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HEARING BEFORE THE UNITED STATES SENATE
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
SUBCOMMITTEE ON AVIATION SAFETY, OPERATIONS, AND INNOVATION
ADDRESSING CLOSE CALLS TO IMPROVE AVIATION SAFETY
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Chairs Cantwell and Duckworth, Ranking Members Cruz and Moran, and members of the subcommittee, thank you for the chance to be here today to testify about some of the significant events we have seen in the National Airspace System (NAS) this year. Before I delve into the details and the Federal Aviation Administration's (FAA) actions to address these events and prevent them in the future, I want to emphasize the seriousness with which we approach this issue. Collectively, air traffic controllers, pilots, commercial operators, general aviation, and airports all play an important role in minimizing risk within the system. Through years of collaboration with these stakeholders, the FAA has established multiple layers of safety that protect the traveling public from the time they board an aircraft to the time they deplane. These efforts include continued pilot outreach and training, controller awareness and training, investments in surface safety and situational awareness technology tools, robust procedures managed by air traffic controllers, and the application of Safety Management Systems internally and across part 121 commercial operators as well as major airport operators.

The level of safety we have would not be possible without continuous transparent and collaborative communication between the FAA and industry. At the FAA, we are proud of our proactive safety culture, which emphasizes the value of nonpunitive sharing of data and safety information between the agency and industry to reduce risk and maximize safety. Nevertheless, we view even one runway incursion or other unsafe operation in the NAS as too many, and the FAA is committed to the relentless pursuit of continual improvement in everything we do. Any runway incursions or other event in the NAS, whether isolated or part of a possible trend, is a concern, and we don't take it lightly. We appreciate the oversight and attention this subcommittee has focused on this issue, as increased awareness helps us improve safety.

Runway Incursions

A runway incursion is any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft. Incursions are caused by operational incidents attributed to air traffic control action or inaction, pilot deviations, or vehicle/pedestrian deviations.

We measure four categories of runway incursions based on objective, observable standards:

- Category A is a serious incident in which a collision was narrowly avoided.
- Category B is an incident in which separation decreases and there is a significant potential for collision, which may result in a time-critical corrective/evasive response to avoid a collision.
- Category C is an incident characterized by ample time and/or distance to avoid a collision.
- Category D is an incident that meets the definition of runway incursion (e.g., the incorrect presence of a single vehicle/person/aircraft on the protected area of a surface designated for the landing and take-off of aircraft) but results in no immediate safety consequences.

For fiscal year 2023, of the approximately 54.4 million takeoffs and landings in the NAS, there were 1,756 total runway incursions. Approximately 60 percent of those incursions were attributable to pilot deviations, approximately 20 percent were caused by air traffic controller action or inaction, and the remaining approximately 20 percent were caused by vehicle or pedestrian deviations. It's important to note that the total number of Category A and B runway incursions was 23. Although these statistics suggest that runway incursions account for approximately 0.003 percent of all NAS operations, and the more serious incursions in Categories A and B combined account for about 0.00004 percent of all NAS operations, we recognize that any number is an unacceptable safety risk and we are working hard to drive the number of such incursions to zero.

Overall, our data, which is regularly shared with Congress and publicly available, shows a recent downward trend in the rate of runway incursions. For example, in fiscal year 2022, there were

approximately 33 incursions per one million takeoffs and landings. In fiscal year 2023, there were 32 incursions per one million takeoffs and landings. Although the change is modest so far, we are optimistic that our recent and ongoing work and collaboration with industry is bearing fruit and will lead to continued safety improvements in the NAS.

The FAA takes seriously every safety event in the NAS, whether it occurs on the surface or in the air. Through the promotion of Voluntary Safety Reporting Programs and expanded system monitoring through Aviation Risk Identification and Assessment, we identify and mitigate events that would have previously been unknown even two years ago. Our focus is on maintaining our status as the premier air navigation service provider, keeping aircraft safe, separated, and on time.

Safety Summit and Follow-on Actions

In March of this year, in response to an uptick in the most severe runway incursions, the FAA took a number of additional actions aimed at helping to drive down the incidence of all runway incursions. The Administrator's call to action led to a safety summit that brought more than 200 safety leaders from across the aviation industry to examine ways that safety could be enhanced to prevent future occurrences. These discussions covered commercial and general aviation operations, the air traffic system, and airport and ground operations. The FAA also held a series of surface summits separately with stakeholders, including general aviation, air carriers, business aviation, and airport operators.

Since the safety summit, the FAA has taken a number of actions to enhance flight safety and reduce incursions:

- **March:** The FAA issued a Safety Alert for Operators (SAFO) identifying items for safety management focus, including guidance related to runway safety, and asking all pilots, air carrier management, and operators to review processes, procedures, or training to ensure operations are conducted at the highest level of safety, including adherence to air traffic control instructions and maintaining a "sterile cockpit" to mitigate risks associated with extraneous communication.

- **March**: The FAA announced additional steps the agency's Air Traffic Organization (ATO) will take:
  - Ensure that supervisors devote their full attention to the operation and airfield during peak traffic periods at each facility.
  - Provide more dedicated training for unusual circumstances.
- **April:** The FAA named an independent safety review team to further examine ways to enhance safety and reliability in the nation's air traffic system. The Safety Review Team began its work in May and will complete its work this fall and present concrete recommendations on how the agency can advance air traffic safety.
- **June:** The FAA launched the "Stand Up for Safety" Campaign. The series will provide monthly, mandatory special emphasis training for our controller workforce, including operations supervisors and managers, in collaboration with the National Air Traffic Controllers Association (NATCA).
- **August**: The FAA announced it will hold runway safety meetings at approximately 90 airports between August and the end of September. The meetings, held annually at each airport with a control tower, are the primary forum for pinpointing and addressing airport-specific risk in the surface environment and are part of the ongoing work of the Runway Safety Action Teams discussed below.
- **August:** The FAA issued a SAFO with reminders of practices to prevent injuries while workers are towing aircraft and guiding them to and from gates. The SAFO reminds aircraft operators that it is important for personnel to remain clear of operating engines until they are shut down.
- **September:** The FAA tasked the Investigative Technologies Aviation Rulemaking Committee to provide recommendations on new technologies, such as cockpit alerting systems, designed to reduce runway safety events. When aircraft land on the wrong surface, it presents risks that can lead to catastrophic events where the surface could be closed, damaged, or an unsuitable length for a safe takeoff or landing.

Moreover, over the course of fiscal year 2023, the FAA awarded grants for 55 runway safety projects under the Bipartisan Infrastructure Law and 154 runway safety projects under the Airport Improvement Program, totaling more than $1.0 billion. These projects will reconfigure

taxiways that may cause confusion, install airfield lighting, signage or markings, or construct new taxiways to enhance safety on the airfield.

Longterm Runway Safety Initiatives

The actions since March that are noted above are a small fraction of the overall sustained effort that the FAA and industry have undertaken over time to lower runway incursions. Runway safety will continue to be a high priority for the FAA, and we will continue to develop and refine initiatives to enhance runway safety. Here are some of the more significant FAA initiatives that are moving the needle on safety.

- **Runway Safety Council**. The FAA convened the Runway Safety Council (RSC) to fundamentally change the existing safety culture and move toward a systemic proactive management strategy that involved cooperation throughout the FAA and among the different segments of the aviation industry. By applying the formalized and proactive approach of the ATO's Safety Management System, the RSC is advancing the shift from a compliance-based safety system to a risk-based, data-driven, integrated systems solution to runway safety.

  Collaboration with the aviation community is a key component of runway safety. The RSC includes aviation stakeholders from across FAA Lines of Business, including Airports, Aviation Safety, and the ATO, as well as FAA employee labor organizations like Professional Aviation System Specialists and NATCA, and industry representatives such as aircraft operators, airline representatives, and flight instructors.

- **Runway Safety Action Teams**. Runway Safety Action Teams (RSAT) bring local airport stakeholders together at least once a year at towered airports to identify risks to surface safety at individual airports and develop plans to mitigate or eliminate those risks. RSATs provide the foundation of the Runway Safety Program at individual airports. The RSAT meetings are the primary forum for pinpointing and addressing airport-specific risks in the surface environment. The product of a RSAT meeting is a Runway Safety

Action Plan in which the stakeholders document and agree to pursue specific actions intended to improve surface safety.

- **Runway Incursion Mitigation.** The Runway Incursion Mitigation (RIM) program is a national initiative at airports with a history of runway incursions to identify airport-specific risk factors that might contribute to a runway incursion. These risk factors may include unclear taxiway markings, airport signage, and more complex issues such as the runway or taxiway layout. The FAA then works with the airport sponsors to develop strategies to mitigate runway incursions at these locations. Currently, 131 unmitigated RIM locations have been identified across 80 airports. To date, the program has mitigated 99 locations. Other solutions like operational modifications or a hot spot designation (to optimize pilot awareness) are employed when physical changes are not feasible or best suited. There is a 78-percent average reduction of runway incursions at mitigated RIM locations. The RIM program continuously monitors these locations for reoccurrence and assesses incoming data for any new RIM location candidates.

Runway Safety Technologies

Investment in technology will continue to be an effective mechanism to enhance aviation safety and runway safety in particular. We are committed to the continued development and deployment of safety technologies in support of aviation safety. Here are some examples of technologies that are advancing safety.

- **Technology Sprints**. The FAA has announced that we are pursuing a technology sprint by fast-tracking the deployment of three initiatives to address specific safety concerns on the airport surface.
  - The Surface Awareness Initiative will deploy a situational awareness display of airport surface traffic to tower air traffic controllers for airports that do not currently have a surface surveillance system.
  - The Approach Runway Verification will add functionality in the Standard Terminal Automation Replacement Terminal System (STARS) to provide

controllers with alerts of wrong runway, closed runway, and wrong airport alignments to prevent wrong surface landings.

- The Runway Incursion Device will provide a memory aid device that generates an audible and visual alert to controllers to enhance situational awareness of occupied and closed runways, which we plan to deploy to over 70 towers.

- **Runway Status Lights.** The FAA developed Runway Status Lights (RWSL) technology to increase situational awareness for flight crews and airport vehicle drivers and thus serve as an added layer of safety. A RWSL system derives traffic information from surface and approach surveillance systems and illuminates red in-pavement airport lights to signal a potentially unsafe situation. Runway Entrance Lights are deployed at taxiway/runway crossings and illuminate if it is unsafe to enter or cross a runway. Takeoff Hold Lights are deployed by the departure hold zone and illuminate red when there is an aircraft in position for departure and the runway is occupied by another aircraft or vehicle and it is unsafe for takeoff. RWSL is operational at 20 U.S. airports.

- **Airport Surface Detection Equipment, Model X.** Airport Surface Detection Equipment, Model X (ASDE-X) integrates data from a variety of sources, including radars, transponder multilateration systems, and Automatic Dependent Surveillance – Broadcast (ADS-B) to provide accurate target position and identification information and thus give controllers a more reliable view of airport operations. ASDE-X provides tower controllers a surface traffic situation display with visual and audible alerting of traffic conflicts and potential collisions. ASDE-X is operational at 35 airports in the United States.

- **Airport Surface Surveillance Capability.** Airport Surface Surveillance Capability (ASSC) is similar to ASDE-X. It improves surface surveillance and situational awareness in all kinds of weather. With ASSC, air traffic controllers see aircraft and ground vehicles on the airport surface and on approach and departure paths within a few miles of the airport. Like ASDE-X, ASSC fuses data from multiple sources, including

radars, to provide a highly accurate display for controllers with the same visual and aural alerting capabilities. ASSC is operational at nine airports in the United States.

- **Runway Incursion Warning Systems and Vehicle ADS-B Transmitters.** Runway Incursion Warning Systems (RIWS) and vehicle ADS-B transmitters are available for installation on airport and airline-owned vehicles that regularly operate in the movement area. These technologies enhance situational awareness for surface operators and Air Traffic Controllers. FAA has been actively encouraging airports to voluntarily equip their vehicles. Grants are available for installation of these systems. As a result, there are now over 2,100 vehicles equipped with ADS-B transmitters at airports with ASDE-X and ASSC and over 1,000 vehicles equipped with a RIWS.

- **From the Flight Deck and the Runway Safety Pilot Simulator**. The FAA has produced 100 site-specific "From the Flight Deck" videos to educate and inform pilots and controllers of the risks associated with operating at specific airports around the NAS. Other videos cover safety topics, including wrong surface landings, complex airfield geometry, hold short, wrong direction intersection takeoffs, and more. Additional airport videos are forthcoming.

  FAA's Runway Safety Pilot Simulator video series is a self-guided resource to assist flight instructors with teaching student pilots surface safety best practices before they step foot into the cockpit. It allows student pilots to navigate on airport surfaces while communicating with air traffic control and gain experience following instructions provided by air traffic control. The scenarios are interactive and allow viewers to make decisions based on air traffic control instructions.

- **Pilot Information on Airports Across the NAS.** To supplement From the Flight Deck videos, we began publishing additional information on faa.gov. This content includes details such as airport-specific cautions, information local controllers want pilots to know, airport communications, airspace details, more general best practices, lost communications tips, and other preflight planning resources. This supplemental web

content is currently available for 25 airports across the NAS, with more content in development.

Controller Hiring

Finally, although eliminating runway incursions requires close coordination and collaboration with industry, we recognize the vital role we play in working to avoid and eliminate them. Part of that work is the hiring and training of air traffic controllers. The President's FY 2024 budget request includes funding for the hiring and training of 1,800 controllers, an increase of 300 above the hiring level for FY 2023. This funding supports the continued training of the 1,500 controllers hired in FY 2023. The FAA Academy's training schedule in execution for FY 2024 will support the FAA's overall goal to hire 1,800 controllers to include the added training cost for the additional 300 controllers reflected in the FY 2024 budget request. The budget request will allow the FAA to continue progress toward attaining the necessary Certified Professional Controller staffing levels to meet current traffic demands, which have returned to, or in some markets exceeded, pre-pandemic levels. The 2023 Controller Workforce Plan released in May includes facility-specific staffing targets. As we continue to work with our labor partners, we also submitted to Congress the results of the Collaborative Resource Workgroup and look forward to continued discussion and progress as we all work toward the shared goal of staffing targets to meet traffic demands.

Conclusion

I would like to reemphasize the seriousness with which we approach this issue and assure you that although we are proud of our safety culture and the work we have done, the FAA will doggedly press for continued collaboration with industry to further enhance safety initiatives and technologies to reduce runway incursions with the goal of eliminating them. Thank you again for the chance to speak about this critical safety issue.