



U.S. DEPARTMENT OF TRANSPORTATION

OFFICE OF INSPECTOR GENERAL

**Perspectives on Maintaining Safety and
Enhancing Oversight of a Diverse and
Complex Aviation Industry**

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Subcommittee on Aviation
United States House of Representatives

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

Thank you for inviting me to testify today on aviation safety. As you know, safety is the Department of Transportation's top priority. Since 1958, the Federal Aviation Administration (FAA) has overseen the safe operation of the busiest and most complex aviation system in the world, which carries over 2.5 million people on approximately 45,000 flights every day. However, recent events, such as the near-miss of Air Canada flight 759 in San Francisco¹ last summer, have drawn renewed attention to the importance of enhancing aviation safety. As FAA continues to seek ways to ensure its safety efforts keep pace with a rapidly evolving aviation industry, new and longstanding oversight needs present several challenges.

My testimony today is based on our recent and ongoing work on aviation safety and will focus on two areas: (1) addressing evolving and longstanding safety oversight challenges related to regional carriers, aircraft parts, and runway incursions and (2) integrating unmanned aircraft systems (UAS) into the National Airspace System (NAS).

Summary

FAA is taking a number of important steps to improve its safety oversight of the NAS. However, our work continues to identify several challenges for FAA that have garnered significant public interest and congressional attention. In recent years, the regional air carrier industry, which serves more than 20 percent of all airline passengers, has experienced significant operational and financial changes that can impact safety in an industry that must keep costs low. These carriers must also meet the same safety standards as mainline carriers, and several oversight adjustments are required for FAA to proactively mitigate risks. Additionally, to ensure safe aviation operations overall, FAA needs to strengthen its monitoring and investigation processes to prevent faulty or counterfeit parts from being installed on aircraft and assess its efforts to reduce runway incursions—incidents on runways involving unauthorized aircraft, vehicles, or people. FAA has launched various safety initiatives over the years to mitigate these incidents, but the number of reported incursions continues to rise. Finally, the use of UAS represents a significant safety concern for FAA, which must accommodate the expansion of commercial UAS operations as it strengthens its oversight and risk-mitigation efforts. As the aviation industry continues to evolve

¹ "National Transportation Safety Board [NTSB] Issues Investigative Update on San Francisco Airport Near Miss," NTSB news release, August 2, 2017.

in these and other areas, FAA must be able to quickly adapt to any challenges to maintain the safety of the aviation system.

Addressing Evolving and Longstanding Safety Oversight Challenges

FAA continues to demonstrate a strong commitment to improving safety oversight of our aviation system. For example, FAA recently transitioned its oversight of passenger air carriers to its risk-based Safety Assurance System (SAS) to more effectively identify and mitigate safety risks. Yet FAA faces both new and longstanding safety oversight challenges involving various aspects of the aviation industry, and enhanced management and stakeholder communication will be key to addressing safety vulnerabilities. The Agency oversees a regional airline industry that serves more than 20 percent of all airline passengers and is rapidly evolving. To help ensure safe aviation operations overall, FAA must strengthen efforts to promptly identify and remove suspected unapproved aircraft parts from the aviation supply chain and address ongoing challenges to runway safety at airports.

Keeping Pace With a Dynamic and Evolving Regional Airline Industry

Regional air carriers have been a growing segment of the aviation industry over the last several years and now operate over 10,000 flights a day and serve approximately 20 percent of all airline passengers.² These carriers operate in a unique and competitive environment and present a multifaceted oversight challenge for FAA. While they must meet the same safety standards as mainline carriers, they operate under a business model that requires them to keep costs low. Yet they do not benefit from upward trends in ticket prices, additional revenue from baggage fees, or passenger enplanements. Therefore, their operations are strongly impacted by changes such as service expansion, airline consolidations,³ or new pilot requirements—all of which have taken place in recent years.

² According to the Regional Airline Association, the average plane size flown by regional carriers grew from 24 seats in 1990 to 61 in 2015, and the average trip increased from 194 miles in 1990 to 478 miles in 2015.

³ Regional airlines have purchased other airlines to expand operations. For example, SkyWest Inc. purchased ExpressJet in 2011. Airlines also merge their operating certificates to streamline operations. For example, in 2014, Republic Airways Holdings merged its Chautauqua Airlines certificate with Shuttle America's certificate.

At the request of the Ranking Members of this Committee and Subcommittee, we recently reported⁴ on how FAA identifies periods of transition and growth for regional air carriers and adjusts oversight in response to operational changes. We found that FAA has not provided inspectors with sufficient tools and guidance to proactively identify and mitigate operational risks at regional carriers. FAA's main risk-assessment tool is subjective and does not include risk scoring—i.e., quantitative metrics to assess the severity of risks related to major operational changes brought about by transition or growth. These include turnover in key personnel, financial distress, or rapid service expansion. In addition, tools to help inspectors assess risks related to financial condition and rapid growth or downsizing are poorly designed and confusing, which limits their effectiveness.

As a result of these weaknesses, FAA may miss opportunities to accurately assess risks and take corrective actions. In one case, FAA inspectors did not recognize multiple indicators of financial distress, as defined in FAA guidance, before a carrier filed for bankruptcy. These indicators included a drastic decline in stock prices, a decrease in scheduled flights due to a pilot shortage, a lawsuit from one of its mainline partners for failing to complete contractually scheduled flights, and an increase in the pilot attrition rate. Although inspectors were aware of these indicators, they did not believe they posed an increased risk at the carrier and attributed many of the risk indicators to a pending merger between the company's subsidiaries.

Even when inspectors are able to identify risk areas, FAA guidance is vague regarding how inspectors should adjust surveillance. Inspectors often make adjustments based on their own discretion without the benefit of specific FAA guidance or data analysis to bolster their experiences. As a result, FAA may not be well positioned to respond to changes common to the regional carrier industry that carry safety implications, such as changes in airline partnerships and bankruptcies. FAA agreed with all 10 of our recommendations and is revising its risk assessment tools, improving data sharing between offices, and clarifying the guidance it provides to inspectors. The Agency committed to implementing our recommendations by the end of this calendar year.

A related issue for the Agency is the increase in required hours of flight experience to 1,500 hours for new pilot hires⁵ and the effect on the pilot population, particularly at regional carriers. FAA issued this rule in 2013 in response to congressionally mandated changes regarding pilot training and experience requirements.⁶ Regional carrier officials state that these requirements have reduced the pool of qualified pilots available to hire and affected the

⁴ *FAA Oversight Is Not Keeping Pace With the Changes Occurring in the Regional Airline Industry* (OIG Report No. AV2018012), December 19, 2017. OIG reports are available on our website: <https://www.oig.dot.gov/>.

⁵ This rule requires each commercial airline pilot to obtain an Airline Transport Pilot license, which requires 1,500 hours of flight experience (unless applicants have qualifying educational or military experience).

⁶ Pub. L. No. 111-216 (2013).

experience levels of new hires. However, FAA has not analyzed the impact of the 1,500-hour rule on the pilot population or reviewed industry's concerns regarding a pilot shortage. Furthermore, the Agency currently has no plans for such a study, even though pilot training, experience, and staffing levels can all play a role in maintaining safety. This raises questions about whether FAA is prepared to detect changes in the pilot pool that may introduce risk into regional air carriers' operations. This will be an important watch area for the Agency in the near and long term.

Strengthening the Investigative Process and Proactively Removing Suspected Unapproved Parts From the Aviation Supply Chain

The traveling public depends on FAA and the aviation industry to ensure that U.S. aircraft are properly maintained and airworthy. Part of this responsibility is to detect and monitor for Suspected Unapproved Parts (SUP)—aircraft parts that may have been manufactured without FAA approval, including counterfeit parts. Our office has been tracking SUPs for years, and we recently reported that FAA's process for monitoring and investigating SUPs is not as effective as it could be.⁷ This is largely due to weaknesses in recordkeeping and management controls to capture and accurately report the number of SUP cases. For example, our recent analysis of all 265 SUP entries in FAA's database revealed 16 duplicate, 86 incomplete, and 28 invalid entries. While FAA guidance provides broad direction to its analysts on data gathering for Hotline submissions, it does not have specific guidance on data entry for SUPs reports. As a result, the quality of data available to FAA to analyze trends is compromised, and FAA does not have a full picture of the problems and risks involving unapproved parts within the aviation industry.

FAA also does not ensure all SUPs are reported to its Hotline office, which should be the central point of contact, where analysts can receive and track SUPs reports in order to identify trends. However, SUPs can be reported through a variety of channels, including reports made by the public to the Hotline or local inspection offices. FAA guidance states that field inspectors who receive SUPs reports from complainants should provide them to the Hotline for tracking and resolution. However, FAA inspectors do not follow the guidance, and some reports to local inspection offices never make it to the Hotline. As a result, the Agency cannot be

⁷ *Enhancements Are Needed to FAA's Oversight of the Suspected Unapproved Parts Program* (OIG Report No. AV2017049), May 30, 2017.

assured that all SUPs reports to local inspection offices have been captured in the Hotline's database.

Furthermore, once unapproved parts are identified, FAA's oversight of industry actions to remove them from the supply chain is ineffective. This is because FAA does not confirm that operators (e.g., manufacturers, repair stations, and parts distributors) take appropriate action to remove unapproved parts from their inventories. For example, an FAA inspector determined that tens of thousands of privately owned commercial aircraft parts, which were for sale online via eBay, were unapproved. However, the inspector did not physically account for the location and quantities of the parts but instead accepted a letter from the owner stating that he had removed the ad from his eBay site and had not sold any parts. As of February 13, 2018—more than 4 years later—the ad for these parts and the owner's contact information could still be viewed online.

FAA agreed with all 11 of our recommendations and is committed to taking action to strengthen its management controls and ensure consistent SUPs investigations. While we are encouraged by FAA's response to our recommendations, ensuring that the hundreds of thousands of aircraft parts installed on airplanes are manufactured or repaired according to standards will continue to be a significant challenge for FAA and the aviation industry.

Addressing Reports of Increased Runway Safety Incidents

Several recent incidents involving close calls in the air and on the ground at our Nation's major airports are a cause for concern. For example, in February 2017 at the San Francisco International Airport, a controller mistakenly cleared one aircraft to land on a runway while another was waiting to depart. A surface surveillance system alerted the controller about the potential collision, and the controller instructed the arriving aircraft to abort its landing.⁸ In addition, in November 2017, a commercial aircraft lined up to land on an active taxiway at Atlanta Hartfield International Airport before aborting the landing.

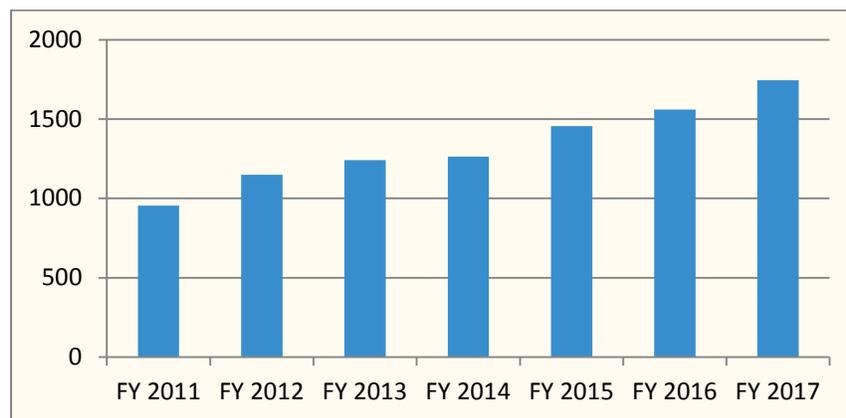
Much of our work in this area has focused on FAA's efforts to reduce runway incursions—incidents involving unauthorized aircraft, vehicles, or people on a runway—which has been a longstanding challenge for FAA. We have repeatedly reported on FAA's efforts to address this issue and made recommendations to improve the Agency's ability to implement, prioritize, and measure the

⁸ As noted previously, there was another near-miss incident at the San Francisco International Airport in July 2017. Instead of landing on a runway, a commercial airplane pilot attempted to land on a taxiway where four other aircraft were awaiting takeoff. This incident has not been officially classified and is currently under investigation by the National Transportation Safety Board.

effectiveness of its runway safety initiatives.⁹ The Agency has undertaken a number of safety initiatives since 2007 in response to our recommendations. These initiatives include instituting voluntary reporting mechanisms for controllers; installing new technologies, such as Airport Surface Detection Equipment, Model X (or ASDE-X), that warn controllers and pilots about runway hazards; and conducting outreach efforts at individual airports and Government-industry forums.

However, reports of incursions have increased over the last several years, with a nearly 83-percent rise in total incursions between fiscal years 2011 and 2017 (see figure 1).

Figure 1. Total Number of Runway Incursions, Fiscal Years 2011–2017



Source: OIG analysis

While the number of serious incidents is relatively low, they fluctuated over the same timeframe, ranging from a low of 7 in fiscal year 2011 to a high of 19 in fiscal year 2016. To help mitigate runway incursions, FAA initiated a Call to Action forum in 2015 that focused on developing short-, medium-, and long-term initiatives. We are currently evaluating the Agency’s progress in this effort. Our preliminary results indicate that FAA has had success in educating pilots about visual aids at high-risk airports and in conducting outreach to the aviation community. However, the Agency faces challenges in implementing other initiatives, including those associated with new technologies, such as Data

⁹ *FAA’s Call to Action Plan for Runway Safety* (OIG Report No. AV-2010-071), July 21, 2010; *FAA Operational and Programmatic Deficiencies Impede Integration of Runway Safety Technologies* (OIG Report No. AV-2014-060), June 26, 2014; *Management Limitations May Hinder FAA’s Ability To Fully Implement and Assess the Effectiveness of Its Runway Safety Initiatives* (OIG Report No. AV-2014-130), September 25, 2014.

Communications (DataComm),¹⁰ and measuring their effectiveness at mitigating runway incursions. We anticipate issuing our report later this year.

Integrating Unmanned Aircraft Systems Into the National Airspace System

The growing use of UAS for commercial purposes—ranging from filmmaking to package delivery—represents a substantial economic opportunity for the United States. However, it also presents one of the most significant safety challenges FAA has faced in decades. In addition to managing the regulatory challenges of this evolving industry, FAA must also develop strategies for overseeing an increasing number of operations and mitigating safety risks.

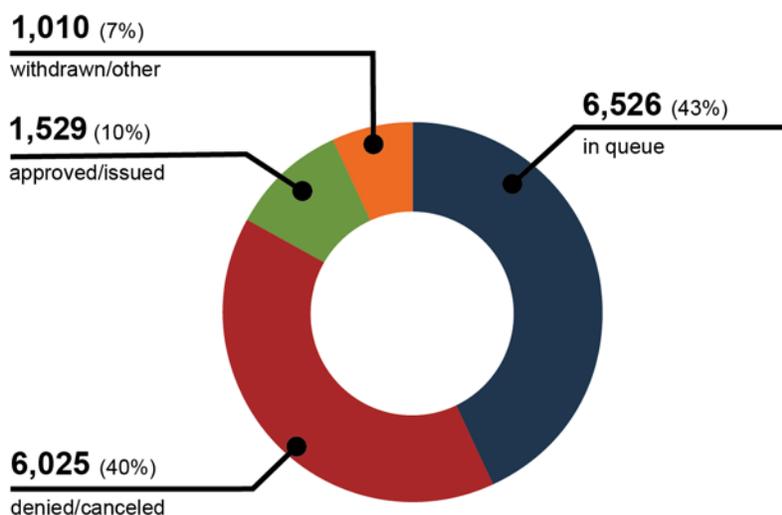
Meeting the Regulatory Challenges of an Evolving and Diverse Commercial UAS Industry

FAA recently forecast that the number of UAS in the United States is likely to be about 4 million by 2021, increasing from 1.1 million in 2016. The growing demand for commercial UAS presents new regulatory challenges for FAA, which must develop rules to govern UAS usage while maintaining safety. To advance the safe integration of UAS in domestic airspace, FAA published a new rule in June 2016¹¹ for small UAS (i.e., systems weighing less than 55 pounds). However, the rule does not permit several potential uses for UAS that are highly valued by industry, such as operating beyond line of sight or at night. To accommodate these operations, the rule allows operators to apply for waivers from its provisions. As shown in figure 2, as of January 2018, the Agency has received more than 15,000 waiver applications and reviewed more than 7,500, issuing approvals for nearly 1,530 waivers. However, just over 6,500 applications are still pending, and the Agency's backlog continues to grow.

¹⁰ DataComm is expected to provide 2-way digital communications between controllers and flight crews by reducing radio voice communications, improving accuracy, safety, and reducing time. While DataComm is being used at over 50 airport towers, the Agency does not expect controllers to use the technology to issue taxi instructions until 2026 at the earliest.

¹¹ 14 CFR Part 107 (June 2016).

Figure 2. Number of Waiver Applications Processed by FAA Since August 2016



Source: OIG analysis of FAA data

While most of these approved waivers (more than 90 percent) have been for night flying, others have been granted for more complex activities, such as for flying over people or beyond line of sight. The commercial activities that typically receive waivers for UAS operations are filmmaking, photography, real estate, and construction.

Developing Strategies for Overseeing Operations and Mitigating Risks as UAS Integration Continues

The increasing number of UAS operators presents significant oversight and risk-mitigation challenges for FAA. The Agency is in the early stages of developing a risk-based oversight process for commercial UAS operators. For example, FAA recently published national program guidelines that instruct Flight Standards field offices to plan at least one operator inspection per year. However, this guidance does not include risk or operational factors field offices should consider when they decide which UAS operators to visit, and it did not take effect until the beginning of fiscal year 2018.

Developing an effective oversight strategy is particularly important given the safety issues that arise as UAS increasingly operate in the same airspace as manned aircraft. UAS sightings by pilots and other sources have increased

dramatically. Over 2,100 events were reported in 2017 and more than 1,800 in 2016, compared to about 1,100 in 2015 and just 238 in 2014, according to FAA's UAS event data. However, FAA still lacks a cohesive system for tracking and analyzing UAS sightings and incidents, which is an essential element of a risk-based oversight system. This limits the Agency's ability to identify, analyze, and mitigate safety risks.

A recently released report from FAA's Center of Excellence for UAS Research on the potential impact of UAS collisions further highlights the importance of mitigating these risks.¹² Specifically, the research shows that small UAS can cause greater structural damage to manned aircraft, including wings and engine fan blades, than bird strikes. The Center plans to conduct additional research on engine ingestion of UAS in collaboration with engine manufacturers, as well as additional studies on airborne collisions with helicopters and general aviation aircraft. These research projects began last year and will run through fiscal year 2021.

Another UAS oversight challenge for FAA is to identify and locate UAS operators, if the Agency needs to contact them or take enforcement action after an incident or violation. FAA established an aviation rulemaking committee, which recently gave the Agency recommendations and options for remotely identifying and tracking UAS owners and operators, as directed by Congress in the FAA Extension, Safety, and Security Act of 2016.¹³ Based on the act's requirements, FAA is also in the process of developing a pilot program to manage UAS in low-altitude airspace (i.e., at or below 400 feet). These efforts could help FAA respond to the challenge of identifying and managing small UAS operations in the NAS.

Finally, prosecuting UAS owners who violate FAA regulations or engage in illegal flight activities has been challenging. Since 2016, our Office of Investigations has opened 23 cases involving illegal operation of UAS. However, 10 of these cases were closed in the preliminary complaint phase, and 9 were declined for prosecution for various reasons, such as the inability to prove criminal intent and a lack of prior prosecutions. Ultimately, further attention is needed to ensure FAA has strong oversight and enforcement mechanisms in place so it can effectively identify violations and mitigate the safety risks associated with increased UAS operations.

¹² *The sUAS Air-to-Air Collision Severity Evaluation Final Report*, Alliance for System Safety of UAS through Research Excellence (ASSURE), November 2017.

¹³ Pub. L. No. 114-190 (2016).

Conclusion

FAA has taken important steps to meet its primary mission of ensuring aviation safety and is committed to carrying out a number of our recent recommendations to enhance its safety oversight. However, as the aviation industry continues to evolve, FAA must ensure it can quickly adapt to new oversight challenges, while also addressing longstanding safety concerns. Increased management attention and a strong commitment to risk-based oversight will be vital to ensure FAA continues to maintain one of the safest aviation systems in the world. We remain committed to supporting FAA's efforts through our audits and investigations to ensure the safety of the NAS, and we will continue to update you on our work on these and related matters.

This concludes my prepared statement. I would be happy to address any questions from you or Members of the Subcommittee at this time.

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