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Subcommittee on Aviation
United States House of Representatives**

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FAA Can Improve the Effectiveness and Efficiency of Its Certification Processes

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Mr. Chairman and Members of the Subcommittee:

Thank you for inviting me to testify on the Federal Aviation Administration's (FAA) certification process. FAA is responsible for ensuring an efficient, effective, and safe process for certifying numerous aviation products. However, two FAA and industry studies mandated by the FAA Modernization and Reform Act of 2012 identified a number of opportunities for improving the Agency's process for certifying and approving aircraft and consistently interpreting regulations. Our previous and ongoing work has highlighted additional management challenges related to FAA's certification processes, including its ability to certify the new technologies and equipment needed to fully implement the Next Generation Air Transportation System (NextGen).

Today, I will discuss FAA's certification processes specifically as they relate to: (1) overseeing organizations with designated aircraft certification authority; (2) certifying new air operators and repair stations; and (3) certifying NextGen capabilities and Unmanned Aircraft Systems (UAS).

IN SUMMARY

Management and oversight weaknesses have hindered the effectiveness and efficiency of FAA's certification processes. First, because FAA's resources are limited, FAA relies on designees and delegated authorities to certify aircraft or components on the Agency's behalf through its Organization Designation Authorization (ODA) program. However, our previous work has identified vulnerabilities with FAA's oversight of this program, which increased the risk that individuals without proper training or qualifications or with known performance problems could approve critical aircraft components. FAA is continuing its efforts to resolve these vulnerabilities. Second, issues with FAA's approval process, resource management, and communication from Headquarters have led to a backlog of more than 1,000 aircraft operators and repair stations awaiting certification. Finally, these weaknesses will be further exacerbated by the growing demand for certifying NextGen technology and procedures, and the need to establish certification standards to safely integrate UAS into the National Airspace System (NAS).

BACKGROUND

FAA's certification process is an integral quality control method to ensure the safety, reliability, and efficiency of the NAS. FAA carries out its certification activities primarily through two lines of business:

- FAA's Aircraft Certification Service issues approvals to designers and manufacturers of aircraft and aircraft components, including equipment required for NextGen. In addition, the Aircraft Certification Service is also responsible for oversight of designees and delegated organizations that perform certification activities on FAA's behalf.

- FAA’s Flight Standards Service issues certificates and approvals for individuals and entities to operate in the NAS, including commercial air carriers, repair stations, pilot schools, and training centers.

While FAA’s certification processes have been a key factor in achieving the remarkable safety record of the NAS, industry stakeholders and Members of Congress have noted inconsistencies in the application of these processes that have led to inefficiency and increased costs. As a result, Congress included several mandates in the FAA Modernization and Reform Act of 2012 addressing FAA’s certification processes.

In Section 312 of the Act, Congress directed the FAA Administrator, in consultation with industry representatives, to conduct an assessment of its certification and approval processes. The Act further directed the Administrator to make recommendations to improve efficiency and reduce costs through streamlining and reengineering the certification process and to consider methods for enhancing the effective use of delegation systems, including ODA. FAA formed an Aviation Rulemaking Committee (ARC), which explored these issues and made six recommendations in May 2012 aimed at improving efficiency and expanding the use of delegation. In July 2013, FAA issued an implementation plan detailing its planned actions in response to the ARC’s recommendations.

In Section 313 of the Act, Congress further required that FAA establish an ARC for the development of recommendations to improve the consistency of regulatory interpretation across FAA. In July 2013, the ARC issued a report making six recommendations to improve consistency in regulatory interpretation. According to the 2013 report, FAA is developing a detailed implementation plan.

EFFECTIVE OVERSIGHT OF ORGANIZATIONS WITH DESIGNATED AUTHORITY IS ESSENTIAL IN THE AIRCRAFT CERTIFICATION PROCESS

Recognizing that it is not possible for FAA employees to personally oversee every facet of aviation, public law allows FAA to delegate certain functions, such as approving new aircraft designs, to private individuals or organizations. In 2005, FAA established the ODA program, through which FAA now delegates to aircraft manufacturers and other organizations the responsibility for selecting individuals to perform certification work on FAA’s behalf. However, with less FAA involvement in the selection process, there is the risk that an ODA company could appoint certification responsibilities to individuals whose qualifications are inadequate or who have a history of poor performance. Therefore, effective oversight is critical to ensure that all ODA organizations are following FAA’s established policies and procedures for aircraft certification.

In 2011, we identified weaknesses with FAA’s oversight and enforcement of its ODA program, including inconsistencies in how FAA aircraft certification offices interpreted

FAA’s role and in how manufacturers selected personnel to perform certification tasks.¹ For example, only three of the five FAA offices we visited were consistently pre-screening the performance histories of proposed certification personnel. In addition, although FAA has the authority to remove personnel based on performance issues, we found that FAA engineers sometimes experienced pushback from ODA companies when they tried to take corrective action against ODA personnel, which led to individuals with performance problems continuing to perform important certification work. In one instance, the ODA company resisted attempts to remove an individual for nearly a year before reassigning the individual in question. Furthermore, FAA did not provide adequate training to its staff on how to enforce its ODA policies and procedures, including how to cite non-compliant ODA companies with regulatory violations and levy civil penalties.

Since our 2011 report, FAA has taken steps to improve its aircraft certification process and ODA program oversight. For example, in response to our ODA report recommendations, FAA issued new guidance requiring a full 2-year transition for personnel appointments,² established procedures for removing ODA personnel in May 2013, and began tracking personnel with performance problems in a database. Table 1 describes FAA actions taken in response to our recommendations in greater detail.

Table 1. FAA Actions To Address OIG Recommendations To Improve ODA

OIG Recommendation/FAA Action	Status
Require full 2-year transition for unit member self selection.	FAA issued updated guidance in May 2013.
Develop better guidance on timely removal of ODA certification personnel with performance issues.	FAA issued updated guidance in May 2013.
Track certification personnel with identified performance issues in an FAA database.	FAA implemented new policies that met the intent of our recommendation in May 2013.
Develop training and guidance pertinent to the unique requirements of the certification engineering discipline.	FAA developed new training and guidance, which was completed in January 2013.
Improve the new oversight structure for large ODA holders by developing training for engineers, disseminating procedures, and assessing the new structure’s effectiveness before implementing it at other large ODA holders.	FAA completed training in January 2012, will disseminate additional procedures in the next update to its ODA policies, and completed an assessment of the new oversight structure. The Agency will issue a report on the results soon.

Source: OIG.

In addition, in 2012, FAA established an ARC to review the aircraft certification process. In a May 2012 report,³ the ARC made six recommendations to improve the efficiency of aircraft certification, including the enhanced use of delegation through a 23-point ODA

¹ *FAA Needs To Strengthen Its Risk Assessment and Oversight Approach for Organization Designation Authorization and Risk-Based Resource Targeting Programs* (OIG Report No. AV-2011-136), June 29, 2011. OIG reports are available on our Web site at <http://www.oig.dot.gov>.

² FAA’s initial ODA policy called for a 2-year transition period before the ODA holder could self-select personnel. However, it also permitted FAA to allow an ODA holder to proceed with self-selection sooner if the company demonstrated a capability to do so. Our audit identified the need for a full 2-year transition.

³ Aircraft Certification Process Review and Reform Aviation Rulemaking Committee, May 22, 2012.

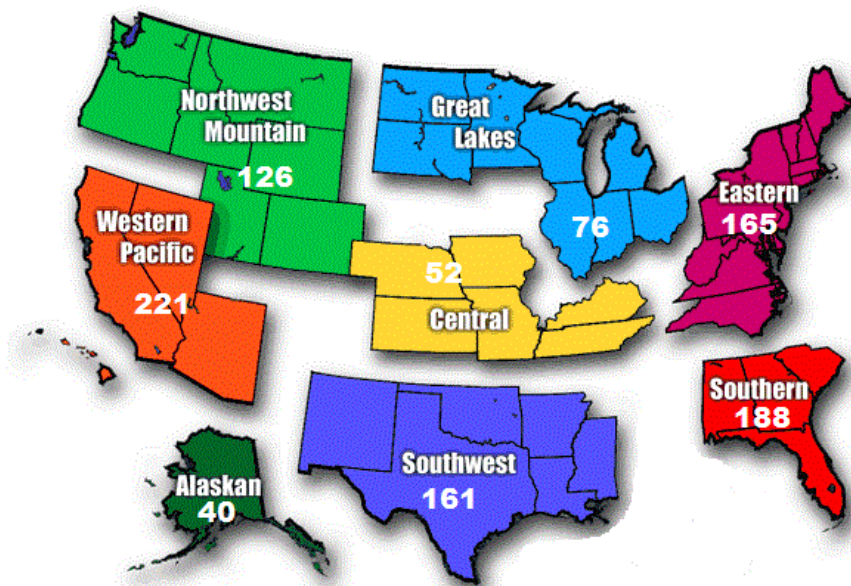
action plan. The action plan calls for joint industry and FAA efforts to improve the effectiveness of the ODA program, including better processes for pre-screening ODA company certification personnel and training improvements. FAA has begun taking action on the plan, and FAA as well as industry representatives expect to assess the effectiveness of changes implemented by July 2014.

Given the expected continued growth of the aviation industry, effectively using ODA will be key to managing FAA’s resources and meeting the industry’s certification needs. However, it remains critical that adequate oversight controls are in place to ensure that qualified individuals are properly certifying critical aircraft components. Accordingly, we plan to begin a follow-up review early next year to assess the status of the ODA program (including the roles of government and industry) and the effectiveness of program controls and FAA oversight.

INEFFECTIVE FAA PROCESSES HAVE DELAYED NEW OPERATOR AND REPAIR STATION CERTIFICATIONS

FAA’s certification process for new air operators and repair stations has led to significant delays in approving applicants. Across the country there are currently 1,029 new air operator and repair station applicants awaiting FAA certification.⁴ Of these 1,029 applicants, 415 are for repair stations and 358 are for Part 135 air carrier⁵ certification. This backlog spans all eight FAA regions (see figure 1).

Figure 1. Applicants Awaiting Certification in FAA Regions



Source: OIG analysis of FAA data.

⁴ According to FAA’s Certification Services Oversight Process database.

⁵ Part 135 air carriers operate smaller aircraft that are configured for 30 passengers or less or under 7,500 pounds of payload; most fly on-demand (i.e., at the request of their customers).

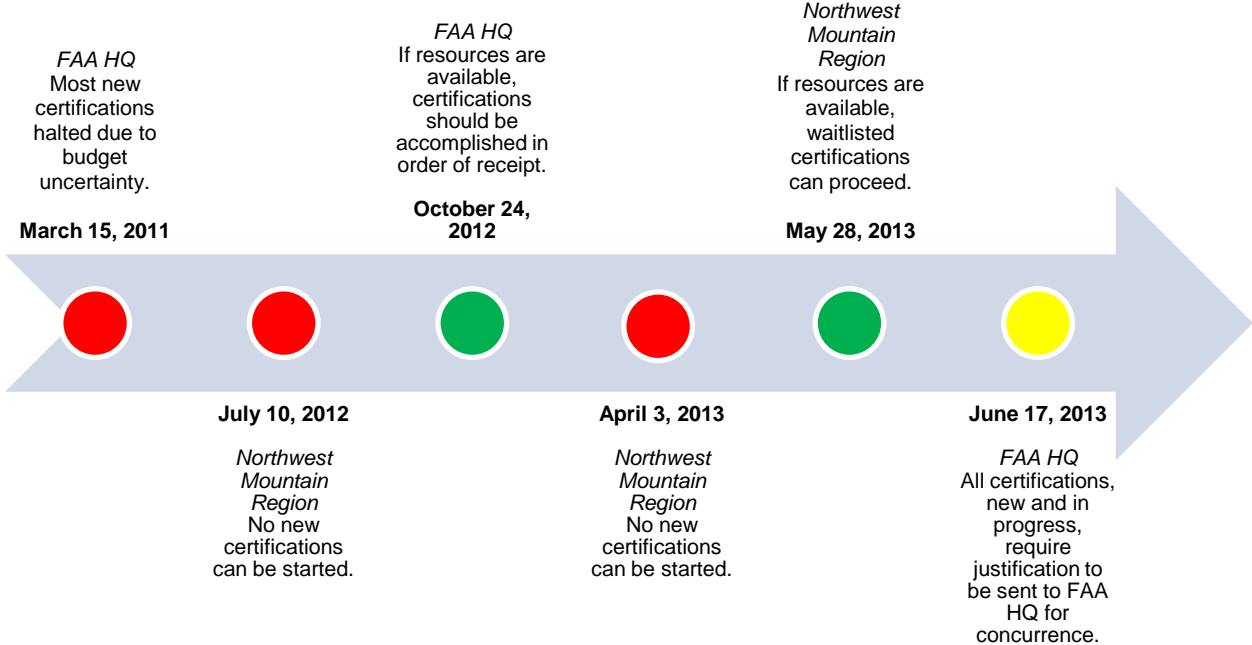
Of those awaiting certification, 138 applicants have been delayed for more than 3 years, with one applicant waiting since August 2006. These delays demonstrate the need for an effective and efficient certification process that ensures safe operations while supporting economic growth. We have identified a number of factors that have likely contributed to FAA's backlog.

First, FAA's certification process itself has led to delays. FAA lacks an effective method to prioritize new certifications for air operators and repair stations. Instead, the Agency uses a first come-first served approach to certifications. As a result, many applicants may be significantly delayed if more complex certifications are ahead of them. For example, a large Part 135 carrier applicant that requires extensive inspector staff time and effort due to the size and complexity of the operation could delay all new certifications. FAA guidance provides flexibility for field offices to "pass over" more complicated applicants in the process when specific resources are not available to perform those types of certifications. While this flexibility would allow less complicated certifications to move quickly through the backlog, this process is seldom used. FAA is currently working on refining the guidance to streamline certifications.

Second, FAA lacks a standardized process for initiating new certifications. FAA has not provided a reliable and objective method or guidance to its offices for determining when resources are available to initiate new certifications. When FAA receives new applications, an evaluation of available inspector staff should be performed to determine whether the certification can proceed. If resources are not available, FAA can determine whether to wait-list the applicant or transfer the certification to a different field office with more work capacity. Field offices are required to communicate with applicants every 90 days regarding their status; however, once applicants are placed on a waiting list there is no requirement for FAA to later re-evaluate available inspector resources to determine when certification for the backlog applicant can begin.

Finally, over the last 3 years, poor communication regarding FAA certification policy has resulted in workflow interruptions and diminished incentive for inspectors to expedite new certification applicants. While FAA states it has never formally suspended all certification work, figure 2 below shows a variety of frequently changing guidance and inconsistent communications between Headquarters and the field regarding when to perform and when to halt certifications. For example, in March 2011, FAA halted most new certification activity. In addition, a large FAA regional division stopped new certifications twice over a 1-year period. Also, as recent as June 2013, FAA stated that Headquarters must approve any new certification work at field offices. According to FAA representatives at both the regional and district office levels, these cessations in certifications were due in part to ongoing budget issues and sequestration, coupled with the need to maintain safety oversight of existing operators.

Figure 2. FAA Communications Regarding New Certifications



Source: Information obtained from FAA inspectors.

As a result of these certification issues, new operators and repair stations face barriers to entering the aviation industry. While FAA recognizes that improvements are needed to streamline the process, regional divisions and field offices should use the flexibilities currently available to reduce the certification delays. We are currently performing a review of this issue and expect to report the results early next year.

CERTIFYING NEXTGEN CAPABILITIES AND INTEGRATING UNMANNED AIRCRAFT SYSTEMS IN THE NAS WILL FURTHER EXACERBATE FAA’S MANAGEMENT AND OVERSIGHT WEAKNESSES

FAA’s weaknesses in its certification process will be further exacerbated by the need to certify the equipment, systems, and procedures necessary to fully implement NextGen, as well as its need to establish certification standards for unmanned aircraft. These efforts will significantly increase FAA’s certification workload, and certification delays could delay both NextGen benefits and FAA’s goals to safely integrate UAS into the NAS.

Certification Is Key to Achieving NextGen Benefits

As we have noted in past reports and testimonies, FAA’s ability to certify complex systems and new technologies is a critical factor in the successful implementation of NextGen and providing benefits to airspace users. As NextGen progresses, airspace users will need to purchase and install new avionics to obtain benefits, which will add to FAA’s already extensive certification and approval workload.

In particular, certification plays a large role in the success of FAA's Automatic Dependent Surveillance-Broadcast (ADS-B) program, a new satellite-based system that will rely on new avionics to communicate flight information to pilots and air traffic controllers. In 2010, FAA issued a rule mandating that all airspace users equip with *ADS-B Out*⁶ technology by 2020⁷ at an estimated cost to users of over \$4 billion dollars. However, when FAA published its final rule, the Agency had not yet certified avionics that could meet the rule's requirements. According to FAA, the Agency has now certified some rule-compliant avionics, and avionics manufacturers have indicated that additional approvals are expected between now and 2015. However, any certification delays could impact users' ability to equip with the avionics and could delay benefits. Moreover, the most significant benefits from ADS-B rely on *ADS-B In*⁸ advanced applications, which have yet to be implemented and will require certification as well. It remains unknown when FAA will be able to develop these applications and how long the certification process will take.

ADS-B will further contribute to FAA's certification workload because FAA must also certify the new procedures that allow pilots and controllers to use the new technology. While FAA has approved ADS-B procedures for the Gulf of Mexico and at some limited locations, it is uncertain when ADS-B procedures can be developed and certified for using ADS-B exclusively and to allow aircraft to fly closer together in congested airspace.

FAA Lacks Certification Standards for Unmanned Aircraft

FAA's goals to integrate unmanned aircraft into the NAS will also increase the Agency's certification challenges. Currently, FAA's congressionally mandated goal is to safely integrate UAS into U.S. airspace by 2015.⁹ However, any UAS operating in the NAS must first be certified, and FAA has not yet developed design certification standards for civil UAS. As a result, FAA's progress in integrating unmanned aircraft has been delayed.

To begin addressing this concern, FAA established "Pathfinder" projects to aid in the certification of civil UAS for operations in the NAS. Under these projects, FAA certificated the first two aircraft in July 2013—an important first step in certifying and integrating UAS. However, the Pathfinder projects rely on an existing certification rule aimed at repurposing surplus military aircraft for civilian use. As a result, they do not apply to new and novel types of UAS or provide new UAS manufacturers with needed guidance on design requirements. Moreover, the first two aircraft are restricted to operations only in the Arctic area. However, FAA officials told us they are working on evaluating the lessons learned from this process to develop standards for widespread use.

⁶ *ADS-B Out* allows aircraft to broadcast more accurate flight position information data to controllers on the ground.

⁷ Automatic Dependence Surveillance--Broadcast (ADS-B) Out Performance Requirements To Support Air Traffic Control (ATC) Services; Final Rule, "75 Federal Register 30160-30195 (May 28, 2010) (amending 14 C.F.R. Part 91).

⁸ *ADS-B In* allows for display of flight information in the cockpit, such as allowing pilots to "see" other aircraft.

⁹ Pub.L. 112-095 (2012).

As FAA progresses in its efforts to integrate UAS, the Agency's certification workload will continue to grow. For example, in addition to certification standards for civil UAS, FAA has not yet established regulatory requirements or standards for a wide range of related issues, including UAS pilot and crew¹⁰ qualifications, ground control stations, airspace procedures, and command and control reliability. These aspects will all require detailed certification efforts before they can be implemented. Until FAA has developed and certified a regulatory framework and related procedures, UAS will continue to operate with significant limitations in the NAS due to safety concerns. At the request of the Chairmen and Ranking Members of this Committee and the House Committee on Transportation and Infrastructure, as well as their Aviation Subcommittees, we are currently assessing FAA's progress on integrating UAS into the NAS. We expect to issue a report early next year.

CONCLUSION

FAA's certification responsibilities are at the heart of its mission to ensure the safety of and efficiency of aviation products and operations, as well as its NextGen modernization goals. Moreover, the aviation industry—a vital component of the U.S. economy—depends on an efficient and fair certification process to advance new technologies in the marketplace. While FAA has taken steps to improve its processes, there is greater industry activity than FAA can support, and new demands for NextGen and UAS will further tax FAA's ability to address its certification challenges. To both meet its goals and support our Nation's economic growth, FAA must continue to seek solutions for enhancing the management and oversight of its certification processes Agency-wide.

¹⁰ Crew, in addition to the pilot, can include ground-based individuals who assist the Pilot in Command (PIC) with determining UAS proximity to other aviation activities and assist the PIC with operating within the visual line of sight limit.