FACT SHEET
UNMANNED AIRCRAFT SYSTEMS (UAS)

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Introduction

Unmanned Aircraft Systems -- previously referred to as "unmanned aerial vehicles," "UAVs,""remotely operated aircraft/ vehicles," or just "unmanned aircraft -- come in a variety of shapes and sizes, and serve diverse purposes. They may have a wingspan as large as a Boeing 737 or smaller than a radio-controlled model airplane. UAS operations always have a pilot in command who is flying the aircraft.

Until recently, UASs mainly supported military and security operations, but that is rapidly changing. Unmanned aircraft promise new ways for government agencies to increase efficiency, save money, enhance safety and even save lives. Interest is growing in a broad range of uses such as aerial photography, surveying land and crops, monitoring forest fires and environmental conditions, and protecting borders and ports against intruders.

UAS numbers and mission uses are growing dramatically. In the United States alone, approximately 50 companies, universities, and government organizations are developing and producing some 155 unmanned aircraft designs.

The FAA's Role: Safety First

The FAA's main concern about UAS operations in the National Airspace System (NAS) is safety. It is critical that these aircraft do not endanger other users of the NAS or compromise the safety of persons or property on the ground.

Recreational use of the NAS is covered by AC 91-57 which generally limits operations to below 400 feet above ground level and away from airports and air traffic.

For the remainder of UAS operations, there are two acceptable means of operating UAS in the National Airspace System outside of "restricted" airspace: a Special Airworthiness Certificate – Experimental Category and a Certificate of Waiver or Authorization (COA).

The Special Airworthiness Certificate in the Experimental Category is the only certification available to civil operators of UAS. Due to regulatory requirements, this approval precludes carrying persons or property for compensation or hire, but does allow the ability to operate for research and development, market survey, and crew training. The FAA has issued 71 experimental certificates since July 2005 to 17 different aircraft types, 14 of these are currently active. These certification efforts provide an excellent opportunity for the FAA to work with manufacturers and to collect vital technical and operational data that will help improve the UAS airworthiness certification process.

The COA process is available to public entities, such as government agencies (including local law enforcement and state universities) desiring to fly a UAS in civil airspace. An

online application is made and the FAA evaluates the request. If the risks can be appropriately mitigated, the FAA issues a Certificate of Waiver or Authorization (COA), generally based on the following principles:

- The COA authorizes an operator to use defined airspace and includes special provisions unique to each operation. For instance, a COA may include a requirement to operate only under Visual Flight Rules (VFR) and/or during daylight hours. Most COAs are issued for a specified time period (up to one year, in most cases)

- Most, if not all, COAs require coordination with an appropriate air traffic control facility and may require the UAS to have a transponder to operate in certain types of airspace.

- Due to the UASs inability to comply with 14 CFR 91.113 (see and avoid), a ground observer or an accompanying "chase" aircraft must maintain visual contact with the UAS and serve as its "eyes" when operating outside of airspace that is restricted from other users.

- Currently, the FAA has 247 active COAs, including 89 completed so far this year and an additional 153 applications pending.

Overall, the COA process has functioned well, enabling public operators to conduct training and operational missions. While the emphasis has always been focused on safety, as FAA's experience with COAs has grown, the number and types of conditions and limitations on UAS operations have increased.

Operation and Certification Standards

To address the increasing civil market and the desire by civilian operators to fly UASs just like any other aircraft, the FAA is developing new policies, procedures, and approval processes. Developing and implementing new UAS standards and guidance is a long-term effort.

- The FAA created the Unmanned Aircraft Program Office (UAPO) and the Air Traffic Organization (ATO) UAS office to integrate UASs safely and efficiently into the NAS.

- The FAA is working closely with stakeholders in the UAS community to define operational and certification requirements. It is critical to develop and validate appropriate operational procedures, regulatory standards and policies for routine UAS access to the NAS.

- The FAA has asked RTCA – a group that frequently advises the agency on technical issues – to work with the industry and develop UAS standards. RTCA will answer two key questions:
    1. How will UASs handle communication, command, and control?
    2. How will UASs "sense and avoid" other aircraft?

  These activities are targeted for completion before 2015.

- The FAA continues to work closely with its international counterparts to harmonize standards, policies, procedures, and regulatory requirements.

Small Eyes in the Sky

The FAA expects small UASs to experience the greatest near-term growth in civil and commercial operations because of their versatility and relatively low initial cost and operating expenses. The agency has received extensive public comment on small UASs, both from proponents who feel their size dictates minimal regulation and from groups concerned about hazards to piloted general aviation aircraft.

In April 2008, the FAA chartered an Aviation Rulemaking Committee (ARC) to examine these operational and safety issues and make recommendations on how to proceed with regulating Small UASs. The agency has received the ARC's recommendations, and is drafting a proposed rule. Ensuring the safety of all airspace users while not putting undue burdens on small UAS operators is a challenging task; the FAA hopes to publish the proposed rule by mid-2011 and the final rule by the end of 2012.

One of the most promising potential uses for small UASs is in law enforcement. Although the Small UAS ARC was not specific to law enforcement organizations, they participated in the Committee.

Currently, any law enforcement organization must follow the COA process if they wish to conduct demonstration flights. The FAA has already worked with urban police departments in Houston and Miami on test programs involving unmanned aircraft. The goal is to help identify the challenges that UAS will bring into this environment and what type of operations can safely be conducted by law enforcement.

The Bottom Line

The introduction of UASs to the NAS is challenging for the FAA and the aviation community. UAS proponents have a growing interest in expediting access to the NAS. There is an increase in the number and scope of UAS flights in an already busy NAS. The design of many UASs makes them difficult to see, and adequate "detect, sense and avoid" technology is years away. Decisions being made about UAS airworthiness and operational requirements must fully address safety implications of UASs flying in the same airspace as manned aircraft, and perhaps more importantly, aircraft with passengers.

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