Unmanned Aircraft Systems (UAS) for Public Safety

Presented to:  UAS/Drone Fire Services Symposium

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Overview

• FAA Mission
• Unmanned Aircraft Systems (UAS)
• National Airspace System (NAS)
• Types of UAS Operations
• Public Aircraft Operations (PAO) vs Civil
• UAS Registration
• How to Get Started
• Handy Tools and References
FAA Mission

The FAA’s continuing mission is to provide the safest, most efficient aerospace system in the world.
What is a UAS?

• A UAS is a **system:**
  1. Unmanned Aircraft
  2. Ground Control Station
  3. Command & Control Link(s)

• Also known as:
  – Unmanned Aerial Vehicle (UAV)
  – Remotely Piloted Aircraft System (RPAS)
  – RC Model Aircraft
  – Drone
National Airspace System (NAS)

- **U.S. airspace is public space**
  - 49 U.S.C. §40103(a)(1)

- **UAS are “aircraft” subject to regulation**
  - 49 U.S.C. §40102(a)(6); 14 CFR 1.1; PL 112-95 §331, §336
  - An aircraft is any device used, or intended to be used, for flight
  - UAS that do not meet the statutory definition of a model aircraft must operate under Part 107

- **UAS flown outdoors operate in the NAS**
Operations in Class G do not require ATC authorization
Operations in Class B, C, D & Class E surface areas require ATC authorization
Online portal available at www.faa.gov/uas/request_waiver/
Airspace – VFR Sectional
## Types of UAS Operations

<table>
<thead>
<tr>
<th>Aircraft Requirements*</th>
<th>Pilot Requirements</th>
<th>Airspace Requirements</th>
<th>Types of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 107</td>
<td>UAS &lt; 55 lbs.</td>
<td>Part 107 remote pilot certificate with small UAS rating</td>
<td>VLOS, daytime, Class G, 400 ft., not over people OR waiver provisions</td>
</tr>
<tr>
<td>Section 333</td>
<td>As specified in exemption</td>
<td>Part 61 airman certificate</td>
<td>Blanket COA or Standard COA for specific airspace</td>
</tr>
<tr>
<td>Experimental Aircraft</td>
<td>Experimental Special Airworthiness Certificate</td>
<td>Part 61 airman certificate</td>
<td>Standard COA for specific airspace</td>
</tr>
<tr>
<td>Type Certificated Aircraft</td>
<td>Restricted type or special class certification</td>
<td>Part 61 airman certificate</td>
<td>Part 91 airspace requirements</td>
</tr>
<tr>
<td>Public Aircraft</td>
<td>Self-certification by public agency</td>
<td>Self-certification by public agency</td>
<td>Blanket COA or Standard COA for specific airspace</td>
</tr>
<tr>
<td>Section 336 Model Aircraft</td>
<td>UAS &lt; 55 lbs.*</td>
<td>Community-based organization (CBO) standards</td>
<td>Notification requirement within 5 miles of an airport</td>
</tr>
</tbody>
</table>

* Note: All UAS greater than 0.55 pounds that do not meet the definition and operational requirements of a model aircraft must be registered (see part 47 and part 48 requirements)

** The exception to this weight limit is stated in P.L. 112-95, Section 336 (a)(3)

*These requirements are subject to waiver.
Getting Started

• **Start with the end in mind**
  – What do you want your UAS to do for you?
  – What can be approved?

• **Under what legal framework will you operate?**
  – Public: Title 49 U.S.C. §§ 40102(a)(41) and 40125
  – Civil: Part 107, Section 333, Experimental, Type Certificated

• **Must comply with applicable flight rules**
Aircraft, Pilots, and Airspace

• **Who, how, when, and where will you deploy?**
  – Equipment
  – Contractor Pilots/Operators or public entity personnel
  – Qualifications, training, certification, maintenance, documentation, etc.

• **Where will you operate?**
  – Class of Air Space
  – Location(s)
  – Under what conditions?
  – Flight Rules
  – State/Local
  – Weather
  – Time of Day
Public or Civil

• Public
  – Need a Public Declaration Letter from AG (must be filed with FAA)
  – Review AC 00-1.1A
  – Title 49 U.S.C. §§ 40102(a)(41) and 40125.
  – Need a Certificate of Authorization (COA) to operate as a PAO in the NAS
  – Need an existing COA on file to obtain emergency authorization (SGI-COA)

• Civil
  – Part 107
    • Can operate today with limits
    • May need waivers and/or airspace authorizations to operate
  – Other
    • Section 333 Exemption
    • Type Certificated UAS operating under Part 91 airspace and Part 61 airman regulations
    • Complicated, time consuming process
First Steps for PAO

• Obtain Public Declaration Letter (PDL) from City, County, State Attorney
  – Send copy of PDL to FAA

• Obtain User ID and password for online Public COA application from FAA (after proof of PDL)
  – Contact the Air Traffic Office at 9-AJV-115-UASCOA@faa.gov for access to the COA Online System

• Complete COA application online
  – Application must address if COA is for blanket area or jurisdiction
Public Aircraft Operations
Certificate of Authorization (COA)

- **Blanket (CONUS) Area COA**
  - Operations in Class G, day and night
  - Typically processed in 10 business days

- **Jurisdictional (Area Boundary) COA**
  - Defines a specific operating area where UAS operations may take place (size of city, county, state) needs to be coordinated with Flight Standards and Air Traffic
  - Processing time 30 business days or more

- **Special Government Interest (Emergency COA)**
  - Requires approved active COA
  - Enables operations outside of approved COA provisions or operations within TFR
  - Processing approval within 60 minutes
Online UAS Registration

• Commercial or public operators flying under part 107 or a public COA must register online as a “non-modeler”
  – You will need to provide an email address, physical address, and the make, model, and serial number (if available) of each sUAS
• UAS over 55 lbs. must use the paper-based registration process
How to Get Started as a Part 107 Operator

• Can fly now under Part 107 if able to fully comply with its rules.
• Cannot fly under Part 107 as a PAO flight, and visa versa.
• If waivers to regulations needed, complete the online waiver request, carefully and thoroughly addressing the Performance Based Standards (PBS).

**NOTE: Many waiver requests are denied due to inadequate information, overly optimistic assumptions about technology, and failure to demonstrate EQUAL or BETTER level of safety as required in the PBS. Read the PBS carefully and answer it.**

• Prior written approval is needed to operate in Class B,C,D, and E airspace, requested online.
Small UAS Rules Highlights (14 CFR Part 107)

- UAS must weigh less than 55 lbs. and be registered
- UAS operators must obtain a Remote Pilot Certificate
- Visual line-of-sight, daylight operations
- Must yield right-of-way to manned aircraft
- No HAZMAT, no weapons
- One UAS per Remote Pilot
Part 107 Overview (cont.)

- No operations over people
- 400 feet or below
- Class G Airspace
- Max groundspeed of 100 mph
- External load operation only permitted if they do not affect flight operations or control
Special Governmental Interest (SGI) Process

Public Aircraft Operator SGI Request
- Coordination by on-scene incident commander
- Active COA or MOA
- Operate under conditions of Approved COA not waived

Part 107 SGI Request
- Coordination by on-scene incident commander
  (Public Sponsor)
- sUAS operator must have Remote Pilot Cert
- Must operate under Part 107

Denial

System Operations Support Center (SOSC)

Denial

AFS-800 Assessment

SOSC Assessment
- Public Operator
- Civil Part 107

UAS Integration office Assessment

APJ-2 Review/Approval

Approved with or without Provisions
Handy Tools and References

B4UFly Smart Phone App  https://www.faa.gov/uas/where_to_fly/b4ufly/
AC 00-1.1A Public Aircraft Operations
AC 107-2 Small Unmanned Aircraft Systems (sUAS)
Title 49 U.S.C. §§ 40102(a)(41) and 40125
14 CFR Part 107 Small Unmanned Aircraft Systems
FAA UAS Webpage:  https://www.faa.gov/uas/
Part 107 Waiver Requests  https://www.faa.gov/uas/request_waiver/
Performance Based Standards:  
https://www.faa.gov/uas/request_waiver/media/performance_based_standards.pdf
Sys Ops Sec: (202) 267-8276, email: 9-ator-hq-sosc@faa.gov
NOTAM Entry:  https://www.1800wxbrief.com/Website/uoa
Summary

- UAS can enhance existing efforts
- UAS fly in the National Airspace System
- UAS pilots performing civil operations must be FAA certificated; PAO self certifies UAS Pilots
- Part 107 may require waivers and or airspace authorizations
- Part 107 enables many operations in non-urban areas quickly
- PAO is an option for some, but not all
- PAO requires a COA
- PAO is not a blanket designation and depends on the operation
- PAO declaration carries responsibility and assumption of risk for the public entity
- Call SysOps Sec before flying in SGI situations
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Questions?

www.faa.gov/uas
Supplemental Material
Waivable Rules under Part 107

- Operation from a moving vehicle or aircraft (§ 107.25)
- Daylight operation (§ 107.29)
- Visual line of sight aircraft operation (§ 107.31)
- Visual observer (§ 107.33)
- Operation of multiple small unmanned aircraft systems (§ 107.35)
- Yielding the right of way (§ 107.37(a))
- Operation over people (§ 107.39)
- Operation in certain airspace (§ 107.41)
- Operating limitations for small unmanned aircraft (§ 107.51)
Public Aircraft Operations
Title 49 U.S.C. §§ 40102(a)(41) definitions excerpt

• “Public aircraft” means any of the following:
  • (C) An aircraft owned and operated by the government of a State, the District of Columbia, or a territory or possession of the United States or a political subdivision of one of these governments, except as provided in section 40125(b).
  • (D) An aircraft exclusively leased for at least 90 continuous days by the government of a State, the District of Columbia, or a territory or possession of the United States or a political subdivision of one of these governments, except as provided in section 40125(b).

• “Civil aircraft” means an aircraft except a public aircraft. The FAA considers all aircraft ops not flown or qualified as a public aircraft operation to be a civil operation, flown under civil rules.
Public Aircraft Operations
49 CFR 40125 (d) excerpt

- Search and Rescue Purposes.—An aircraft described in section 40102(a)(41)(D) that is not exclusively leased for at least 90 continuous days by the government of a State, the District of Columbia, or a territory or possession of the United States or a political subdivision of 1 of those governments, qualifies as a public aircraft if the Administrator determines that—

(1) there are extraordinary circumstances;
(2) the aircraft will be used for the performance of search and rescue missions;
(3) a community would not otherwise have access to search and rescue services; and
(4) a government entity demonstrates that granting the waiver is necessary to prevent an undue economic burden on that government.
Governmental Function
49 CFR 40125

• The term “governmental function” means an activity undertaken by a government, such as national defense, intelligence missions, firefighting, search and rescue, law enforcement (including transport of prisoners, detainees, and illegal aliens), aeronautical research, or biological or geological resource management.

• An aircraft described in subparagraph (A), (B), (C), or (D) of section 40102(a)(41) does not qualify as a public aircraft under such section when the aircraft is used for commercial purposes (performing a non governmental function) or to carry an individual other than a crewmember or a qualified non-crewmember.

• Not all public entity aviation activities meet the qualifications. Just because you are a public entity does not necessarily mean your flight meets the criteria as a governmental function.
Temporary Flight Restrictions

WHO CAN REQUEST A TFR
A TFR may be requested by various entities, including: military commands; federal security/intelligence agencies; regional directors of the Office of Emergency Planning, Civil Defense State Directors; civil authorities directing or coordinating organized relief air operations (e.g., Office of Emergency Planning; law enforcement agencies; U.S. Forest Service; state aeronautical agencies); State Governors; FAA Flight Standards District Office, aviation event organizers, or sporting event officials.

WHO CAN ISSUE A TFR?
FAA Headquarters or the Directors of Terminal or En Route and Oceanic Area Operations (or their designee) having jurisdiction over the area concerned may issue a TFR.
Temporary Flight Restrictions

WHAT IS A TFR

TFR is a type of Notices to Airmen (NOTAM) that defines an area restricted to air travel due to a hazardous condition, a special event, or a general warning for the entire FAA airspace. The text of the actual TFR contains the fine points of the restriction.

DIFFERENT TYPES OF TFRs

FAA issues TFRs under the following regulations:

1. Section 91.137, Temporary Flight Restrictions in the Vicinity of Disaster/Hazard Areas
   - A1 Protect persons and property on the surface or in the air from a hazard associated with an incident of the surface
   - A2 Provide a safe environment for the operation of disaster relief aircraft
   - A3 Prevent an unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest

2. Section 91.138, Temporary Flight Restrictions in National Disaster Areas in the State of Hawaii

3. Section 91.139, Emergency Air Traffic Rules

4. Section 91.141, Flight Restrictions in the Proximity of the Presidential and Other Parties

5. Section 91.143, Flight Limitation in the Proximity of Space Flight Operations

6. Section 91.145, Management of Aircraft Operations in the Vicinity of Aerial Demonstrations and Major Sporting Events

7. Section 99.7, Special Security Instructions