybersecurity for vehicle and weapons platforms have not kept pace with IT cybersecurity. Offensive cyber tools today far outpace most defensive tools. The Navy required the management of disparate PLCs under a unified platform and single console. In addition, given that sensor data contains potentially valuable clues on the future state of a given component, it required the same data also be used for predictive maintenance. The platform should also give indication as to whether anomalies in behavior are due to maintenance or malware.

Specifications Required: MSi built an ICS lab to include in-line protections, added PLC protocols, and several complex attack scenarios. The predictive maintenance model used real component data from diesel engines and electric relay components.

Technology Developed: Mission Secure provides cybersecurity for Operational Technology (OT)/ Industrial Control System (ICS) networks. MSi provides best-in-class protection and resilience through Zero Trust networks, asset visibility, and automated or human-in-the-loop corrections to overcome malware. It directly monitors critical physical processes, validating PLC/sensor data. MSi's cybersecurity platform serves as the backbone for data analytics and incorporates normal and failure mode data into its platform for predictive maintenance.

Warfighter Value: Mission Secure's provides warfighters a defensive cybersecurity platform better than the adversary's offensive cyber tools. In a single dashboard, the MSi platform provides visibility and protection to critical OT networks, enabling components to operate as they were intended. The platform also allows the warfighter to tap into rich data provided by sensors and the network, for forensics and predictive maintenance. As a commercial product/service company that already manufactures, deploys, and monitors systems across several industries, MSi provides a low-risk solution from a proven manufacturer with high quality control.

WHEN

Contract Number: N68335-20-C-0141   **Ending on:** October 7, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
SBIR Option Year 1 completion	Low	relay failure modes entered	6	September 2021
NSWC environmental testing	Low	ship PLCs integrated; attacks successfully defended	8	March 2022
Navy program signs contract/PO	Low	Phase 3 contract signed	8	April 2022
Platform deployed onto USN ships	Low	OT/ICS network assessed; Solution deployed and validated; operators trained	9	October 2022

HOW

Projected Business Model: MSi intends to apply the technology proven in SBIRs and STTRs and commercial applications to manned and unmanned systems. Mission Secure has a unique combination of cyber security, data analytics, machine learning, and network/communications capabilities. It can sell the platform directly to the Government or through an OEM. It will provide any systems/weapon-specific assessments and design engineering, as required, then support testing and integration. It can also provide post-deployment monitoring and expertise, as appropriate.

The OT cybersecurity market is a rapidly growing space for which the Government is quickly assessing procurement options. MSi is well-poised to provide an array of similar platforms in support of our nation's military.

MSi expects to deploy hundreds of systems in support of Platform Aero's Vanilla UAS and the USN in 2022. A Navy official believes it is the most "cyber secure UAS in the Navy."

Company Objectives: Mission Secure will pursue unmanned and manned systems, including shipborne, aircraft, vehicle, and satellite systems. It intends to pursue product/service contracts for specific systems, but also IDIQ contracts with machine learning platforms that handle varying environments and hardware systems with the support of AI/ML-leading Virginia Tech. The innovations from Defense projects will add features to the company's commercial offering.

Potential Commercial Applications: Our commercial platform provides strong protection and resilience for its customers. Our recent Defense research projects and Virginia Tech partnership adds considerable capability applicable to our commercial offering. Mission Secure's unique combination of cyber security, network/communications capabilities, data analytics, and machine learning create opportunities previously unavailable. Our intent is to reinforce success in the markets we have already penetrated, including unmanned systems, maritime, aviation, energy, and smart cities.

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