

UAS Airworthiness, certification and access to the airspace

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**Federal Aviation
Administration**



“... UAs are part of the future of aviation, and that future is on our doorstep right now. The system is in place today to accommodate the entry of new aircraft into the National Airspace System; this is nothing new for the FAA. It is our day-to-day business.” ... “The FAA, working closely with the aviation industry, will develop safety standards and operating procedures to ensure their safe integration into the NAS.”

**Nick Sabatini,
Associate Administrator
for Aviation Safety**



Overview

- **What is a UAS?**
- **Policy Status**
- **The Approval Basis**
 - Civil Aircraft
 - Public Aircraft
- **Operational Tests**
- **Key Relationships**
- **The Future.....**
 - Standards Development
 - Small UAS Standards
 - **Detect, Sense and Avoid**
 - **Command, Control and Communications**



What is a UAS?

- **UAS are aircraft**
 - ***Aircraft* means a device that is used or intended to be used for flight in the air (14 CFR § 1.1)**
 - **14 CFR § 91.203 requires all civil aircraft to have a current airworthiness certificate**
 - **Not just an airframe – it's a system**
 - **Ground control station**
 - **Communications and Control**
 - **Lost link/comm**
 - **Must comply with 14 CFR § 91**



Policy Status

- **Federal Register Notice Feb 13, 2007**
 - **Describes the Current ways to fly in the NAS**
 - Officially calls UAS an “Aircraft”
 - The Certificate of Waiver/Authorization
 - The Experimental Airworthiness Certificate
 - Clarifies what AC 91-57 is and isn’t (Circa 1981)
 - Model Aircraft are for recreational and hobbyist and flown under AMA established guidance
 - **Revising Interim UAS Guidance**
 - Reflect ‘lessons learned’



Airspace Integration Approach

- **“Do no Harm”**
- **Use of visual observers**
 - Ground based or chase aircraft
- OR
- **Segregate operations from manned aircraft**
 - Operations contained to active Restrictive, Prohibited or Warning Ares or Positive Control Airspace
- **Address ATM concerns**
 - Ensure Capacity and Efficiency not impacted
- **Radar not a sole means of mitigation**



Approval Basis – Public Aircraft

‘Certificate of Authorization/Waiver’

- **COAs for Public aircraft only**
 - **Airworthiness basis is the responsibility of the Public entity**
 - IAW established standards and policy (MIL Handbook 516)
 - **COA application process is managed by Air Traffic**
 - Web based application
 - **Aviation Safety reviews application to determine appropriateness of operational mitigations**
 - **Approximately 100 COA’s issued last year**



Approval Basis – Civil Aircraft

- **Special Airworthiness Certificate (Experimental)**
 - Defines operational limitations
 - Not used for compensation or hire (14 CFR § 21.191,193,195)
 - Authorizes use:
 - Market share
 - Crew training
 - R&D



Experimentals

- **Policy has been proto-typed this past year**
 - Draft Order 8130.UAS
 - Very Mature
 - Close to finalizing
- **Issued 14 Certificates to-date**
- **8 more in the queue**
 - All shapes and sizes



Experimentals



AAI's Shadow

Experimentals



Raytheon's Cobra

Experimentals



General Atomic's Warrior

Experimentals



Aurora's Golden Eye 50

Experimentals



Telford Aviation's Skybus 30K

Proposed Operational Tests

- **Determine Feasibility of Law Enforcements operations in Metropolitan Areas**
 - City of Houston
 - Miami Dade Police Department
- **Establish test plan**
 - Identify risks associated with non-rural areas
 - RFI, EMI
 - Collaborative effort between operator, manufacturer, and the FAA
 - Initial operations will most likely be restrictive



Key Relationships

- **Department of Defense**
- **Department of Homeland Security**
- **National Oceanographic & Atmospheric Administration**
- **NASA**
- **Many other US Government Agencies**
- **EUROCAE**
- **EUROCONTROL**
- **RTCA**
- **ICAO**



The Future

- **Pursuing a small UAS strategy**
 - New Policy is needed
 - Completing a safety analysis on potential:
 - Size
 - Speed
 - Location
 - Potentially Nontraditional Certification Approach
 - Collaborative FAA/Industry approach
 - Establish an Aviation Rule Making Committee
 - Rulemaking Activities



Detect, Sense, and Avoid

TCAS a multi-layered approach

- DSA should:
 - Provide separation assurance
 - Single layer approach
 - Both cooperative and non-cooperative traffic
 - Standards TBD



Command, Control, and Communications

- Develop Standards and Regulatory framework
 - **Ground Control Stations**
 - Communication Security
 - Latency concerns
 - **Lost Link**
 - Must be able to integrate with other NAS users
 - **ATC Communications**
 - **Spectrum Management**
 - Bandwidth requirements not yet identified
 - Future allocation
 - RFI, particularly in metropolitan areas



QUESTIONS?

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