



Brent Pickrell

Physical Security Pathway Lead

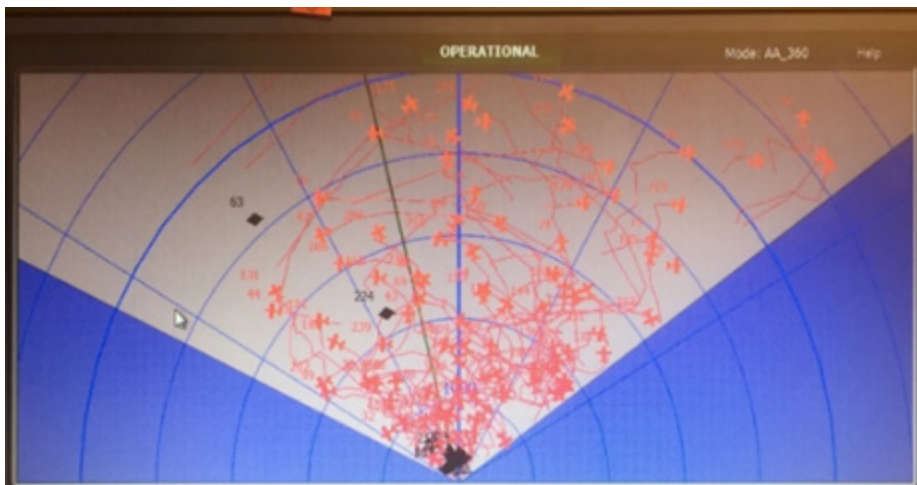
April 30, 2025

Detecting Waterborne Threats

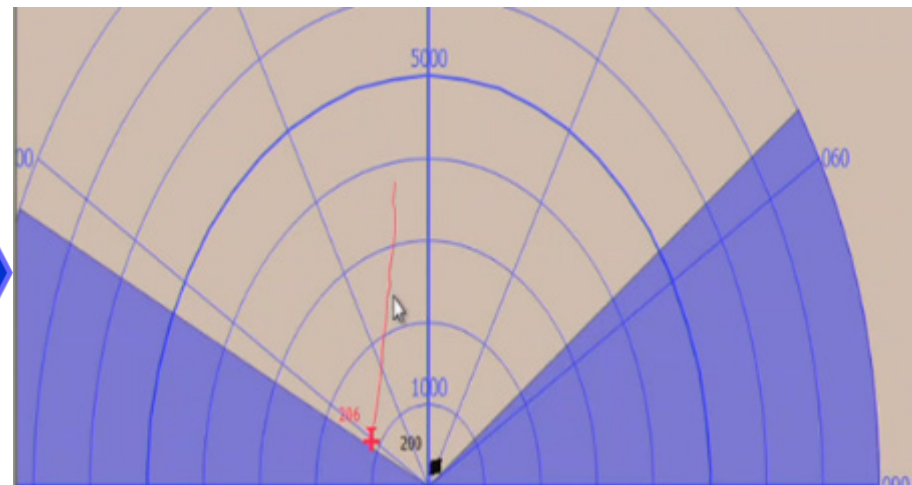


What is DMA -- Deliberate Motion Analytics

- A sensor algorithm that can fuse multiple sensors to create a multi-physics sensor system
- Enables explicit implementation of the principal of complementary sensors
- Uses a form of AI to differentiate intruder alarms from nuisance alarm sources



Actual screen shot – High NAR, during light rain

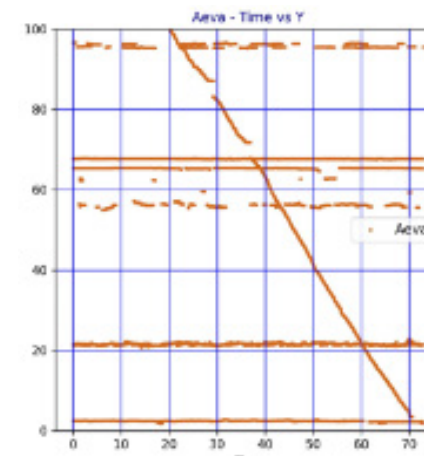


What you want to see

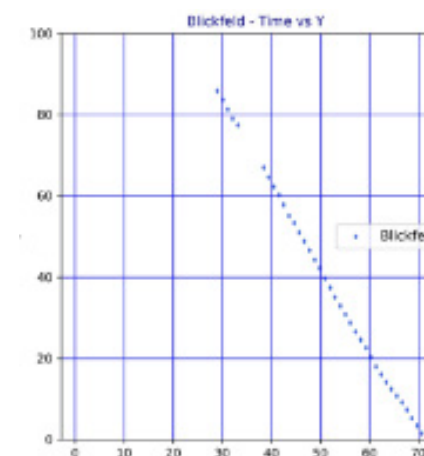
An enabling technology for new security architectures

What Are the Benefits of the Fusing Sensors

- Good LiDAR/imager detection if swimmer approaches “flat” on the surface
- Good sonar detection if the swimmer attempts to approach with only head exposed or submersed
- DMA filters out nuisance alarms
- Can use COTs sensors and reduce NAR



Aeva LiDAR

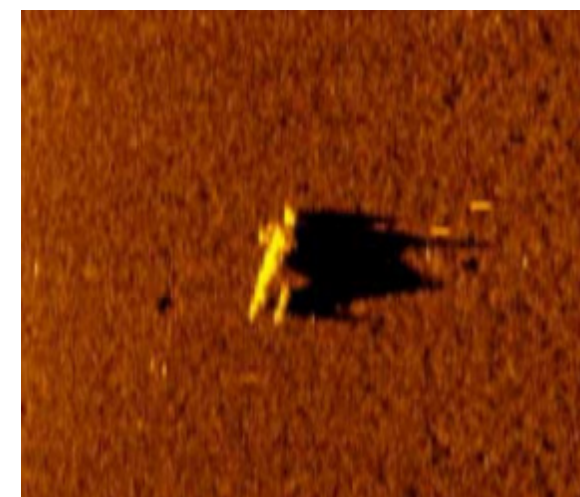
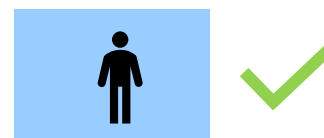
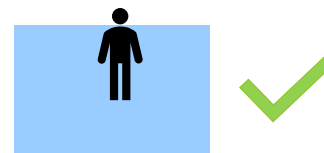
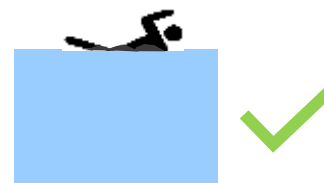


Blickfeld LiDAR

What Are We Doing with DMA on Water Intakes

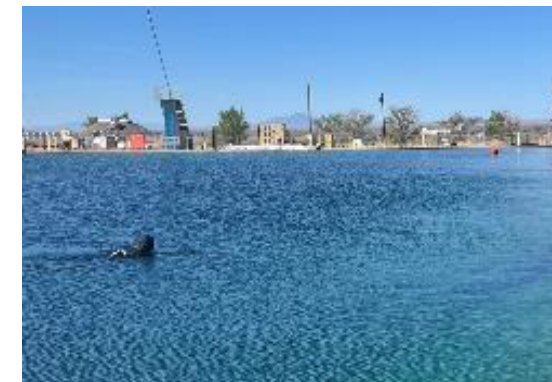
Objectives:

- Create a (WIIDS) Water Intake Intrusion Detection System (FY25)
 - Demonstrate a high detection capability – surface/subsurface (Pilot Testing at Crane Clean Energy NPP)
 - Reduce or eliminate nuisance and false alarms
 - Establish Integration into NPP Security Monitoring Systems
- Perform Vulnerability Analysis of WIIDS (FY25-26)
- Provide an image of subsurface intruders (FY26)

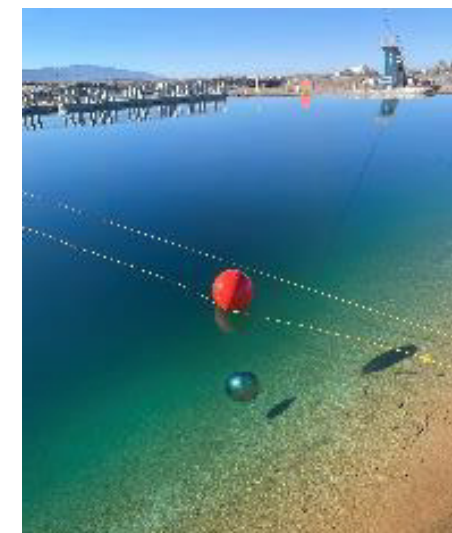


What Impact will WIIDS Have

- If successful, WIIDS provides a reliable solution to an unsolved problem
- Test results will inform:
 - Performance Metrics for a WIIDS (performance based vs compliance based)
 - DBT for waterborne intruders
 - Show sites and NRC how to test a WIIDS – *T&E*
 - Will identify vulnerabilities (FY26)



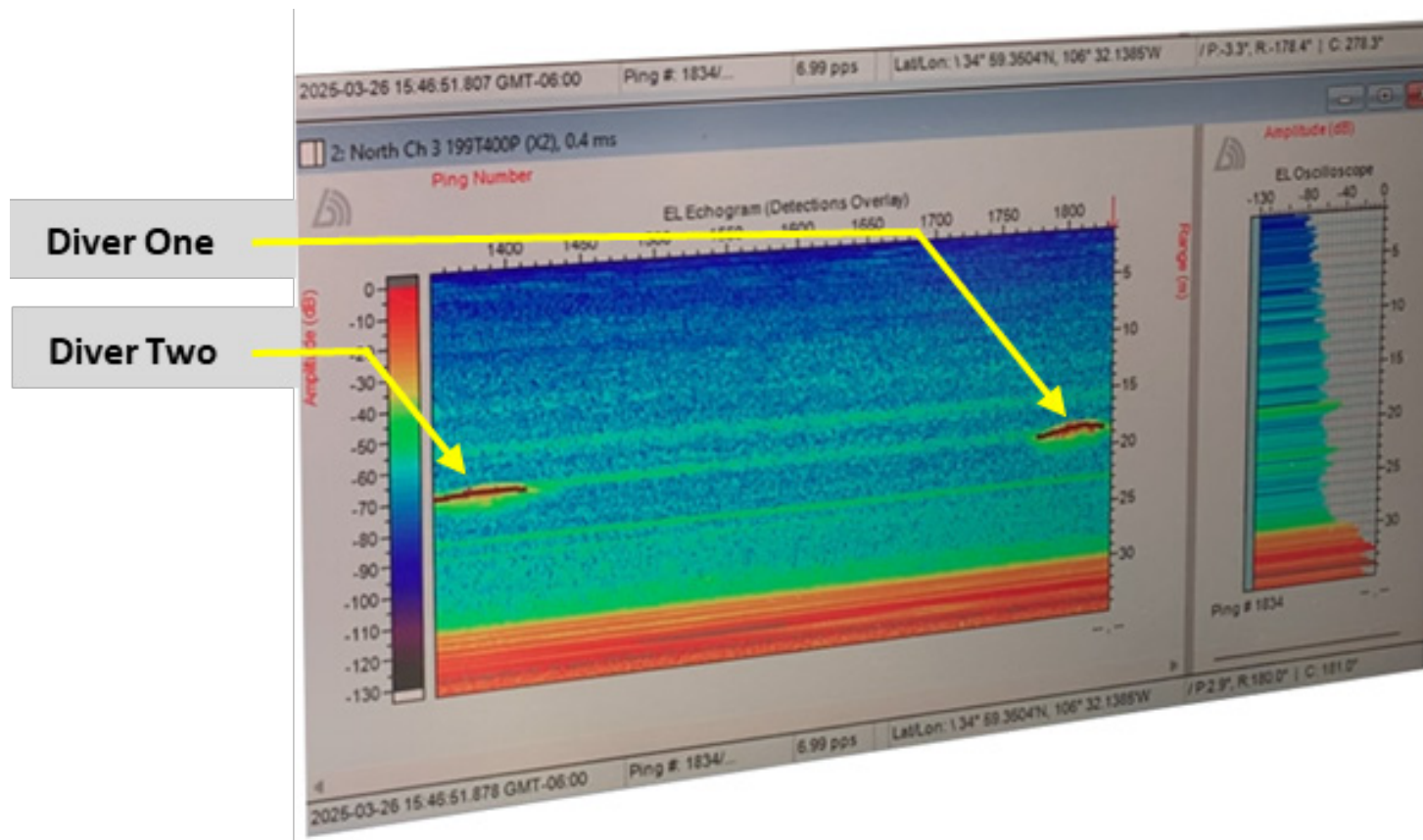
(FY24) Over 230 swim tests conducted



Swimmer/Diver Simulator

FY25 Deliverables

- Report on results from Pilot Deployment of WIIDS at Crane Clean Energy Plant
- Report on Preliminary Vulnerability Assessment of WIIDS
- Presentations to NRC and NPPs on results
- Possible Demonstrations if there is interest



Sonogram of Test Target
10-100 Times Smaller Than Diver

Summary

- Purpose and Key Efforts
- Modeling and Simulation Applications for Physical Security (Matthew Talbot)
- Seeking Wireless Solutions for Security (Brent Pickrell)
- Detecting Waterborne Threats (Brent Pickrell)

QUESTIONS or COMMENTS?



Sustaining National Nuclear Assets

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