Small Unmanned Aircraft Systems (sUAS) & Airports

Presented to: ASW Airports Conference
Presented by: Alvin Brunner, ASW-220
Date: 29-31 Jan 18
Overview

- Unmanned Aircraft Systems
- Model Operations
- Small UAS Rule (Part 107)
- Airspace Authorizations
- Next Steps in Integration
  - Focus Area Pathfinders
  - Drone Zone
- Outreach Efforts
- Airport Specific Concerns
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
Why Use a UAS?

• UAS operations are particularly effective for missions that are dangerous or dull
  – Humans are not put at risk
  – Continuous operations are possible

• Operations with UAS often cost less than using manned aircraft
Authorization for Model Aircraft

• PL 112-95 §336 ➔ Part 101
  – Hobby/recreation only,
  – Must maintain visual line of sight,
  – Community based organization safety standards,
  – \( \leq 55\text{lbs}^* \), & yields to manned flights,
  – Notify all airports and ATC facility (if present) within 5 miles

• Doesn’t limit FAA authority to pursue enforcement action against modelers who endanger the safety of the NAS

• FAA registration required (w/2017 NDAA law)

• AC 91-57A guidance for modelers
  – 400ft AGL “best practices”

• Interpretive Rule
Authorization for Model Aircraft

• Interpretation of the Special Rule for Model Aircraft (Docket No. FAA-2014-0396) – Interim interpretation (June 2014)
  – FAA may make rules affecting all aircraft or airspace which include models
  – Community-based org = membership association that provides its membership with safety guidelines
  – Visual Line of Sight of the operator, no binoculars/ no night vision goggles/ no first person view
  – Incidental to business = commercial operations = not model ops
  – Maximum gross weight ≤55 lbs*
  – Ref operations near airports, 5 miles is statute miles
    • Notificationversation. Only ATC may “deny” operations i.e. Class B.
  – Objection of ATC or Airport Mgr ≈ NAS endangerment

• FAA evaluating comments to determine where clarification or changes are needed
The Small UAS Rule (Part 107)

- First rules for routine operation of small UAS (<55 pounds); effective August 29, 2016
- Recreational operators may fly under Part 107 or Public Law 112-95 Section 336/Part 101
- 333 exemptions are valid until expired
Part 107 by the Numbers as of 12 Jan18

Total Remote Pilot Certificates Issued: 74,862
Total Knowledge Exams Passed: 53,575
Knowledge Exam Success Rate: 92%

Top 5 Waiver Requests

- Night Operations: 71%
- Operations over People: 29%
- BVLOS Operations: 16%
- Operational Limitation: Altitude: 9%
- Operations from a Moving Vehicle: 7%

UAS Registrations
- Online Hobby: 879,363
- Paper: 6,820
- Online Commercial: 118,586
- Total: 1,004,769

Airspace Waivers/Authorizations Approved

<table>
<thead>
<tr>
<th>Class</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class B</td>
<td>1,934</td>
</tr>
<tr>
<td>Class C</td>
<td>2,909</td>
</tr>
<tr>
<td>Class D</td>
<td>7,372</td>
</tr>
<tr>
<td>Class E</td>
<td>1,447</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13,662</td>
</tr>
</tbody>
</table>
The Basics

• UAS operators must obtain a Remote Pilot Certificate
• Visual line-of-sight, daylight operations
• 400ft or below and within 400ft of structures
• UAS must weigh less than 55 lbs, be registered and marked per Part 47/48
General Rules

• Not applicable to
  – Air carrier operations
  – Part 101 operations
  – 333 exemptions

• No falsification, reproduction, alteration

• Inspection, testing, & demo of compliance
  – Gives very broad authority; includes airman abilities

• Accident reporting – FAA & NTSB (Part 830)
  – FAA: *Serious injury* or property damage >$500
Operating Rules

• Remote Pilot in Command
  – Foreign UAS can fly per Part 107 if they meet Part 375 (ICAO SARPs)
  – No *undue hazard* to persons or property for any reason

• Condition for Safe ops
• No medical conditions that would interfere with safe ops
• Inflight emergency
• No careless or reckless ops
• No ops from an aircraft or moving vehicle; OK if in *sparely populated* area
Operating Rules Con’t

• Drug & alcohol restrictions apply to UAS Part 107
• Daylight or civil twilight (with anti-collision light vis 3mi)
• Visual line-of-sight only
  – Location, attitude, altitude, & flt path
• Visual Observer responsibilities
• One UA per operator (RPIC)
• No hazardous cargo
• Must yield right-of-way to manned aircraft & may not interfere w/ Arpt Tfc Pat ops
Operating Rules Con’t

• No operations over people not directly participating in ops
• Ops in P, R, TFR airspace
• Preflight inspection required
• External load operation OK*
  – Load is secure & not adversely affect flight controls or flight characteristics

• Ops limits
  – 400ft altitude limit
  – Must have 3mi visibility
  – Max groundspeed of 87kts/100mph
  – Clouds clnc – 500ft blo, 2000ft horiz
• Prior authorization required for Class B, C, D, & E sfc
UAS Facility Maps

• Depict maximum altitudes that FAA may grant approval to fly near airports under Part 107 without additional safety analysis

• Maps **do not authorize** operations
  – Job aid for airspace authorization requests
  – Assists the FAA in streamlining authorization process

• Maps released in phases, with all maps available by end Oct 2017
Goals

- Enable efficient notification and authorization services to small UAS operators
- Provide the data exchange framework for UAS traffic management (UTM)
Focus Area Pathfinders – Expanding Operations

• 3 Focus Area Pathfinder Partners:

1. CNN
   • Exploring visual line-of-sight operations over people

2. Precision Hawk
   • Exploring extended visual line-of-sight operations in rural areas

3. BNSF Railways
   • Exploring beyond visual line-of-sight operations in rural areas
UAS Detection Initiative

• Growing concerns about potentially unsafe small UAS operations
• The FAA co-leads an interagency group with DHS to research UAS detection technology
• In October 2015, the FAA signed a CRDA with CACI International to test its detection technology
• In May 2016, the FAA signed additional CRDAs with Gryphon Sensors, LitEye, and Sensofusion
FAA DroneZone Initiated

- **Enterprise solution for “one stop shopping”**
  - One user ID & password
  - Links numerous databases
  - Provides status of registered aircraft, airspace and waiver applications
UAS Outreach and Education

Federal Aviation Administration

Unmanned Aircraft Systems Overview
January 2018
Reporting Unsafe UAS Activity

• **Flight near or at the airport:**
  – Report the sighting to Air Traffic Control
    • Note the location, altitude, and characteristics of the aircraft

• **Anywhere else:**
  – Call local law enforcement
    • The FAA has published guidance for law enforcement to help them respond to unsafe UAS activity

• **Be as detailed & specific as possible**
  – Location, altitude, direction, pictures, videos, etc.
  – FAA Hotline 1-866-TELLFAA 1-866-835-5322
Airport Concerns & Opportunities

• ATC manages airspace; you manage airports
  – May object to model ops; may not disapprove
  – 107 ops do not require any notification to arpt mgr
  – UAS operators on your airfield – now what?
• LOAs/MOUs with model clubs
• UAS troubles & what to do
• UAS for airfield inspection
  – Public Aircraft Operations vs 107
Show Your Commitment to Safety

- Develop Best Practices
- Establish Safety Plans
- Build Community Involvement and Trust
- Welcome Encounters to Educate
- Take Efforts to Communicate
- Identify Mitigations to Hazards
Public Aircraft Operations

• An entity who operates a public aircraft which is *intrinsically governmental* in nature (49 U.S.C. §40102 and §40125)

• e.g. DoD, NASA, CBP, state & local governments

• Aircraft + location + purpose = public use

• Certificate of Authorization (COA) – since can’t meet all FAA regulations; Self-certifies UAS ops