

Section 383 Update and UAS Detection System Process

ARP National Consultant Workshop

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Section 383 UAS Detection and Mitigation

Section 383* created a new § 44810 in Title 49 U.S.C., which among other requirements, directs the FAA to test and evaluate technologies and systems that detect and/or mitigate potential aviation safety risks posed by unmanned aircraft systems (UAS) at 5 airports.

Sec. 383(a)

- Work with Federal agencies who have received grants of authority for Counter-UAS (C-UAS), including Depts. of Defense (DOD), Energy (DOE), Homeland Security (DHS), and Justice (DOJ)
- Ensure activities do not adversely impact or interfere with aviation

Sec. 383(b)

- Develop a plan for the certification, permitting, authorizing, or allowing deployment of C-UAS systems NAS-wide
- Charter an Aviation Rulemaking Committee (ARC)
- Unable to delegate any authority provided in this section

Sec. 383(c)

- Conduct testing and evaluation of detection and mitigation systems at five airports, including one airport that ranks in the top ten of the FAA's most recent Passenger Boarding Data.

Sec. 383(d)

- FAA must test both detection and mitigation technologies under subsection (c)

Sec. 383(e)

- Determine Airport Improvement Program (AIP) funding eligibility requirements for technologies legally permissible for deployment

Sec. 383(f)

- Provide an annual briefing to the appropriate committees of Congress



Sunset date: Sept 30, 2023



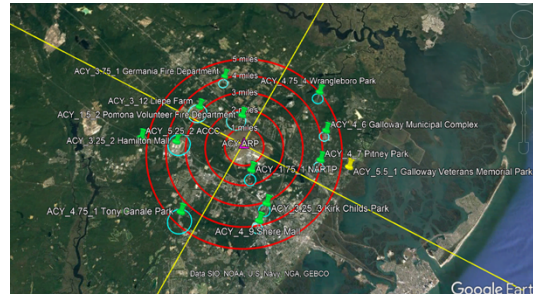
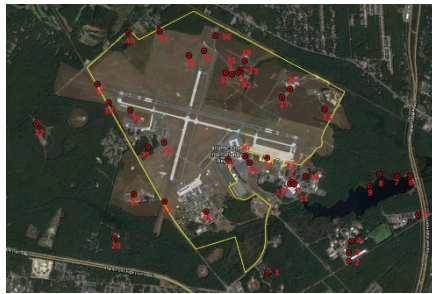
*Section 383 of the 2018 FAA Reauthorization Act

Components of the Research Program

- Selection of Host Airports:



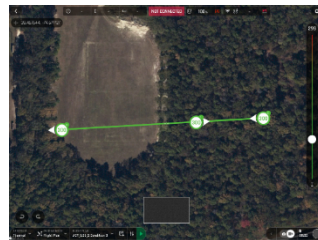
- Selection of Vendors and Installation of Sensors



- Drone Fleet

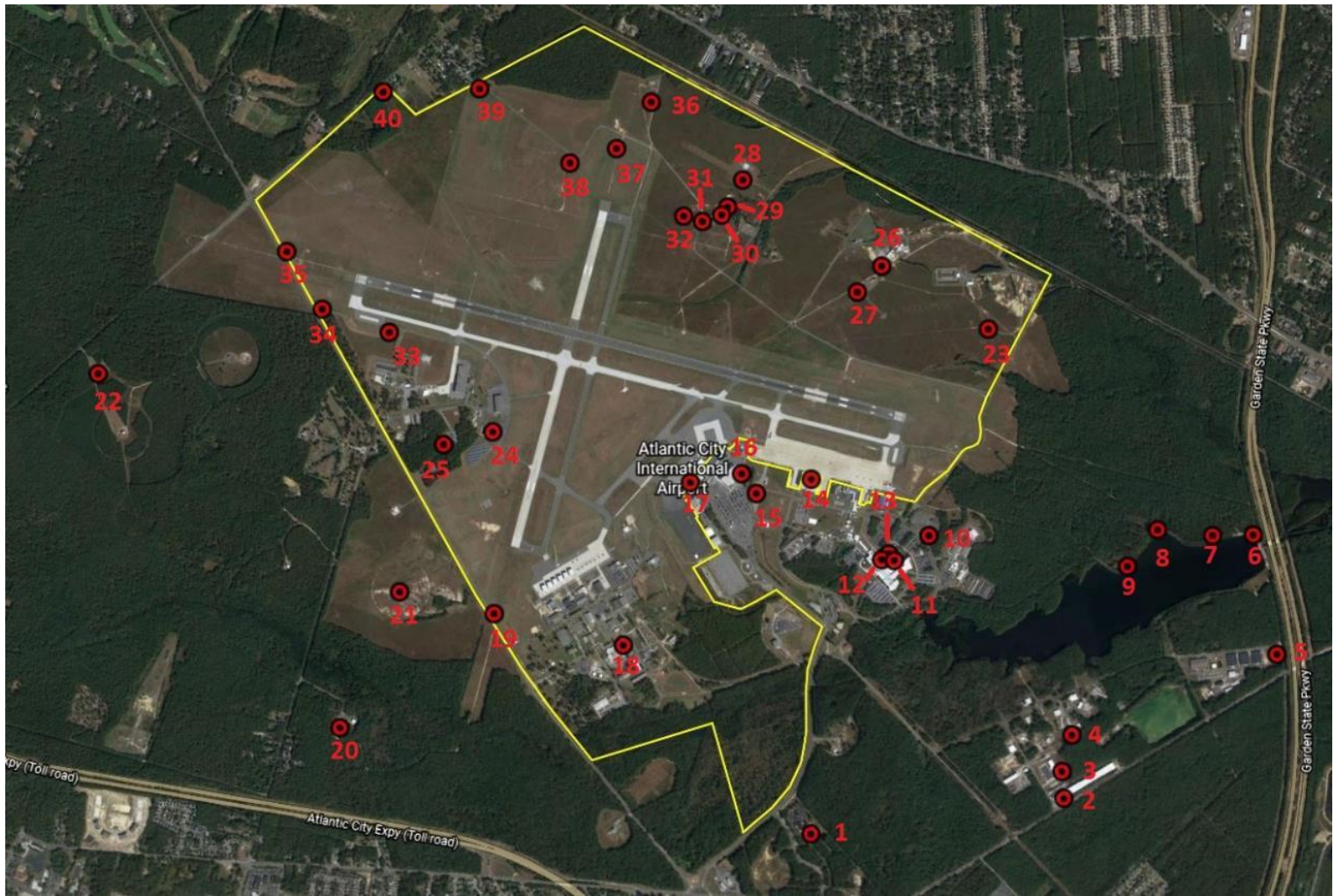


- Repetitive Testing



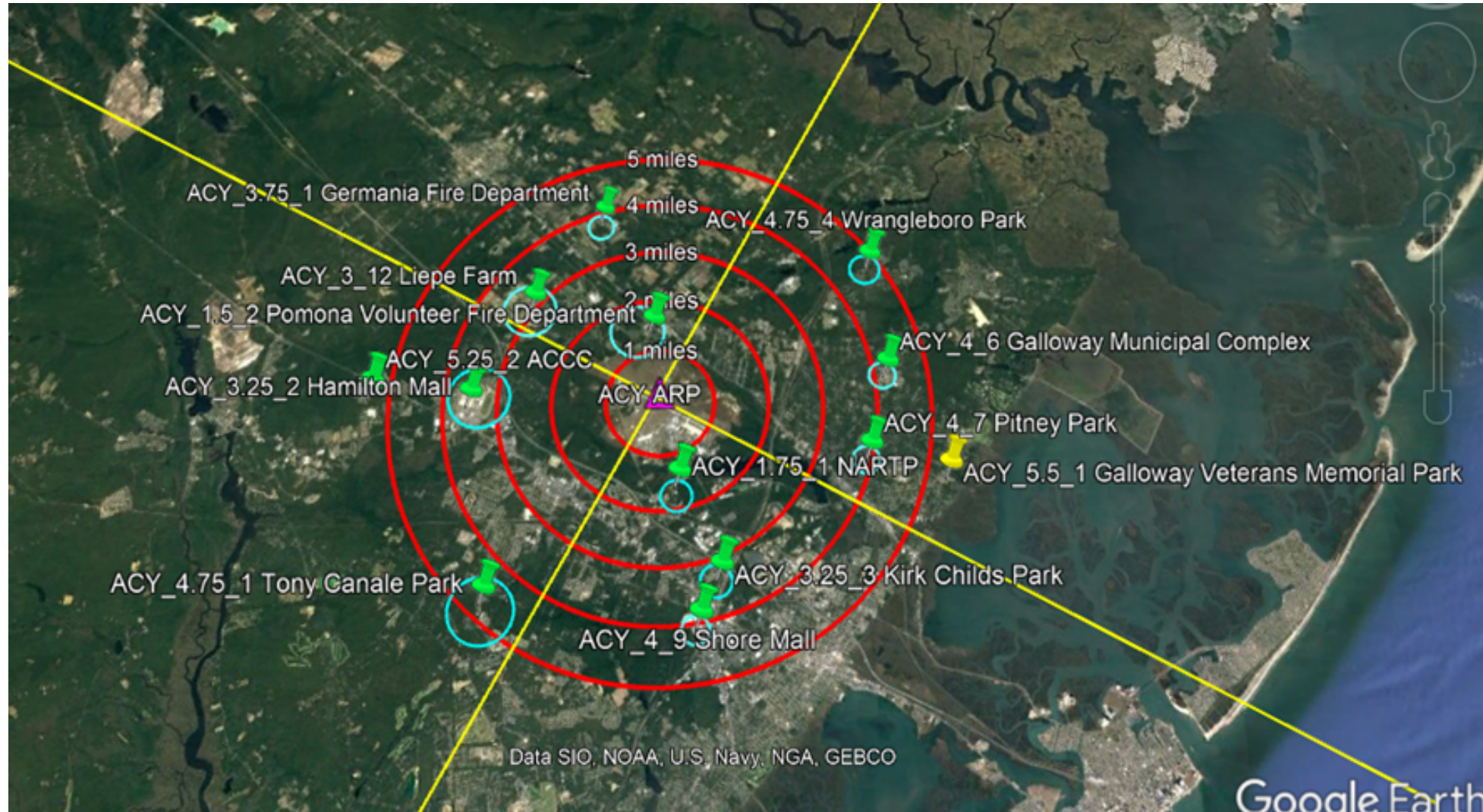
Sample Vendor Installation

Potential Sensor Locations



UAS Flight Operations

UAS Flight Locations



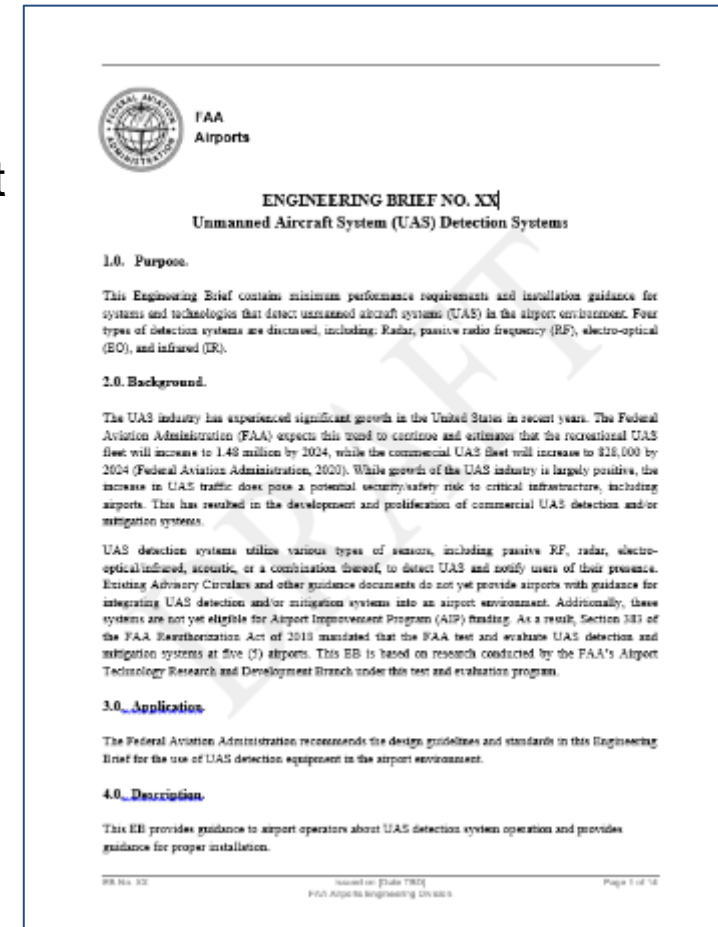
Section 383 - Summary of Testing Activity

- Successfully conducted testing at Atlantic City, Syracuse, Huntsville, Rickenbacker, and Seattle.
- Utilized fleet of 42 UAS, 13 flight locations, 5 flight patterns, all at 5 airports.
- Conducted 14,772 UAS flights to support program.
- Evaluated total of 30 technologies (21 detection and 9 mitigation technologies) provided by 18 vendors.
 - 12 vendors successfully passed through the program (9 detection and 3 mitigation)
 - 6 vendors were washed out (2 detection and 4 mitigation)
 - (Primary reasons: RF and performance)
 - 7 vendors backed out prior to contract signing for various reasons (Ukraine, Supply Chain, etc.)
- Success rate of technologies in completing the program: Detection (62%) Mitigation (33%)
- Technologies evaluated under program include:
 - Radio Frequency (RF)
 - Time Difference of Arrival (TDOA)
 - Library Based
 - Direction Finding (DF)
 - Hybrid (DF and Library)
 - Radar
 - Pulse Doppler
 - Frequency-Modulated Continuous Wave Radar (FMCW)
 - Camera
 - Electro-optical and Infrared (EO/IR)
 - RF Takeover and RF Interruption



Data Analysis and Reporting

- Results of the data analysis will result in the development of a performance standard that will provide US airports with:
 - Information on **siting** and operational considerations for each technology type.
 - Information on minimum **performance** characteristics that a system must meet.
- Things we are NOT doing:
 - Selecting a winner or best in class.
 - Proposing a federal acquisition.
 - Issuing any type of approval to a vendor.
- At the present time, the FAA is proposing to use an “Engineering Brief” format to disseminate this information.



Section 383 Observations

Initial Observations based on evaluation of detection technologies:

- General performance
- Diverse Types of Technologies
- Layered Solution
- Extraneous Signals
- Scalability
- Siting
- User Interfaces



Next Steps - Research

- Awaiting interpretation of new language in recent FAA reauthorization.
- Identify our role in next phase of program.
- Continue to refine standards and/or guidance material for FAA Office of Airports (ARP).
- Share data and experiences with federal partners.



UAS Detection Systems on Airports

- Airport operators continue to show interest in using UAS Detection Systems.
 - Department of Defense and other Federal agencies have also deployed technology in the airport environment.
- Since 2016, FAA has issued several letters and guidance documents to advise of:
 - Legal considerations;
 - Potential electromagnetic interference (EMI) to communications and navigation equipment; and
 - Process for on-airport proposals.



UAS Mitigation Systems

- UAS Mitigation Systems, also referred to as Counter UAS (cUAS), include the capability to disrupt, disable, destroy, take control of, and/or provide alternate flight instructions to a UAS.
- Federal law limits the authority to use this technology in the United States.
- Only 4 Federal departments are expressly permitted to use this technology:
 - Department of Defense;
 - Department of Energy;
 - Department of Homeland Security; and
 - Department of Justice.
- Airport owners and operators are not authorized to use cUAS systems.



Best Practices for FAA Review Under Part 77

- Most systems require notification and coordination prior to installation and/or deployment in accordance with 14 CFR Part 77.
 - However, these systems trigger security sensitive information practices.
- Cases are submitted to OE/AAA just like any other study submission, with a few exceptions.
 - Only information for one airport is entered for the case. ***Backup materials should not contain information about detection/mitigation equipment at other airports.***
 - Supporting documentation should be combined into a single file, password protected, and with a cover sheet that identifies the information submitted is sensitive/confidential.



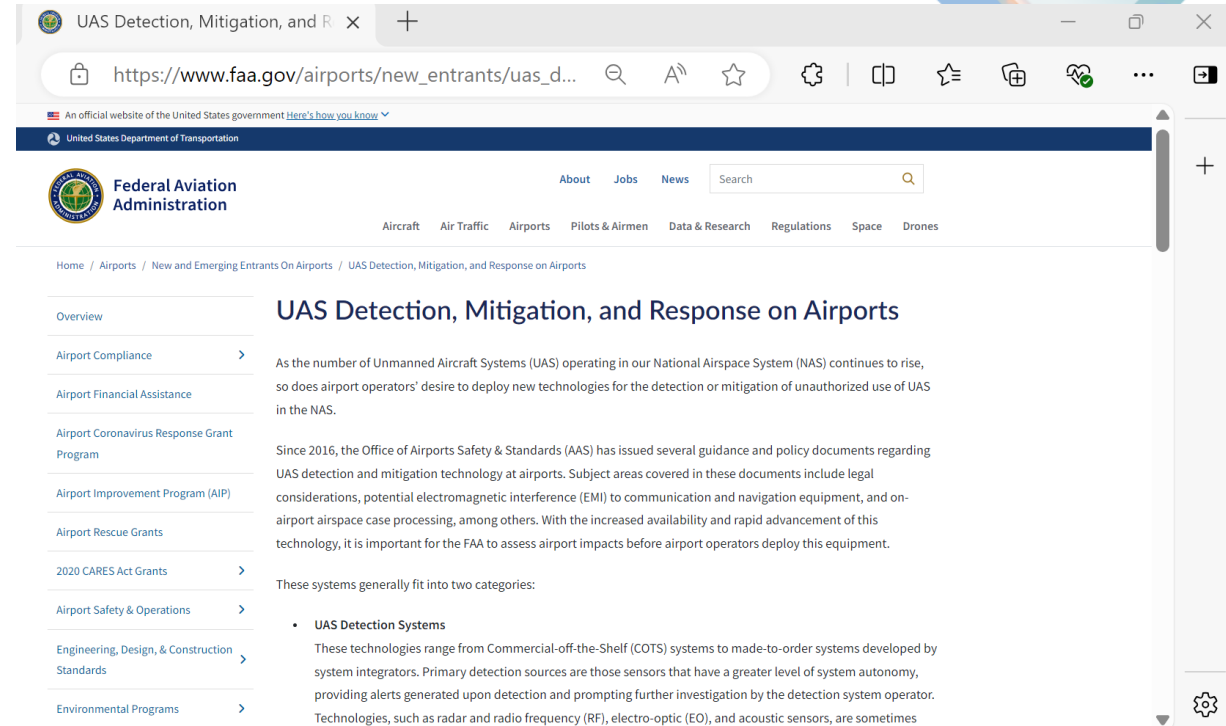
UAS Response Planning

- FAA issued Cert Alert 21-04, *Updated Guidance for Airport Emergency Plans (AEP) under 14 CFR Part 139.325(b)(7)*, in September 2021.
 - The Cert Alert informed Part 139 airport operators that AEPs should include instructions for responding to unauthorized UAS operations.
 - UAS Response Plans were coordinated with applicable stakeholders including:
 - Air Traffic Control;
 - Airport Operations;
 - Transportation Security Administration (TSA); and
 - Law Enforcement.
- If a Part 139 airport has UAS Detection System **and** intends to use it as part of their response, it must be included in their UAS Response Plan.



For More Information

- The Airports Emerging Entrants Division (AAS-200) maintains a webpage to assemble all relevant information for the airport community on UAS Detection, Mitigation and Response on Airports.
- [UAS Detection, Mitigation, and Response on Airports | Federal Aviation Administration \(faa.gov\)](https://www.faa.gov/airports/new_entrants/uas_d...)



Questions & Discussion

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