UAS Applications for Airport Operations and Safety

Presented to: ICAO UAS RPAS

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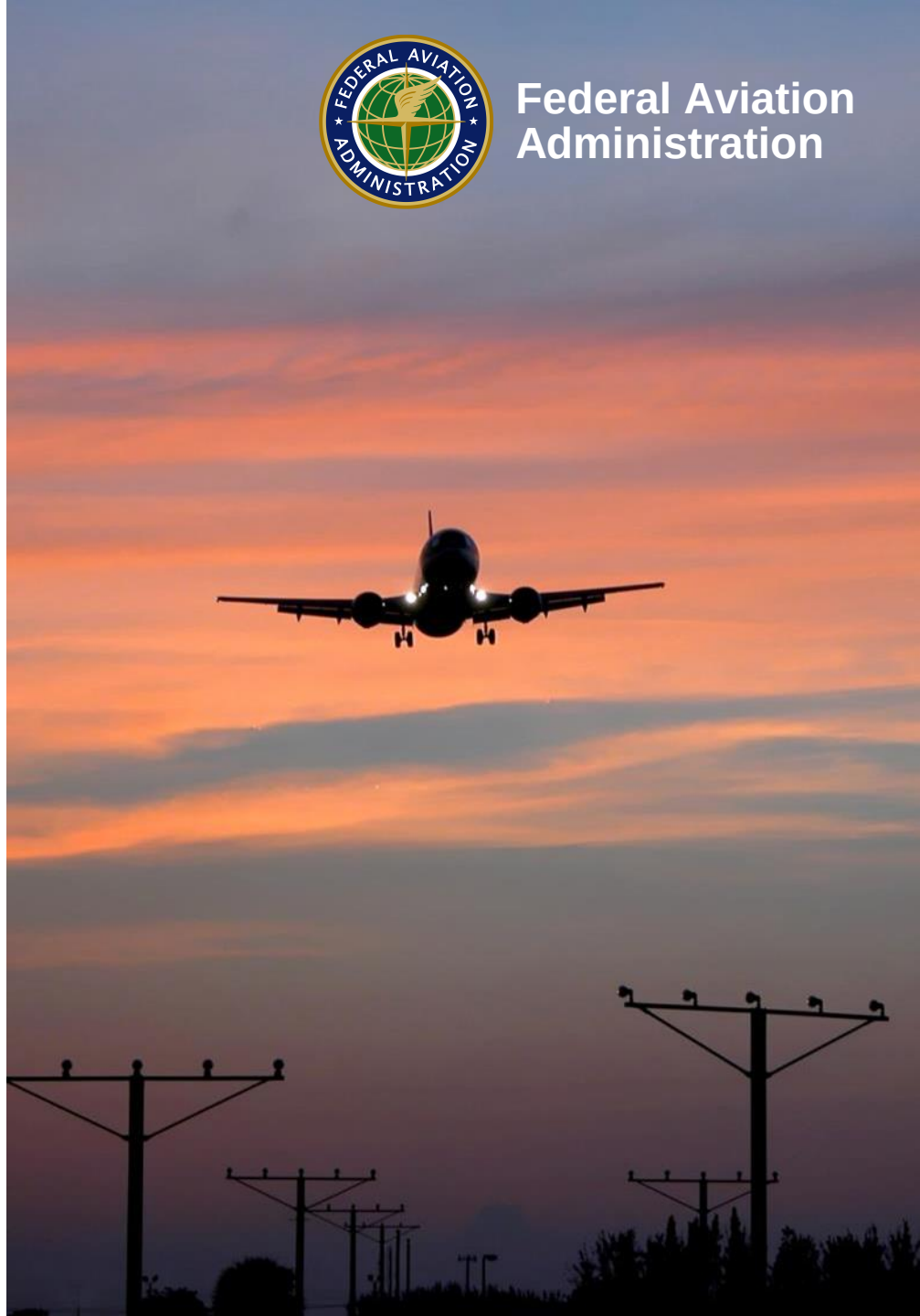
Office of Airports, Airports Emerging Entrants Division

Date: December 11, 2024

Federal Aviation Administration

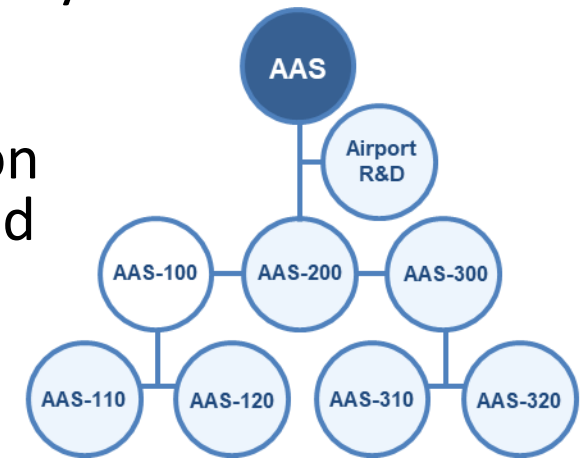


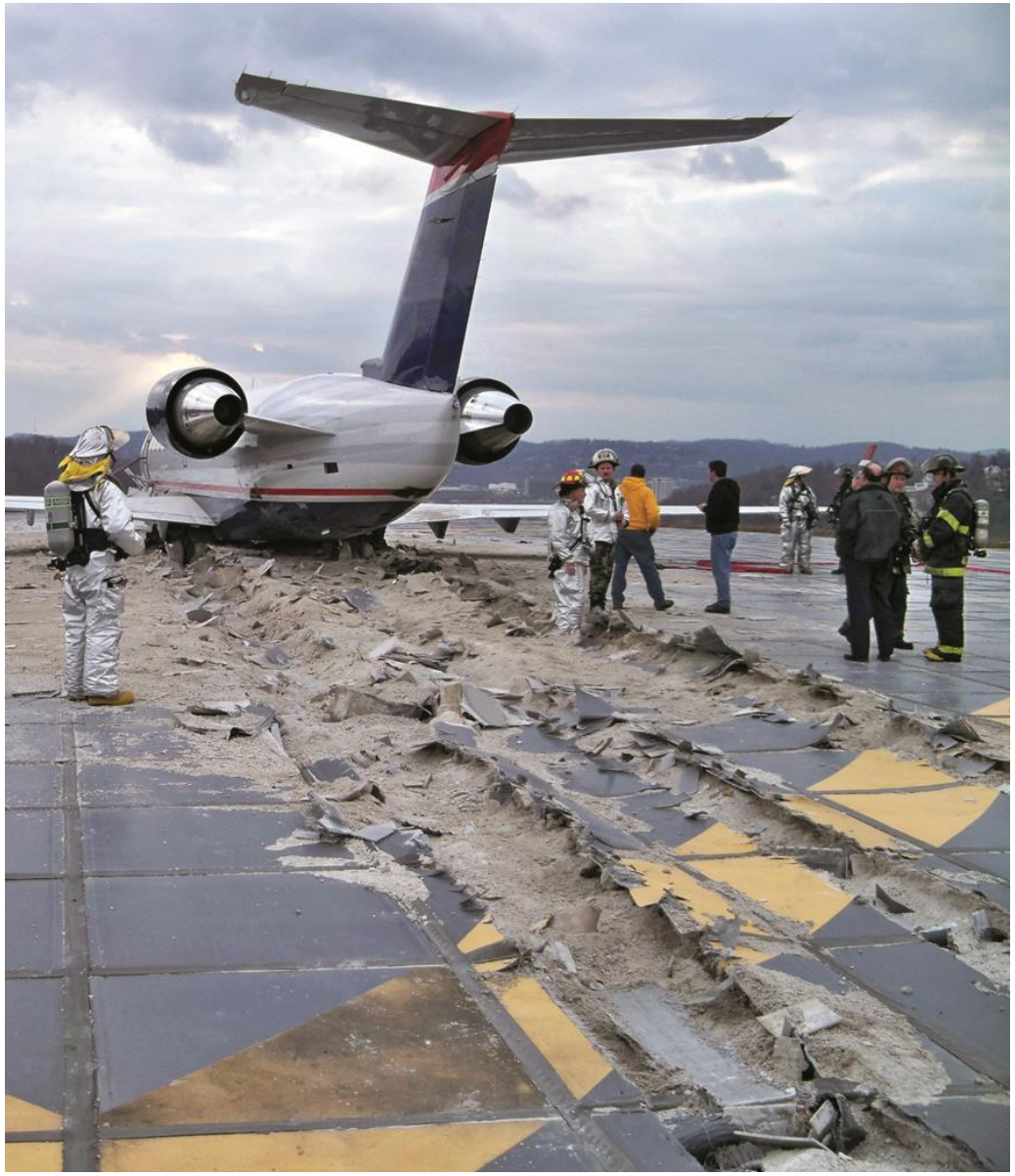
The U.S. Federal Aviation Administration (FAA) – Office of Airports (ARP)

We provide leadership to airport owners and operators (as well as other key stakeholders) to ensure that U.S. airports are as safe and efficient as possible. ARP's goal is to optimize the safety, security, capacity, efficiency, economic and environmental sustainability and fiscal responsibility of airports, with due consideration of state and local government priorities as well as the rights of private landowners and commercial stakeholders.

U.S. FAA – Airport Safety and Standards (AAS)

The Office of Airport Safety and Standards has primary responsibility for all airport program matters related to standards for airport design, construction, maintenance, operations, safety, Part 139 airport certification, airport safety management systems, research and development, integration of emerging entrants and international activities.





Overview: UAS Airport Applications (Use Cases)

- There is a growing interest to leverage small UAS (sUAS) as a tool to supplement airport operations.
- The FAA's Technical Center (Airport Technology Research and Development (R&D) Branch) is conducing research on the use of UAS for various applications (also referred to as 'use cases')
  - Until research is complete, and guidance and standards for use of sUAS in these applications are formalized, sUAS cannot be used as a sole means of compliance with federal regulations and requirements and must be supplemented by traditional methods.

UAS Airport Applications (use case) Research Update

The FAA's Airport Technology R&D Branch is conducting research to determine minimum performance specifications and technical/operational considerations for the following airport UAS applications (use-cases).

Completed Research

- Obstruction Analysis – Phase 1
- Perimeter Fenceline Inspections
- Pavement Inspections
- Aircraft Rescue and Firefighting (ARFF) – Live Monitoring
- ARFF Accident/Incident Documentation (Visual Camera)
- FOD Detection
- Construction Monitoring (literature review)

Ongoing Research

- Obstruction Analysis – Phase 2 (Point Cloud-Based Data Processing)
- Wildlife Hazard Management – Dispersal/Monitoring
- UAS-based Lighting Inspection

Planned Research

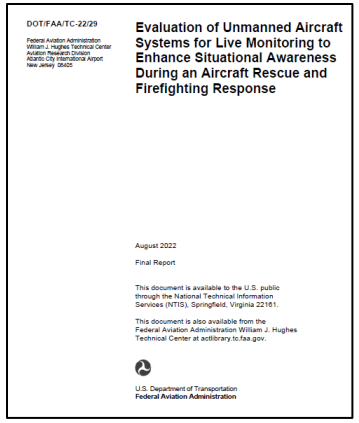
- Drone-in-a-Box
- Runway/Taxiway Safety Area Surveys
- ARFF Aircraft Fuselage Interior Searches
- ARFF Accident/Incident Documentation (Thermal Cameras)
- Wildlife Hazard Management – Dispersal/Monitoring – Testing at additional airports

- The FAA's Airport Technology R&D Branch has concluded their initial research (in the 'completed applications') and have prepared final reports that summarize the research results and findings.
  - On Airport Unmanned Aircraft System Operations | Federal Aviation Administration (faa.gov)
- The Office of Airports plans to develop guidance and standards for the use of UAS for on-airport applications (use cases) based on FAA Airport Technology R&D results/findings.

Lifecycle: Research to Guidance/Standards Development

ARFF Live Monitoring

- **Purpose:**
  - Explore the use of UAS to improve the situational awareness and effectiveness of ARFF personnel when monitoring the response to an ongoing ARFF accident/incident.
- **Research Approach:**
  - Tested at Atlantic City International Airport (ACY), New Jersey and Dallas / Fort Worth International Airport (DFW) Fire Training Research Center, Texas.
  - Tested various types of UAS and optical/thermal cameras.
- **Finding:**
  - Based on analysis of footage and feedback collected during testing, UASs equipped with thermal and visual cameras were found to provide a **significant situational awareness benefit** to incident commanders in a variety of ARFF response scenarios.
- **Accomplishment:**
  - Published final report
- **Planned Next Step:**
  - Take research results/findings in final report and create guidance.


DOT/FAA/TC-22/29

Federal Aviation Administration
William J. Hughes Technical Center
Aviation Research Division
Atlantic City International Airport
New Jersey 08405

Evaluation of Unmanned Aircraft Systems for Live Monitoring to Enhance Situational Awareness During an Aircraft Rescue and Firefighting Response

August 2022

Final Report

This document is available to the U.S. public through the National Technical Information Services (NTIS), Springfield, Virginia 22161.

This document is also available from the Federal Aviation Administration William J. Hughes Technical Center at actlibrary.tc.faa.gov.

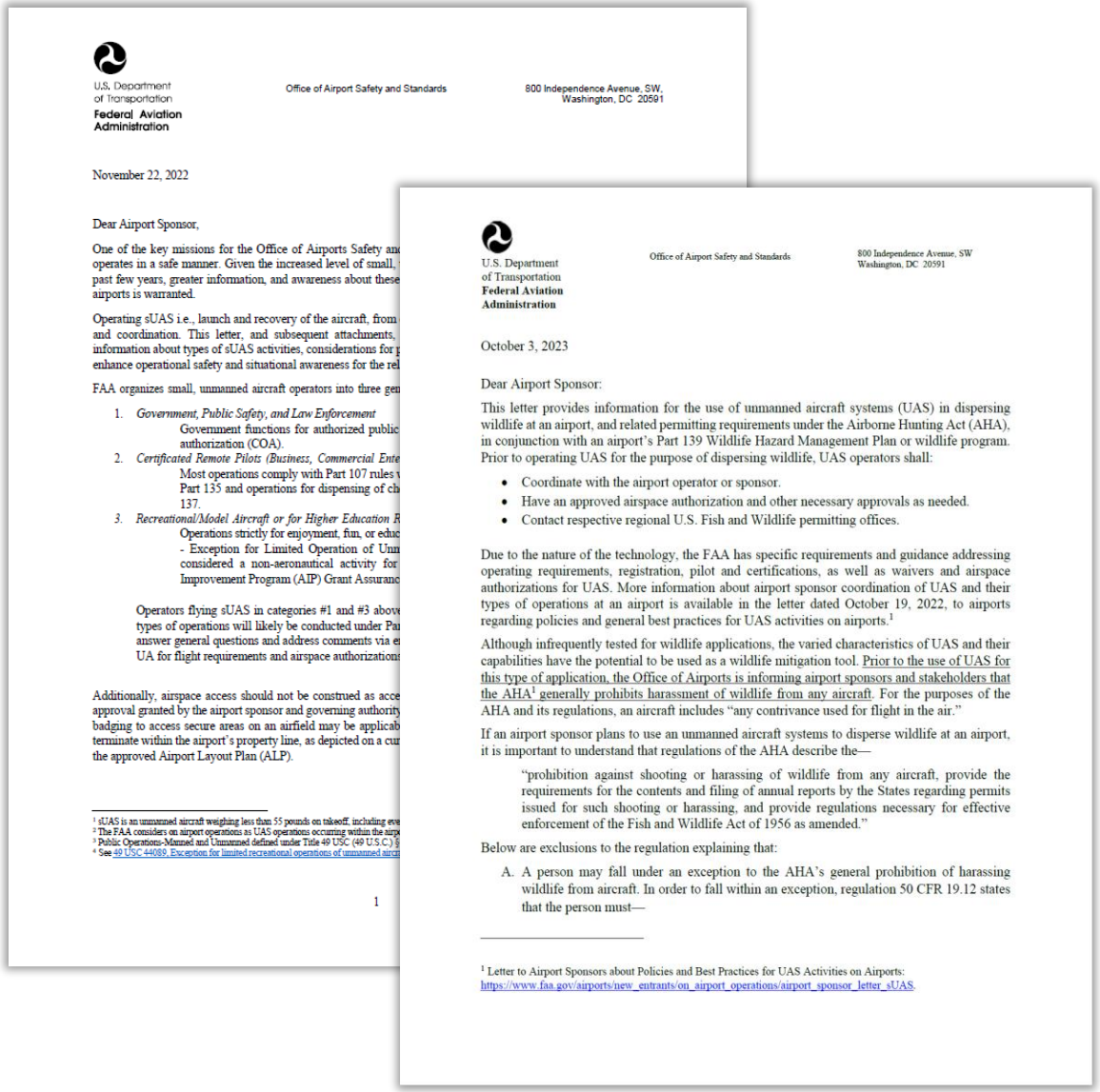
U.S. Department of Transportation
Federal Aviation Administration

On-Airport UAS Operations Guidance

November 22, 2022: Letter to *Airport Sponsors about Policies and General Best Practices for UAS Activities On Airports*

October 3, 2023: Letter to Airport Sponsors about Using UAS to Disperse Wildlife

Both letters available at:
www.faa.gov/airports/new_entrants/on_airport_operations



U.S. Department of Transportation
Federal Aviation Administration

Office of Airport Safety and Standards

800 Independence Avenue, SW, Washington, DC 20591

November 22, 2022

Dear Airport Sponsor,

One of the key missions for the Office of Airports Safety and operates in a safe manner. Given the increased level of small, past few years, greater information, and awareness about these airports is warranted.

Operating sUAS i.e., launch and recovery of the aircraft, from and coordination. This letter, and subsequent attachments, information about types of sUAS activities, considerations for enhance operational safety and situational awareness for the rel

FAA organizes small, unmanned aircraft operators into three gen

1. *Government, Public Safety, and Law Enforcement* Government functions for authorized public authorization (COA).
2. *Certificated Remote Pilots (Business, Commercial Ente* Most operations comply with Part 107 rules Part 135 and operations for dispensing of ch 137.
3. *Recreational/Model Aircraft or for Higher Education R* Operations strictly for enjoyment, fun, or educ - Exception for Limited Operation of Unm considered a non-aeronautical activity for Improvement Program (AIP) Grant Assuranc

Operators flying sUAS in categories #1 and #3 above types of operations will likely be conducted under Pa answer general questions and address comments via e UA for flight requirements and airspace authorizations

Additionally, airspace access should not be construed as acce approval granted by the airport sponsor and governing authority badging to access secure areas on an airfield may be applicab terminate within the airport's property line, as depicted on a cu the approved Airport Layout Plan (ALP).

[1] sUAS is an unmanned aircraft weighing less than 55 pounds on takeoff, including eve
[2] The FAA considers on airport operations as UAS operations occurring within the airp
[3] Public Operations-Manned and Unmanned defined under Title 49 USC (49 U.S.C.)
[4] See 49 USC 44089, Exception for limited recreational operations of unmanned aircr

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U.S. Department of Transportation
Federal Aviation Administration

Office of Airport Safety and Standards

800 Independence Avenue, SW Washington, DC 20591

October 3, 2023

Dear Airport Sponsor:

This letter provides information for the use of unmanned aircraft systems (UAS) in dispersing wildlife at an airport, and related permitting requirements under the Airborne Hunting Act (AHA), in conjunction with an airport's Part 139 Wildlife Hazard Management Plan or wildlife program. Prior to operating UAS for the purpose of dispersing wildlife, UAS operators shall:

- Coordinate with the airport operator or sponsor.
- Have an approved airspace authorization and other necessary approvals as needed.
- Contact respective regional U.S. Fish and Wildlife permitting offices.

Due to the nature of the technology, the FAA has specific requirements and guidance addressing operating requirements, registration, pilot and certifications, as well as waivers and airspace authorizations for UAS. More information about airport sponsor coordination of UAS and their types of operations at an airport is available in the letter dated October 19, 2022, to airports regarding policies and general best practices for UAS activities on airports.[1]

Although infrequently tested for wildlife applications, the varied characteristics of UAS and their capabilities have the potential to be used as a wildlife mitigation tool. Prior to the use of UAS for this type of application, the Office of Airports is informing airport sponsors and stakeholders that the AHA[1] generally prohibits harassment of wildlife from any aircraft. For the purposes of the AHA and its regulations, an aircraft includes "any contrivance used for flight in the air."

If an airport sponsor plans to use an unmanned aircraft systems to disperse wildlife at an airport, it is important to understand that regulations of the AHA describe the—

> "prohibition against shooting or harassing of wildlife from any aircraft, provide the requirements for the contents and filing of annual reports by the States regarding permits issued for such shooting or harassing, and provide regulations necessary for effective enforcement of the Fish and Wildlife Act of 1956 as amended."

Below are exclusions to the regulation explaining that:

A. A person may fall under an exception to the AHA's general prohibition of harassing wildlife from aircraft. In order to fall within an exception, regulation 50 CFR 19.12 states that the person must—

[1] Letter to Airport Sponsors about Policies and Best Practices for UAS Activities on Airports: https://www.faa.gov/airports/new_entrants/on_airport_operations/airport_sponsor_letter_sUAS.

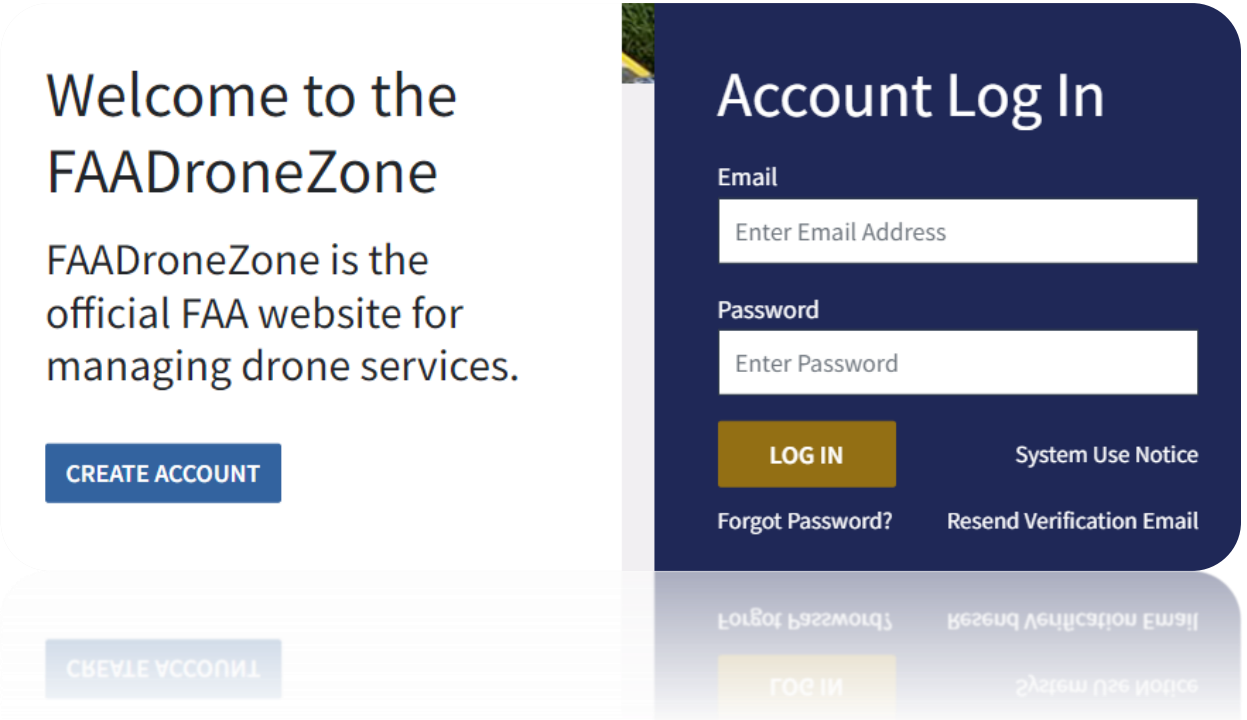
Airspace Access/Authorization: On Airport Operations

Controlled Airspace

- sUAS authorizations at airports in controlled airspace must use *FAA DroneZone*.
  - During this process, multiple organizations (FAA, Air Traffic Control Manager, and airport authority) review the request.
- Airport sponsors have the authority to approve/disapprove a sUAS operation requesting access to operate on an airport.
- Operations cannot be conducted in 'active' movement areas.

Uncontrolled Airspace

- Current policy does not require prior communication for sUAS operations in Class G airspace, airport sponsors and operators are encouraged to begin planning and coordination well in advanced of the proposed activity.



Next Steps

- Develop guidance for the use of UAS for on-airport applications based on FAA research results/findings.
- Update our Letter to *Airport Sponsors about Policies and General Best Practices for UAS Activities On Airports.*
- Explore the how to safely integrate UAS into active movement areas for operational purposes.
- Work with FAA Tech Center (Airport Safety R&D) to initiate new research efforts, which include but are not limited to:
  - Drone-in-a-Box
  - Runway/Taxiway Safety Area Surveys
  - ARFF Aircraft Fuselage Interior Searches
  - ARFF Accident/Incident Documentation (Thermal Cameras)
  - Wildlife Hazard Management – Dispersal/Monitoring – Testing at additional airports

Questions ?

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New and Emerging Entrants On Airports | Federal Aviation Administration