STATEMENT OF MICHAEL WHITAKER, DEPUTY ADMINISTRATOR OF THE FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION ON ENSURING AVIATION SAFETY IN THE ERA OF UNMANNED AIRCRAFT SYSTEMS, OCTOBER 7, 2015.

Chairman LoBiondo, Congressman Larsen, Members of the Subcommittee:

I am pleased to appear before you today to discuss a subject that continues to be the topic of a lot of conversation; Unmanned Aircraft Systems or UAS. Wherever we look, in everything from popular culture to store shelves, UAS seem to be everywhere. It might appear to some people that UAS suddenly appeared in our skies and are now everywhere, from the White House lawn to the U.S. Open Tennis tournament, sometimes flying too close to commercial aircraft or interfering with firefighting efforts. Many different departments and agencies within the federal government have responsibilities associated with UAS. Among other things, the Federal Aviation Administration's (FAA) responsibility includes the safe and efficient integration of UAS into the National Airspace System (NAS). In 2012, Congress passed the FAA Modernization and Reform Act of 2012 (2012 Act), which, in part, charged the FAA with safely integrating UAS into the NAS by September 30, 2015.

FAA has recognized the significance of this technology and has adapted organizationally to provide this emerging technology with a commensurate level of attention. Recently, FAA selected two executives to oversee our UAS integration efforts. Accompanying me today are Marke "Hoot" Gibson and Earl Lawrence. Hoot is the Senior Advisor on UAS integration, reporting directly to me. He will establish a focus on external outreach and education and interagency initiatives. Earl is the Director of the UAS Integration Office within the FAA's Safety organization. He will lead the FAA's efforts to safely and effectively integrate UAS into

the NAS. Their addition to the FAA team acknowledges the expanded demand of UAS issues both inside and outside the FAA.

There is no doubt that UAS can be of great value to this country. In accordance with the appropriate authorizations, UAS are being used today to examine infrastructure, survey agriculture, provide emergency response support, examine damage caused by time or disaster, and go places that would otherwise be dangerous for people or other vehicles. Entrepreneurs around the world are exploring innovative ways to incorporate the potential of UAS into their corporate activities. There are a number of public and commercial operations being conducted today, including the ones mentioned above, that contribute to public safety and enhance the ability of corporations to achieve important goals. FAA does not underestimate the importance of integrating the range of UAS technology into the NAS, but there are significant safety challenges that must be mitigated for this to occur.

For example, we have witnessed a huge influx of casual users, people who fly UAS for entertainment or recreation. This has become the crux of a growing problem. UAS introduces, not just a new class of aircraft, but a new class of pilot. The vast majority of these operators do not have the basic aviation training or experience required for pilots of traditional aircraft. They have no knowledge that they may be flying in controlled airspace. Some may have no recognition that their actions could have serious consequences. They are simply having fun with a toy.

The primary goal of the FAA is to integrate this new class of aircraft and their operators safely and efficiently into the NAS, regardless of whether the operations are recreational or commercial in nature. Because this new branch of aviation is changing at the pace of human imagination, the

FAA believes a flexible framework is imperative. The UAS industry is developing many new exciting technologies and the FAA must provide a regulatory framework for UAS to operate safely. Our goal is to provide the basic rules for operators, not identify specific technological solutions that could quickly become outdated. The FAA is creating a safe operational environment for innovators to demonstrate their technologies. We are doing this through the establishment of basic operational regulations, the issuance of exemptions and experimental certificates, and through our continued research and collaboration at our UAS test sites, Center for Excellence, and Pathfinder programs.

Our efforts also include long-term planning, including the ongoing development and finalization of the regulation of small unmanned aircraft. We are conducting collaborative research and development with interagency partners and the UAS industry. We have established test sites and airspace for these activities. The FAA and our government partners have always realized that the best way to succeed is through partnership, whether it be with industry or other governments. Finding consensus leads to cooperation and willing participation.

Consistent with our approach to other regulations, we are establishing a risk-based approach to the regulations in this area, laying a strong foundation for safe integration. The concept is balance. We must develop a broadly scoped approach to rulemaking to identify and mitigate safety risks without stifling innovation and industry performance. However, a key factor in the success of any regulation is the willingness of the operators to follow them.

Integrating UAS means integrating operators into the aviation culture and mindset. It means creating a general awareness that these devices are not toys and the consequences of misuse can be serious. We believe the most effective way to accomplish this task is through education. We

want to work through partnerships with model aircraft organizations, manufacturers, and interagency partners, as well through traditional and social media outreach, to ensure that these new operators know when and where they may safely fly.

To this end, with the help of our stakeholders, we developed the "Know Before You Fly" and "No Drone Zone" programs. "Know Before You Fly" offers common sense advice, such as don't fly near airports, don't fly in adverse weather, don't fly under the influence of alcohol or drugs, and don't fly over people or sensitive infrastructure like power plants.

Our "No Drone Zone" program began with the Super Bowl earlier this year and is tailored to specific events and places, such as the heavily restricted airspace around Washington, D.C. The No Drone Zone video posted on You-Tube prior to the Super Bowl this year received over 59,000 hits. Most importantly, we received no reports of unauthorized activity in the restricted airspace around the stadium.

We want people to enjoy their hobby, but we want to make sure they fly safely. Education, such as the programs noted above, has been our preferred method for successfully integrating UAS operators. We can never let an educational opportunity slip by. We need to be creative and collaborative in our approach to reaching the public. I will share with you two examples of this approach. Several UAS manufacturers have started to voluntarily include the "Know Before You Fly" safety literature with their product packaging. We are also trying to reach a broader audience by working with the San Francisco 49ers NFL football team to use their scoreboard to make public service announcements during their games. We hope to expand this type of outreach in the coming months.

In order to make it easier for the operator to know when and where it is appropriate to operate a UAS, in particular a model aircraft, we helped develop the B4UFLY mobile app. This is a simple, intuitive user interface that lets the UAS operator know if there are any prohibitions in place for where they are flying or where they want to fly. There is a color-coded status indicator with text that provides the operator with situational awareness. Beta-testing of this app is ongoing and the FAA will make adjustments where necessary based on user feedback. The industry is clearly looking to FAA for leadership in educating the public about the safety parameters for model aircraft operations. Our vision for this app is that the FAA would continue to support the basic technology, while other companies could augment it with their navigational maps.

As discussed, the FAA believes that partnerships and education are the keys to the success of safe UAS integration. But to be clear, if the unauthorized operation is intentional or is intended to cause harm, strong and swift enforcement action, including criminal enforcement, will be taken.

When UAS delayed fire-fighting activities in the drought-stricken western states, local law enforcement and forest service personnel were on the front lines dealing with the situation. We are working with law enforcement agencies to educate them about our rules and to emphasize that, in addition to the FAA's rules, there are existing state and local laws in areas of reckless endangerment, trespass, and privacy that could apply. Just because this is a new technology or different than what law enforcement has seen in these areas before does not mean that these laws would not be equally applicable to such acts involving use of UAS. We want to work with law enforcement because if they encounter unauthorized UAS operations, they can help us to gather evidence and find witnesses that will help with our investigations and enforcement action. For

some, education will never be sufficient. As with any other activity, we will always have to contend with those who wish to cause mischief or refuse to consider the potential harm their activities might pose to others.

Informing and educating UAS operators is just one piece of integrating these vehicles safely into the NAS. The 2012 Act provided the Secretary with the authority to issue exemptions that allow for commercial UAS activity in low risk, controlled environments (section 333 exemptions). After gaining experience with various types of operators, the Department recently expedited its approach for section 333 exemptions. We are now able to issue summary grants when we find that we've already granted a similar exemption. Summary grants are more efficient because they do not require applicants to repeat analysis that has already been performed. This streamlined approach now allows the Department to issue between 40 and 50 section 333 exemptions a week. These exemptions are effectively acting as a bridge until the small UAS rule comes out to more broadly authorize the operation of UAS under 55 pounds if the operations take place under a set of parameters to maintain safety, including operating at speeds below 100 mph and below 500 feet in altitude.

Additionally, as part of our efforts to streamline the integration of this technology, the FAA has further expedited safe UAS integration and facilitated commercial use by issuing a blanket Certificate of Waiver or Authorization (COA) for flights at or below 200 feet when it issues a section 333 exemption. The blanket COA can be used for UAS operations that involve aircraft that weigh less than 55 pounds, operate during daytime Visual Flight Rules (VFR) conditions, operate within visual line of sight (VLOS) of the pilots, and stay at the prescribed distances away from airports or heliports.

From the outset, we have worked closely and successfully with government partners and industry stakeholders to achieve milestones put forward by the 2012 Act. In coordination with other governmental agencies and industry, we developed two long-term planning documents, the Comprehensive Plan and a five-year Roadmap. We have worked with members of the UAS Executive Committee (ExCom), comprised of representatives of various government agencies and departments with responsibilities in this area, to leverage our collective assets and conduct research and development on UAS integration while ensuring the continued safety of the NAS. The FAA collaborated with the National Aeronautics and Space Administration (NASA) on studies advancing air traffic control interoperability with future use by UAS of detect-and-avoid (DAA) systems in controlled airspace. We continue to collaborate with the industry on flight tests to validate RTCA[1] standards for DAA systems as well as command and control radios. RTCA began work on the standards at the request of the FAA in 2013 and they are scheduled for completion in 2016. These standards will help resolve two of the difficult challenges facing the industry for integration of UAS into the NAS. NASA, the FAA, and industry partners have successfully demonstrated a proof-of-concept airborne DAA system and prototype radios for use as command and control systems for UAS.

We are already looking beyond the small UAS rulemaking at what comes next in terms of the types of operations expected, and what technologies we may need to certify to ensure safety. The FAA has consulted with the UAS ARC to determine the next areas of focus so we can enable those UAS operations with the highest net societal benefits. These recommendations are

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[1] RTCA, Inc. is not-for-profit organization that serves as a federal advisory committee to the FAA. *See* http://www.RTCA.org.

being assessed and will result in additional focus areas that will become the centerpiece for FAA's strategic plans for UAS integration.

As the aerospace industry and aviation system grow more complex, we must ensure that our resources are directed to those areas which pose the greatest risk to safe aviation operations. We will need to expand collaborative, data-driven processes with the UAS industry to improve safety and streamline process in areas such as certification. We must meet challenges and take advantage of opportunities.

The safe integration of UAS into the NAS will be facilitated by new technologies being deployed as part of the Next Generation Air Transportation System (NextGen). NAS Voice System (NVS), Data Communications (Data Comm), and System Wide Information Management (SWIM) will provide more information, flexibility, situational awareness, and a greater ability to communicate with NAS users.

To enhance safe application of new and emerging technologies, earlier this year, FAA established the Pathfinder Program, which was referenced above. In the Pathfinder Program we work with three companies to obtain important information on the next steps beyond operational parameters included in the small UAS notice of proposed rulemaking. For visual line of sight operations, FAA is working with CNN on how UAS might be used for news gathering in populated areas. We are also working with the UAS manufacturer Precision Hawk to explore beyond visual line of sight operations in rural areas. Precision Hawk will be working to explore how flying beyond the pilot's direct vision might be used to allow for greater UAS use for crop monitoring in precision agricultural operations. BNSF Railway will explore command and

control challenges of using UAS to inspect rail system infrastructure. Developing the safe use of this important technology can only benefit how UAS can be used in the future.

Aviation technology is constantly evolving. This is certainly not the first time we, as an agency, have been required to integrate new aviation technology into the NAS. Different aircraft technologies, including jet engines, were required to be accepted operationally and we handled them as they developed. Today, in addition to UAS, we are working to integrate commercial space technology into the NAS. Clearly, there will be other technologies that we will be required to integrate moving forward.

I am proud of the team we have brought together and of the approach we are taking to ensure that our airspace continues to be the safest in the world, even as we work to accommodate new technologies that have the potential for changing the way we live our lives. This is an exciting time to be part of the FAA. I am happy to have had the opportunity to speak with you this morning and I will be glad to answer any questions you have.