Unmanned Aircraft Systems (UAS)

Overview

Presented to: Preparing for UAS in Minnesota Workshop

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FAA UAS Organization

FAA UAS Integration Office

• To promote UAS-NAS integration, the FAA established a division-level organization reporting to the Director of Flight Standards
• Single executive focal point
• Matrixed organization that combined former Air Traffic and Flight Standards UAS offices
• Standup complete May 2013
FAA Vision for UAS Integration

Safe, efficient, and timely integration of UAS into the airspace

- **Safe**
  - Because safety is the FAA’s primary mission
- **Efficient**
  - FAA is committed to reduce delays and increase system reliability
- **Timely**
  - FAA is dedicated to supporting this exciting new technology
What are UAS?

- Unmanned Aircraft Systems (UAS) historically were called by various terms:
  - Drone/RPA/ROA/RPV/UAV Model/R-C
- FAA defines UAS as a system
  - Unmanned Aircraft (UA)
  - Aircraft Control Station
  - Command & Control Link/s
  - Pilot
UAS Come in Various Shapes and Sizes
Economic Impact Estimated at $82B with over 100,000 Jobs Created – AUVSI, 2013
Law Enforcement is a Growing Area for small UAS
Agricultural is Forecast to be a Large Growth Area for UAS Applications
Who is Operating UAS in the National Airspace System (NAS)?*

**Public (Governmental) Use Aircraft – via Certificate of Waiver or Authorization (COA)**

- Department of Agriculture
- Department of Commerce
- Department of Defense
- Department of Energy
- Department of Homeland Security
- Department of Interior
- Department of Justice
- NASA
- State Universities
- Federal/State/Local Law Enforcement

**Civil Aircraft – via Special Airworthiness Certificates in the Experimental Category and Special Flight Permits**

- Insitu
- Aerovironment
- Raytheon
- AAI Corporation
- General Atomics
- Boeing
- Others

*FAA has approved limited small UAS commercial operations in Arctic*
Where are UAS Operating?

- UAS are operated in most classes of airspace (not Class B)
- Fight over populated areas must be approved on a case-by-case basis
Types of UAS Authorization

• **Public (governmental)**
  - Activities completely contained in active Special Use Airspace (Restricted and Warning Areas)
  - Certificate of Authorization or Waiver (COA)

• **Civil (non-governmental)**
  - Type Certifications
    - Existing type certifications with Insitu (Boeing) and Aerovironment
      - Both small UAS
      - May be used for commercial operations
  - Special Airworthiness Certificate in the Experimental Category and Special Flight Permits for production flight testing
    - Currently used for development, marketing and research
    - Rules limit commercial use
  - Private recreational use (toys, model aircraft)
Applications submitted

COA Applications Submitted

- 2013, 492
- 2012, 452
- 2011, 360
- 2010, 283
- 2009, 341
- 2008, 238
- 2007, 82

All data as of 12/31/2013
Proponent breakdown

- Academia: 37%
- DOD: 31%
- Other: 27%
- Law Enforcement: 5%

COA Applications Submitted by Proponent CY13

All data as of 12/31/2013
Applications Approved

COA Applications Approved

All data as of 12/31/2013

FAA UAS Integration Office
Getting to Integration

Today
• Accommodation

Mid-term
• Transition to NAS Integration

Long-term
• Integration into the NextGen NAS
UAS Integration – Critical Issues

Current State Via Individual COA

Lost Link Procedure
Sense and Avoid
ATC Procedures
Link Reliability
UAS Reliability
Certification & Standards
Training

Integration “File and Fly”

NAS Architecture

UAS

Regulatory
FMRA Mandates

The FAA Modernization and Reform Act of 2012 (FMRA) stated:

“…the Administrator shall establish a program to integrate unmanned aircraft systems into the national airspace system at six test ranges…”
Test Site Timeline

- **February 14, 2013:** Solicitation for proposals from public entities
  - Received 25 applications from 24 states
- **November 2013:** Test site privacy requirements published
- **December 30, 2013:** Test sites awarded
- **June 28, 2014:** First test site must be up and running
  - Can occur before this date
  - First COA granted April 21 – North Dakota Department of Commerce
    - First test flights expected to occur in early May
    - Stand-up will occur sequentially, not concurrently
    - All six test sites should be operational by Summer 2014
- **February 13, 2017:** Test sites operations may conclude
- **June 2017:** Final report due to Congress within 90 days of the test site program conclusion
Test Site Locations

- University of Alaska
  - Includes test ranges in Hawaii and Oregon
- State of Nevada
- New York Griffiss International Airport
  - Includes test range locations in Massachusetts
- North Dakota Department of Commerce
- Texas A&M University – Corpus Christi
- Virginia Polytechnic Institute and State University (Virginia Tech)
  - Includes test ranges in New Jersey (partnered with Rutgers University)
Test Site Stand-up

• **Initial approval as Public Aircraft Operations (PAO)**
  – Existing Certificates of Authorization or Waiver (COA) can be used to the maximum extent practical
  – Aircraft qualified and declared as airworthy by existing public aircraft operators
  – Operational limitations established by service history
  – Validation of flight risk mitigation strategies
  – Data collection provisions in place

• **Provides initial PAO as a flight test center without the need for civil airworthiness certification**

• **Minimizes delays in conducting operations under COA**

• **Limits ability to collect fees for service in test site access**
Test Site End-State Vision*

• Operate under a “Test Site” Certificate of Waiver or Authorization (COA)
• Are delegated authority to issue experimental certificates
  – Will enable civil operations
  – Limited to test site only
• Are delegated responsibility for oversight of Safety Management System (SMS) processes

*Test Site Operator responsible to make this transition happen
Test Site Research

• General Research and Development (R&D) goals for Test Sites include, but are not limited to:
  – System safety and data gathering
  – UAS aircraft certification
  – UAS command and control link
  – UAS control station layout and certification standards
  – UAS ground and airborne sense and avoid technologies
  – Assess environmental impacts of UAS operations

• No FAA funding
Small UAS Rule

• Remains a key initiative for introducing commercial UAS operations safely into the National Airspace System
• Target release for draft rule later in 2014
International

- **International Civil Aviation Organization (ICAO)**
  - Participating in UAS Study Group
  - Producing Remotely Piloted Aircraft System (RPAS) Manual
  - Creating RPAS Integration Panel
    - Summer 2014

- **Civil Air Navigation Services Organization (CANSO)**
  - For Air Navigation Service Providers (ANSP):
    - Published “ANSP Considerations for RPAS Operations”
    - Drafting UAS Training Initiatives Document
FAA UAS Accomplishments FY13/14
(as required by Reauthorization)

• Streamlined COA application process for public operators
• Developed “Common Strategy” to expedite local law enforcement small UAS authorization
• Published Arctic small UAS expansion plan
• First authorized commercial small UAS flights (in Arctic)
• Published UAS Roadmap
• Published UAS Comprehensive Plan (JPDO)
• Selected six Test Sites

http://www.faa.gov/about/initiatives/uas/
Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap

First Edition – 2013

Posted at http://www.faa.gov/about/initiatives/uas/
Questions?