



Federal Aviation
Administration

Speech – "Safety Must Come First"

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Good afternoon, and thank you, John [Langford, Chairman & President, Aurora Flight Sciences]. It's an exciting time in aviation and to be involved with introducing new technology into the National Airspace System. It's also a good time to be thinking and talking about personal and professional responsibility — something I have unfortunately had to do too much of lately. But we all — every professional in aviation — have a shared responsibility to make this system as absolutely as safe as it can be, and never to just a level where we would ever say, "We could do more, but this is safe enough".

So if we are direct with ourselves here, as of today, unmanned aircraft systems are not ready for seamless or routine use yet in civilian airspace. The idea of pilots flying remotely has been around for a long time. And it is, I truly believe, the way of the future. But where we are, on numerous fronts, they're not ready for open access to the NAS and we can't give you the thumbs up.

And you know that I'm not telling you anything that your technical folks aren't already telling you. While the UAS is undoubtedly the way of the future, my concern must be on today, and right now, the era of the unmanned aircraft system in civilian airspace is just not here yet. Much as we'd all wish the case were different, the level of technical maturity isn't where it needs to be for full operation in the NAS.

UAS is not plug-and-play. The technology has shown amazing potential and it's provided an astonishing value in use for what they're intended. As someone who's pulling for our troops overseas, I'm glad that unmanned aircraft systems are part of our military arsenal. When they gave the *Hunter* and the *Predator* their names, they weren't kidding.

But the issue here stateside is safety and it is Rule number one for everyone in the NAS. And being able to see-and-avoid is a fundamental part of that rule.

The definition of see and avoid for UAS is "the capability of an unmanned aircraft system to remain well clear from and avoid collisions with other airborne traffic and vice-versa." With the UAS, you're talking about a blend of technology that in terms of complexity is head and shoulders above anything we're doing now. That complexity is what makes it difficult to meld the UAS safely into a mature system like the NAS.

I think it's fair to compare the advent of the UAS with the introduction of the jet engine. We're talking about an exponential leap in capability, and that leap needs a contemporaneous jump in technology and procedures to do so safely.

We are considering the vast potential of UAS as we develop and implement NextGen, but it's an unacceptable risk to simply add today's level of UAS technology to today's NAS, and, I'd venture to say, that both you and the American public would agree.

We know the headlines following the helicopter accident over the Hudson on August 8th. That was followed by two Congressional hearings and calls to immediately shut down all traffic over the Hudson or sharply curtail these operations.

Now can you even imagine if one of those aircraft had been an unmanned system? With the headline: "Unmanned Robot plane crash kills 9." How do you think the Congress would react to that headline — after they confirmed my replacement?

That kind of scenario notwithstanding, I think unmanned aircraft systems are here to stay. In FY-09, there were about 20,000 flights in civilian airspace for a total of over 2,500 hours. And the number of operations that have been granted has more than tripled since 2007. But in order for us to get to the place where the UAS can become a viable, accepted part of the national airspace system, we have to make sure that sense-and-avoid is more than a given — it must be a guarantee.

Without a pilot who can look and scan to the left and the right — just the way you and I do when we're backing out of a parking space — there's a perceived level of risk that the American public isn't ready for.

As a safety regulator who is obligated to consider the total picture, I can tell you that proven performance must be the order of the day when it comes to UAS. We can't let our desire to focus on the enormous potential blind our safety concerns.

With that said, change is a joint effort. You drive change. The FAA ensures safety. And I do believe more community support is needed, and not just by DoD. Technology takes time. Development and maturity takes time — raising children should have proved that to you. But seriously, we know that from every aspect of our life experience that when you rush into something, your troubles have usually just begun. Consider, for example, that most of what you're doing now with unmanned aircraft takes places in the daylight. The challenge of night flying is not insignificant.

When you're dealing with the FAA, remember that all of the components need to be addressed. While air traffic will help you get from point A to point B, it's the aviation safety organization that sets the standards to be at point A. Our Airports group regulates point A and point B and other groups within the FAA setting standards for performance and maintenance of the machines and facilities. And I haven't yet mentioned the Human Factors considerations.

To assist and be ready for UAS reaching maturity, we have special program offices in our aviation safety and air traffic organization, military and other government organizational liaisons for UAS. We are doing what we can to help get you to market. My senior executives in Aviation Safety and Air Traffic, including Hank Krakowski, our COO, are meeting with the Government Executives that operate UAS in Dallas as we speak.

As far as UAS technology itself goes, most UAS have a single point of failure for hydraulics, electrical, flight control and satellite link. That's a concern.

When there's a single point of failure for something that runs into trouble every thousand hours, that's a problem. We have to address these risks. When you're talking about bringing something new into the airspace mix — something that could range from the size of a 737 to something as small as your fist, there's little doubt that there's a lot of homework that needs to get done first. That's part of earning the privilege to operate in the NAS. We're all going to have to act like we are from Missouri — "*Show me*".

For our part, we're working on an NPRM for small UAS. It will define standards for routine commercial operations to meet the needs of a large portion of the UAS community. And while limited, it represents a significant step forward in enabling this community. I think this experience will promote a better understanding of the challenges that you and I face. We're also working on revising a memorandum of agreement with DoD that addresses specific critical access needs.

The UAS Executive Committee — the ExCom — has been established to develop solutions to allow incremental access of UAS into the NAS. The ExCom is a multi-agency, Federal executive-level committee including FAA, DoD, DHS and NASA.

No organization can solve this challenge alone. But by combining the strengths, expertise and capabilities of the member organizations, we'll take on the task of UAS access much faster and will do it more efficiently. The ExCom has a tremendous amount of operational experience and have the lessons learned to implement policy and procedures. Additionally we're making sure we meet the requirements of the National Defense Authority Act.

We also have a special Committee with RTCA, SC-203, to develop standards. This is the primary method for you to support and promote the future of the UAS. These standards will serve as a basis for regulations.

And I also must mention that we're working with DoD and NASA on research as part of NextGen. This will not

only help us get to sense and avoid, but find interim solutions until we do.

Given that unmanned aircraft are becoming the method of choice to conduct mapping, fire detection, scientific missions, weather mapping, volcanic sampling, search and rescues, disaster response and security surveillance, the need for standardized regulations has never been more paramount.

And in closing, that is where we are. We need to develop standards for the future. But we must make sure that we're all moving in the same direction before it happens. Those safety standards must be the same for everyone, even if no one's in the cockpit.

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