NexDefense, Inc.
partnered with
Oak Ridge National Laboratory

NE-18-16180, Nuclear Cybersecurity Initiative

YEAR AWARDED: 2018

TOTAL PROJECT VALUE: $500k (DOE: $430k, Kairos: $100k)

STATUS: Completed

PRINCIPAL LAB INVESTIGATOR: Kevin Shaw (shawkl@ornl.gov)

DESCRIPTION: NexDefense, Inc. offers a software solution that helps industrial companies monitor their plant networks for malicious cyber activities by providing complete visibility into their networks. This enables industrial companies to protect their plant networks from cybersecurity attacks. NexDefense Integrity™ is an Industrial Network Anomaly Detection solution that passively monitors industrial control system networks for anomalous and malicious cyber activities and provides users with complete network visibility. With support from GAIN, this project was aimed at enabling NexDefense to evaluate their existing software on a production nuclear test bed and determine a potential path for future commercial adoption. All data and experiences were to be documented and presented in a use case format. The vision for the use case document was to provide a guide for industrial operators on implementing an industrial monitoring solution and to show how these solutions can be deployed without causing safety and reliability issues. NexDefense sought assistance from Oak Ridge National Laboratory (ORNL) to analyze and address potential cyber vulnerabilities in nuclear reactor cyber-physical systems by using the ORNL High Flux Isotope Reactor for test-bed demonstrations.

BENEFIT: Combining the expertise of NexDefense and ORNL allowed for the development of next generation interrogation methods to establish both normal communication patterns as well as differentiate anomalous noise from potential cyber intrusions on a production network.

IMPACT: In 2019, NexDefense was acquired by Dragos, Inc., which announced the free release of two well-known industrial control system asset and identification tools, Cyberlens and Integrity. The latter was originally developed at Idaho National Laboratory in 2012 as “Sofia,” and the following year NexDefense acquired exclusive rights to commercialize it.