Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

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October 2, 2015

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Aviation
FROM: Staff, Subcommittee on Aviation
RE: Subcommittee Hearing on "Ensuring Aviation Safety in the Era of Unmanned Aircraft Systems"

PURPOSE

The Subcommittee on Aviation will meet on Wednesday, October 7, 2015 at 10:00 a.m. in 2167 Rayburn House Office Building to explore issues related to aviation safety as the number of unmanned aircraft systems (UAS) increases in the United States. The Subcommittee will receive testimony from the Federal Aviation Administration (FAA), the United States Forest Service, the Academy of Model Aeronautics (AMA), the Air Line Pilots Association (ALPA) and a Professor of Aeronautics and Astronautics.

BACKGROUND

Overview

UAS have been a part of American aviation for nearly a century, primarily in military research and operations.[1] The FAA first authorized UAS operations in U.S. airspace in 1990.[2] Most operations since that time have been confined to public uses such as law enforcement and scientific research.

Recent and rapid advancements in computing technology have transformed UAS. Small unmanned aircraft are typically substantially less expensive, easier to acquire and simpler to

[1] John David Blom, *Unmanned Aerial Systems: A Historical Perspective*, Occasional Paper 37, pp 46. Combat Studies Institute Press, US Army Combined Arms Center. Available at: http://usacac.army.mil/cac2/cgsc/carl/download/csipubs/OP37.pdf

[2] http://www.faa.gov/uas/faq/media/1009_UAS_Fact_Sheet.pdf

operate than manned aircraft.[3] In some cases, UAS offer capabilities that cannot be matched by manned aircraft such as close inspections of oil rig flare stacks and transportation infrastructure.

As a result, there is tremendous demand for UAS as new applications are developed across industries beyond aviation including agriculture, energy and media. The economic opportunities and impacts are expected to be substantial. The Association of Unmanned Vehicle Systems International foresees that the use of UAS will lead to the creation of 100,000 jobs and $82 billion in economic impact by 2025.[4]

Governing law and regulation

In the *FAA Modernization and Reform Act of 2012* (P.L.112-95), Congress directs the FAA to take steps in furtherance of UAS integration into the National Airspace System.[5] This legislation directs the FAA to create a comprehensive plan for the integration of civil UAS by September 2015 and to issue regulations applicable to the operation of small UAS.[6] The FAA published a proposed rule for the Operation and Certification of Small UAS in February 2015, and reports that the final rule will be completed sometime in 2016.

Section 333 of the same legislation directs the FAA to permit UAS operations meeting certain criteria prior to the completion of the required comprehensive plan and rulemaking. After some delay, the FAA began permitting operations under section 333 in November 2014 for a variety of commercial applications, including surveying, photography and pipeline inspection. As of September 24, 2015, the FAA had granted 1,732 permits under section 333.

Section 336 defines "model aircraft" as any unmanned aircraft that are capable of sustained flight, flown within visual line of sight of the person operating the aircraft, and flown for hobby or recreational purposes. Section 336 prohibits FAA from issuing any rule or regulation regarding model aircraft, provided:

1. the aircraft is operated in accordance with a community based set of safety guidelines and within the programming of a nationwide community-based organization;
2. the aircraft is limited to less than 55 pounds unless otherwise certified;
3. the aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; and
4. notice is given to an airport operator or airport air traffic control tower if flown within 5 miles of an airport.

If an operator of an unlawful UAS operation is identified, the FAA and other agencies can pursue civil penalties for careless and reckless operations or criminal penalties for other legal

[3] Small unmanned aircraft are those weighing less than 55 pounds.
[4] The Economic Impact of Unmanned Aircraft Systems in the United States, AUVSI, Mar. 2013. See: http://www.auvsi.org/auvsiresources/economicreport
[5] Pub. L. 112-95, 126 Stat 11. (Feb. 14, 2012)
[6] *Id.at* 126 Stat. 73, Sec. 332

violations.[7] To date, the FAA has initiated 20 legal enforcement actions related to unlawful UAS operations. The FAA is also working with state and local law enforcement agencies to address unlawful UAS operations.[8]

National Airspace System Safety

The proliferation of UAS in the United States has occurred at a dramatic rate, particularly as they have become widely available in the consumer market. In 2010, the FAA estimated that 15,000 UAS would be in operation by 2020.[9] Today, it appears sales of UAS exceed 15,000 each month and up to one million units may be sold during the 2015 holiday season.[10] The available data does not distinguish between those that will be purchased or sold as "model aircraft" used by hobbyists or other UAS used for personal or commercial purposes.

The rapid growth in unmanned aircraft (recreational, commercial and public) operated in the United States has been accompanied by a sharp rise in reported sightings by pilots of manned aircraft and air traffic controllers. Since last year, these sightings have been reported as occurring in proximity to major airports and during critical phases of flight.[11] The trend has continued into 2015 as pilots continue to report sightings to the FAA.[12] In August 2015, in response to a Freedom of Information Act request, the FAA released a compilation of over seven hundred reported sightings of UAS by pilots between November 2014 and early-August 2015. In addition, efforts to combat forest fires have been seriously disrupted as tanker crews have been forced to cancel or postpone missions because of unmanned aircraft sightings[13] In 2015, the U.S. Forest Service reported 18 unauthorized unmanned aircraft incursions above or near wildfires; 10 of these events hampered the Forest Service's aviation operations.[14] In the majority of cases,

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[7] *See* 49 U.S.C. §§ 44709, 46301. In addition, chapter 463 of title 49 authorizes fines and/or imprisonment under title 18 for violations of national defense airspace, interference with air navigation, and transportation of hazardous materials. 49 U.S.C. §§ 46307-46317.

[8] FAA Issues UAS Guidance for Law Enforcement (Jan. 2, 2015) *available at* https://www.faa.gov/news/updates/?newsId=81244.

[9] Fed. Aviation Admin. *FAA Aerospace Forecast Fiscal Years 2010-2030, Unmanned Aircraft Systems,* available at: https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/2010%20Forecast%20Doc.pdf Pg. 48.

[10] *Unmanned aerial vehicles, Welcome to the Drone Age*, The Economist, Sept. 26, 2015. & Aaron Karp. *FAA warns of 'a million drones under people's Christmas trees'*, Air Transport World, Sept. 28, 2015. Available at: http://atwonline.com/technology/faa-warns-million-drones-under-people-s-christmas-trees

[11] Craig Whitlock. *Near-collisions between drones, airliners surge, new FAA reports show*, Wash. Post, Nov.26, 2014. https://www.washingtonpost.com/world/national-security/near-collisions-between-drones-airliners-surge-new-faa-reports-show/2014/11/26/9a8c1716-758c-11e4-bd1b-03009bd3e984_story.html

[12] Craig Whitlock. *FAA records detail hundreds of close calls between airplanes and drones*, Wash. Post. Aug. 20, 2015. https://www.washingtonpost.com/world/national-security/faa-records-detail-hundreds-of-close-calls-between-airplanes-and-drones/2015/08/20/5ef812ae-4737-11e5-846d-02792f854297_story.html

[13] Joseph Serna, *Drone sighting halts some firefighting efforts in Northern California*, Los Angeles Times, Sept. 14, 2015.

[14] Information provided to Subcommittee staff

authorities have been unable to ascertain the identity of the unmanned aircraft operators. In addition to reports by pilots, unmanned aircraft have posed safety risks on the ground. In the last year, unmanned aircraft have crashed into the White House grounds, the stadium at the U.S. Open and a college football game.

There are questions about the nature of some of the sightings reported to the FAA.[15] For instance, questions have been raised as to whether certain reported sightings involve birds rather than unmanned aircraft or were instances in which an unmanned aircraft was visible to pilots but did not entail a loss of safe separation between aircraft.[16] In one case, a collision between an airliner and a UAS reported by a flight crew was later determined to be a bird strike.[17] In other cases, some questionable unmanned aircraft operations included in the FAA data were conducted by government agencies (including a local police department and the military) rather than errant consumers.[18]

The increase in reported UAS sightings by pilots as well as accelerating sales of unmanned aircraft to consumers concern stakeholders and the public for several reasons. First, safety is paramount, and unauthorized operations of unmanned aircraft create the possibility of a midair collision with a conventional aircraft that could result in injuries or the loss of life. Furthermore, other stakeholders say the FAA should develop methods for objectively measuring and analyzing the risks associated with UAS operations. Finally, stakeholders have expressed concern that unnecessarily restrictive government policies or the actions of irresponsible individuals could hamper or even cripple the development of the commercial UAS industry.

Solutions

Efforts are underway to address these risks through improved education, better enforcement of existing laws and technological means. For example, FAA has joined industry trade groups, manufacturers and other stakeholders on "Know Before You Fly" an educational campaign to provide prospective users of unmanned aircraft with the information they need to safely and legally operate in the nation's airspace. There are also private sector-led efforts to use technologies such as geo-fencing and enhanced aircraft detection to mitigate the risks.

This hearing will enable the Subcommittee to better understand the nature and extent of potential risks posed by unmanned aircraft to aviation safety, how to measure and analyze possible risks, and what technological, educational and policy solutions should be used to mitigate such risks.

[15] *See* A Closer Look at the FAA's Drone Data, *available* at http://www.modelaircraft.org/gov/docs/AMAAnalysis-Closer-Look-at-FAA-Drone-Data_091415.pdf
[16] Bart Jansen. *Drone hobbyists find flaws in "close call" reports to FAA from other aircraft*, USA Today, Sept. 14, 2015.
[17] Whitlock 2015. *Supra.*
[18] Jansen, *Supra.*

WITNESS LIST

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