

STATEMENT OF MARGARET GILLIGAN, ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY, FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE, SUBCOMMITTEE ON AVIATION, U.S. UNMANNED AIRCRAFT SYSTEMS: INTEGRATION, OVERSIGHT, AND COMPETITIVENESS, DECEMBER 10, 2014.

Chairman LoBiondo, Ranking Member Larsen, Members of the Subcommittee:

Thank you for the opportunity to appear before you today to discuss unmanned aircraft systems (UAS). The Federal Aviation Administration (FAA) has successfully integrated new technology into the National Airspace System (NAS) for more than 50 years, while maintaining the safest aviation system in the world. In the FAA Modernization and Reform Act of 2012, Congress mandated the safe and expedient integration of UAS into the NAS. We have been working steadily to accomplish that goal. The FAA has taken several key steps to integrate UAS into the NAS.

Progress Toward Integration

In the 2012 FAA Modernization and Reform Act, Congress mandated that the Secretary of the Department of Transportation (Secretary), in consultation with other government partners and industry stakeholders, develop a Comprehensive Plan to safely accelerate the integration of civil unmanned aircraft systems in the NAS, as well as a five-year Roadmap. Both documents have now been published.

The Integration of Civil UAS in the NAS Roadmap outlines the tasks and considerations necessary to integrate UAS into the NAS. The five-year Roadmap, updated annually, provides stakeholders with proposed agency actions to assist with their planning and development. The UAS Comprehensive Plan was drafted by the Joint Planning and Development Office (JPDO), in

coordination with JPDO Board participants from the Departments of Defense (DOD), Commerce (DOC), Homeland Security (DHS), the National Aeronautics and Space Administration (NASA) and the FAA. The Comprehensive Plan details work that has been accomplished, along with future efforts needed to achieve safe integration of UAS into the NAS.¹ It sets overarching, interagency goals, objectives, and approaches to achieving integration. It is a document that considers UAS issues beyond 2015, including technologies necessary for safe and routine operation of civil UAS and the establishment of a process to inform FAA rulemaking projects related to certification, flight standards, and air traffic requirements.

UAS Test Sites

On December 30, 2013, the FAA announced six UAS test sites. In selecting the sites, the FAA followed Congressional direction to consider geographic and climatic diversity and to consult with DOD and NASA. The FAA selected the University of Alaska Fairbanks, the State of Nevada, New York's Griffiss International Airport, the North Dakota Department of Commerce, Texas A&M University Corpus Christi, and Virginia Polytechnic Institute and State University (Virginia Tech) to serve as UAS test sites.

Consistent with the Congressional mandate, the FAA set out to have at least one test site operational within six months. On April 21, 2014, within four months of selecting the site, the FAA announced that the North Dakota Department of Commerce was the first test site to be operational. On May 5, 2014, the second test site, University of Alaska Fairbanks was declared operational. On that day, both operational UAS test sites conducted their first flight operations.

On June 9, 2014, the FAA announced that the State of Nevada became the third operational UAS

¹ The Integration of Civil UAS into the NAS Roadmap and Comprehensive Plan are available on the FAA UAS website at <http://www.faa.gov/uas/publications/>.

test site. On June 20, 2014, the FAA granted the Texas A&M University Corpus Christi approval to conduct operations; four of the test sites were operational within six months of being named. New York State Griffiss International Airport was declared operational on August 7, 2014. On August 13, 2014, the sixth and final UAS test site, Virginia Tech, was declared operational.

To support and accelerate test site activities, the FAA prioritized the processing of the first Certificate of Waiver or Authorization (COA) for each of the test sites. Since then, the FAA has continued to process test site COAs expeditiously. Since the inception of the test site program, the FAA has approved 40 COAs for UAS operations at the test sites with an average processing time of 57 days per COA, which surpasses the FAA goal of 60 days for all COAs. At the FAA/UAS Test Site Technical Interchange Meeting in September, the test sites indicated that they plan to submit 57 COA and 14 experimental certificate requests in the next year. We are prepared to process their requests expeditiously and look forward to continuing to work with the test sites to facilitate their operations and advance our research goals.

The FAA implemented a Designated Airworthiness Representatives program which will permit Test Site designees to issue experimental certificates for unmanned aircraft. To help the test sites develop the capability to assess unmanned aircraft and issue these certificates, the FAA developed both online and in-person training. Once test site designees have completed FAA training, they will be authorized to work within this new program. The State of Nevada was the first test site to participate in the training, and it expects to complete the test site Special Airworthiness Certification this month.

The test sites play a critical role in the safe and efficient integration of UAS into the NAS. The FAA will utilize data from the test sites to help answer key questions and provide critical information about how UAS will interface with the air traffic control system. Our research goals are focused on (1) gathering system safety data, (2) aircraft certification, (3) command and control link issues, (4) control station layout and certification criteria, (5) ground and airborne detect and avoid capabilities, and (6) impacts on affected populations and the environment. The information provided by the test sites will help the FAA to develop regulations and operational procedures for future civil commercial use of UAS in the NAS. Data from the test sites will also help identify elements of the certification and navigation requirements we will need to establish for unmanned aircraft.

UAS operational pre- and post-flight data is currently being collected from all test sites. The test sites are providing data about the types and sizes of aircraft, number of operations, number of flight hours, notable operating parameters (for example, whether the flight was within or beyond visual line of sight), and any incidents and accidents. Each site has also established its own research agenda. I'd like to highlight just a few of the activities underway at each test site.

- The North Dakota Department of Commerce test site has conducted more than 84 flights, with research concentrated on wildlife census and precision agriculture studies.
- The University of Alaska Fairbanks test site encompasses 3,369 cubic miles of airspace in Alaska and Oregon. It is expanding flight operations into Kansas with the recent approval of Kansas State University as a new team member. The research conducted at this test site includes forward-looking infrared technology to support surveying large land mammals and using UAS to meet operational firefighting needs and provide tactical police support.
- The State of Nevada became the first test site to participate in Designated Airworthiness Representative training. Nevada expects to complete the test site Special Airworthiness Certification this month, leading to the first Special Airworthiness Certification issued

under the Designated Airworthiness Representatives for UAS Certification at UAS test sites program. Nevada's research will concentrate on UAS standards and operations, as well as operator standards and certification requirements.

- Griffiss International Airport has conducted 31 flights using three different vehicles. In cooperation with Lockheed Martin, Griffiss International Airport test site has conducted Optional Piloted Aircraft research, testing a rotorcraft with and without an onboard pilot for firefighting research.
- Texas A&M Corpus Christi created a fully operational UAS command center with advanced toolsets and is pursuing solutions that will incorporate air traffic control data to augment operational safety mitigation strategies. Research activities include precision agriculture and coastal monitoring.
- The Virginia Polytechnic Institute and State University (Virginia Tech) hosted the second FAA/UAS Technical Interchange Meeting for the FAA and all six test sites in September 2014. This test site includes Virginia, Maryland, and New Jersey. Research in these three states will include agricultural spray equipment testing, developing training and operational procedures for aeronautical surveys of agriculture, and the development of aeronautical procedures for integration of UAS flights in a towered airspace.

We continue to work closely with the test sites to identify the data most useful to the FAA.

FAA personnel at the William J. Hughes Technical Center in Atlantic City, NJ, play a key role in data collection and analysis. The FAA Technical Center has served as the core research facility for modernizing the air traffic management system and for advancing programs to enhance aviation safety, efficiency, and capacity since 1958. The Technical Center is the nation's premier air transportation system laboratory. The Technical Center's highly technical and diverse workforce conducts research and development, test and evaluation, verification and validation, sustainment, and ultimately, de-commissioning of the FAA's full spectrum of aviation systems. Its employees develop scientific solutions to current and future air transportation safety, efficiency, and capacity challenges. Technical Center engineers, scientists, mathematicians, and technical experts utilize a robust, one-of-a-kind, world-class laboratory

environment to identify integrated system solutions for the modernization and sustainment of the NAS and for developing and integrating new technology and operational capabilities.

The Technical Center has served a critical function in advancing UAS integration. A significant portion of test site data analysis is being performed at the Technical Center. A Data Lead from the Technical Center, regional representatives, and research engineers, are also visiting each UAS test site to evaluate how data is captured and maintained, ensure data transference and integrity, and determine whether additional data collection would facilitate meeting the FAA's research objectives. We continue to work with the test sites to obtain the most valuable information possible and facilitate further UAS integration.

Rulemaking and Exemptions

Section 332 of the FAA Modernization and Reform Act required the agency to conduct rulemaking to permit the civil operation of small UAS in the NAS. The NPRM is currently under executive review.

Consistent with the authority in section 333 of the FAA Modernization and Reform Act of 2012, the FAA, in coordination with the Secretary of Transportation, is issuing exemptions that allow for commercial activity in the NAS in low-risk, controlled environments. As directed in the Act, an exemption may be granted after a two-step process. First, the Secretary must determine that, based on certain criteria set forth in the statute, the UAS does not pose a risk to those operating in the NAS, the general public, or national security and it can be safely operated without an airworthiness certificate. The FAA will then use its existing exemption authority to grant relief from FAA regulations that may apply. The exemption process allows the FAA to carefully

evaluate each request to determine what conditions are required to ensure that the operation will not create an adverse impact on safety. Once an exemption is granted, the applicant must then apply for a civil Certificate of Waiver or Authorization, permitting the operator to conduct the proposed operation. We are looking at ways to streamline the process to enable broader use of civil UAS in the NAS.

Public Aircraft Certificates of Authorization and Partnerships with Law Enforcement

For the last two decades, the FAA has authorized the limited use of unmanned aircraft for important missions in the public interest. These include firefighting, disaster relief, search and rescue, law enforcement, border security, military training, and testing and evaluation. The FAA continues to facilitate the use of UAS by public entities. More than 35 law enforcement agencies operate unmanned aircraft now under certificates of authorization (COA). We have processed COAs on an emergency basis to facilitate the efficient use of UAS technology when it advances law enforcement purposes. We have authorized COAs that allow for UAS to be utilized in search and rescue operations in less than 24 hours. We will continue to work with law enforcement agencies to ensure that UAS technology is a tool available to them when it is sufficiently safe and in the public interest.

We are also working with Federal, State, and local law enforcement agencies to address and educate the public about the unsafe, or unauthorized, use of UAS since they are often in the best position to deter, detect, and immediately investigate such activity. The FAA may take enforcement action against anyone that operates a UAS in a way that endangers the safety of the NAS, or who conducts an unauthorized UAS operation. This authority is designed to protect

users of the airspace as well as people and property on the ground. State and local law enforcement can assist us in protecting the safety of the NAS by identifying individuals or entities engaged in unauthorized use, collecting and preserving evidence, and immediately reporting an incident, accident or other suspected violation to one of the FAA Regional Operation Centers (ROC) located around the country. The FAA tracks UAS events, including those reported to the FAA by law enforcement and the general public, as well as events identified by FAA air traffic control facilities. A single UAS-specific event tracking database is currently in development and will be deployed by the end of 2015.

Center of Excellence

Under the Consolidated Appropriations Act of 2014, Congress directed the FAA to establish a UAS Center of Excellence (COE). The goal of this endeavor is to create a cost sharing relationship between academia, industry, and government that will focus on research areas of primary interest to the FAA and the UAS community. We intend to forge a union of public sector, private sector, and academic institutions to create a world-class consortium that will identify solutions for existing and anticipated UAS related issues. The COE will perform short- and long-term basic and applied research through a variety of analyses, development, and prototyping activities. To that end, the FAA solicited proposals from accredited institutions of higher education with their partners and affiliates. The FAA intends to enter into cooperative agreements with core university members, and will award matching grants for public benefit. Initially, grants will be awarded to university members to establish the COE, define the research agenda, and begin UAS research, education, training and related activities. We are currently in the process of reviewing proposals and look forward to establishing the COE.

The FAA has long had successful partnerships with the nation's academic research community, working with U.S. colleges and universities to foster research by COE faculty and students, industry, and other affiliates. These research efforts have provided the agency and the industry a high return on investments and have contributed significantly to the advancement of aviation science and technology over the past two decades. We look forward to continuing these partnerships with respect to UAS research as we establish the COE.

Conclusion

The FAA is committed to safely integrating UAS into the NAS. The FAA has made steady progress toward that goal through the UAS Roadmap, the Comprehensive Plan, the test sites, Section 333 Exemptions, partnerships with public entities, and the proposed Center of Excellence.

The United States has the safest aviation system in the world, and our goal is to integrate this new and important technology while still maintaining safety as our highest priority. We are committed to ensuring that America continues to lead the world in the development and implementation of aviation technology. We look forward to continuing to work together with Congress as we continue to integrate UAS into the NAS.

This concludes my statement. I will be happy to answer your questions at this time.