

OVERVIEW
DANA SCHULZE, NTSB

NTSB SAFETY FORUM ON UNMANNED AIRCRAFT SYSTEMS

April 29, 2008

Good morning. As Mr. Hahn just discussed, there are a variety of applications for unmanned aircraft systems in the United States, and their utility to military, government, and civilian organizations has and will continue to hasten the desire to fly them in the U.S. national airspace system.

In 2006, the National Transportation Safety Board conducted its first investigation of an unmanned aircraft accident. NTSB investigators, working with the operator, manufacturer, and the Federal Aviation Administration, examined all aspects of the unmanned aircraft system and its operation to determine the probable cause of the accident and to make safety recommendations.

As a result of its investigation, the NTSB issued 22 safety recommendations addressing unmanned aircraft system design, operation, and safety management. This investigation also raised questions concerning the broader issue of how unmanned aircraft will fit into the existing aviation system and the safety challenges such integration will present.

During this investigation, and culminating with the October 2007 Board Meeting on the accident, the NTSB recognized that both government and civil organizations were avidly pursuing the use of unmanned aircraft in the National Airspace System and that some, including the Department of Defense, Federal and state agencies, local law enforcement, universities, and unmanned aircraft system manufacturers, had already begun such operations with the approval of the FAA.

In light of these questions and the growing interest in UAS applications in civil airspace, the Safety Board decided to conduct this public forum to allow the NTSB and other interested parties to learn more about unmanned aircraft system operations and the efforts underway to ensure their safe integration into the National Airspace System.

We have three objectives for this forum; One, to educate ourselves and the public about the safety system, present and future, employed for UAS operations in civil airspace, two, to enable the sharing of lessons learned across a number of involved parties, and three, to expand the NTSB's knowledge on matters related to the investigation of UAS accidents and incidents.

Similar to the safety requirements for manned aircraft, the safety requirements for unmanned aircraft systems will need to be shaped by the nature of the mission and the corresponding safety risk to the public. Of interest to the NTSB is learning about current UAS missions, the corresponding hazards involved in these operations, and ways to mitigate them. Unique aspects of UAS operation, such as the use of data links and fully autonomous control, are some of the factors of interest.

We are also interested in UAS equipment issues, such as human-machine interface design, the redeployment of UAS equipment from military to civil applications, and UAS maintenance

program plans. Safety requirements and operational oversight for UAS pilots and mission planning are also aspects of UAS operations of interest to the Safety Board.

And last, we are interested in the protocols that operators have put in place to report accidents to the NTSB and their preparedness to participate in accident investigations for the purpose of identifying and correcting safety system deficiencies.

To explore these areas of interest during this two-day forum, the discussion of key aspects of unmanned aircraft operations has been organized into seven panels. These panels are comprised of experts from industry, academia, and the government, who will talk about their experience with unmanned aircraft systems, the hazards the operations can present, and the knowledge and lessons learned which have helped shape the policies, practices, and procedures these organizations are using today to manage the associated safety risks.

Our first panel will address regulatory issues associated with unmanned aircraft operations in the national airspace system. Our panelist, the Manager of the Federal Aviation Administration's Unmanned Aircraft Program Office, will address the current requirements for gaining access to U.S. civil airspace for all unmanned aircraft system operators including the military, government agencies conducting public use operations, and civil organizations. The panel will also discuss details on the FAA roadmap for future rulemaking efforts covering both large and small civil UAS applications. Last, this panel will address the role of the FAA with regard to public use UAS operations.

Our second panel will be focused on the safety challenges associated with the integration of UAS into the national airspace system. We have asked our panelists to discuss the risks associated with remotely or autonomously controlled aircraft, such as lost link conditions, and the safety system controls in place to manage this risk, including procedures and training for air traffic controllers, lost link emergency procedures, and training for UAS pilots and operational staff. We will also see an example of an operational risk assessment that was used to evaluate hazards and determine the necessary precautions to minimize the corresponding risk for a given operational mission.

In the third panel, we will hear from current public use UAS operators about their missions and their aviation safety programs, certain elements of which have been formulated through findings from past accidents or mishaps. This discussion with public use operators will offer an opportunity to share lessons learned as well as best practices across the UAS community. We have focused this panel on public use applications because these agencies represent the majority of UAS users in U.S. civil airspace given the limited scope permitted for civil operations under current Federal Aviation Regulations and policy.

Our last panel today will provide other users of the NAS the opportunity to voice their thoughts on the potential impact of UAs on manned aircraft operations and to share their concerns and insights on possible mitigation strategies.

Tomorrow, we will begin with a panel addressing equipment design standards, airworthiness, and maintenance. This panel will consist of manufacturers and military certification experts who will discuss the thinking behind design requirements and standards for safety, and the processes employed to determine UAS airworthiness. The Board's interest in this area is in understanding how to ensure the predictability of unmanned systems when they fail, and that the resulting effect on the aircraft can be managed within an acceptable level of risk.

Tomorrow's second panel will address human factors considerations from an operational and design approach. From the operational perspective, the panelists will address pilot selection, certification, and training as well as interaction and teamwork. From the design standpoint, safety considerations for the human-machine interface will be discussed.

We will end the forum with a case study panel that will present a 360-degree view of the processes in place today to request, evaluate, access, and oversee a public use unmanned aircraft system in the NAS and to show the challenges and successes in one such endeavor.

As Member Higgins' noted in her opening statement, we will conduct a question and answer session for each panel after all of the panelist have concluded their presentations. We would again like to encourage those here in the conference room and those watching the forum remotely via the web to submit questions for consideration as part of the Q&A sessions. For those viewing online, the e-mail address for submitting questions is shown on the screen. Those in attendance here should use the cards provided by an attendant or located on the tables in the rear of the conference room and pass completed cards to one of the attendants at the end of the aisle.

We would also like to take this opportunity to alert the public to the NTSB's Notice of Proposed Rulemaking concerning unmanned aircraft systems, published on March 31, 2008, for the purpose of clarifying the Board's requirement for UAS accident notification. This NPRM is available at www.regulations.gov. Any person who would like to submit a comment to the NTSB's Notice of Proposed Rulemaking concerning unmanned aircraft systems should do so in writing by the means described in the Notice. The deadline for submitting comments is June 30, 2008. Although the Safety Board will be discussing the general topic of unmanned aircraft systems and their operation today, this forum is not a vehicle to collect comments regarding this proposed rulemaking, nor will the forum serve as a hearing under the Administrative Procedures Act.

In closing, the NTSB would like to take a minute to recognize our panelists, and the organizations that have supported their participation in this forum as well as those providing product displays. I would also like to recognize the following NTSB staff who contributed to the planning and development of this forum event.

Madame Chairman, this concludes my presentation. Staff is ready to begin with our first panel of the day.

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