



**Committee on Transportation and Infrastructure
U.S. House of Representatives**

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July 18, 2014

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SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Aviation
FROM: Staff, Subcommittee on Aviation
RE: Subcommittee Hearing on “Domestic Aviation Manufacturing: Challenges and Opportunities”

PURPOSE

The Subcommittee on Aviation will meet on Wednesday, July 23, 2014, at 10:00 a.m. in 2167 Rayburn House Office Building to review the state of American aviation manufacturing. The Subcommittee will hear about the economic health of American aviation manufacturing and challenges the industry is facing. The Subcommittee will receive testimony from representatives of the Federal Aviation Administration (FAA), Government Accountability Office (GAO), General Aviation Manufacturers Association (GAMA), Aerospace Industries Association (AIA), Hartzell Propellers Inc., and the Air Washington project.

BACKGROUND

Manufacturing

The American aviation industry is comprised of different sectors, including commercial aviation, general aviation, unmanned aircraft, airports, and manufacturing. Each sector plays an important role in the United States economy, creating millions of jobs and contributing billions of dollars annually. For instance, in 2012, aviation generated roughly five percent of the nation’s gross domestic product, contributed \$1.2 trillion dollars in economic activity and supported 11.8 million jobs.¹ In addition, the United States is the home of several major aviation manufacturers. For example, the Boeing Company is one of only two major global manufacturers of wide-body

¹ Federal Aviation Administration. “The Economic Impact of Civil Aviation on the U.S. Economy.” June 2014. Pg.1.

aircraft. Furthermore, half of world's major general aviation manufacturers for business jets - Cessna, Hawker Beechcraft, and Gulfstream Aerospace - are based in the United States.²

After a severe economic downturn, economic indicators reflect that American aviation manufacturing is on the road to recovery. In 2012, civil aircraft manufacturing's total output was roughly \$132 billion and general aviation manufacturing's total output was over \$27 billion.³ Additionally, in 2013 the high demand for civil transport aircraft resulted in an order backlog of 4,787 aircraft worth \$344 billion.⁴

Despite signs of economic recovery, American aviation manufacturing faces a number of challenges in an increasingly competitive global market. These challenges include those associated with FAA's efforts to streamline the certification process and reduce regulatory inconsistencies, as well as foreign competition and foreign approval of domestic certification. Pursuant to mandates enacted in 2012, the FAA is working with industry to find ways to streamline and improve the certification process and address certification delays and costs due to inconsistent interpretations of regulations.⁵ Another challenge aviation manufacturing encounters is in the education, recruitment and training of the aerospace workforce. Finally, the FAA faces challenges with its own workforce as certification approval workload is increasing- due to increased new technologies associated with NextGen.⁶ These are just a few examples of the challenges, some which fall outside of this Committee's jurisdiction, that manufacturers face as they work to bring innovative products to market.

Certification

Aircraft Certification Service

The FAA is responsible for issuing type and manufacturing certificates for aircraft, aircraft engines and propellers, as well as aircraft components. The FAA has developed a set of safety standards that must comply with to ensure the safety of the design and production of an aircraft and aircraft components.⁷ In exercising its discretion, the FAA has devised a system of compliance review that involves the certification of the design and manufacture of aircraft and aircraft components. Under this process, the duty to ensure that aircraft and aircraft components conform to FAA safety regulations lies with the manufacturer and operator, while the FAA retains responsibility for overseeing compliance. The manufacturer is required to (1) develop the plans and specifications and (2) perform the inspections and tests necessary to establish that an

² The other major business jet general aviation manufacturers are Bombardier (Canada), Embraer (Brazil) and Dassault (France). United States International Trade Commission. "Business Jet Aircraft Industry: Structure and Factors Affecting Competitiveness." April 2012.

http://www.usitc.gov/press_room/news_release/2012/er0530kk2.htm

³ Federal Aviation Administration. "The Economic Impact of Civil Aviation on the U.S. Economy." June 2014. Pg. 17.

⁴ Aerospace Industries Association, "2013 Annual Report." http://www.aia-aerospace.org/assets/2013_AIA_Annual_report_webversion.pdf pg.2.

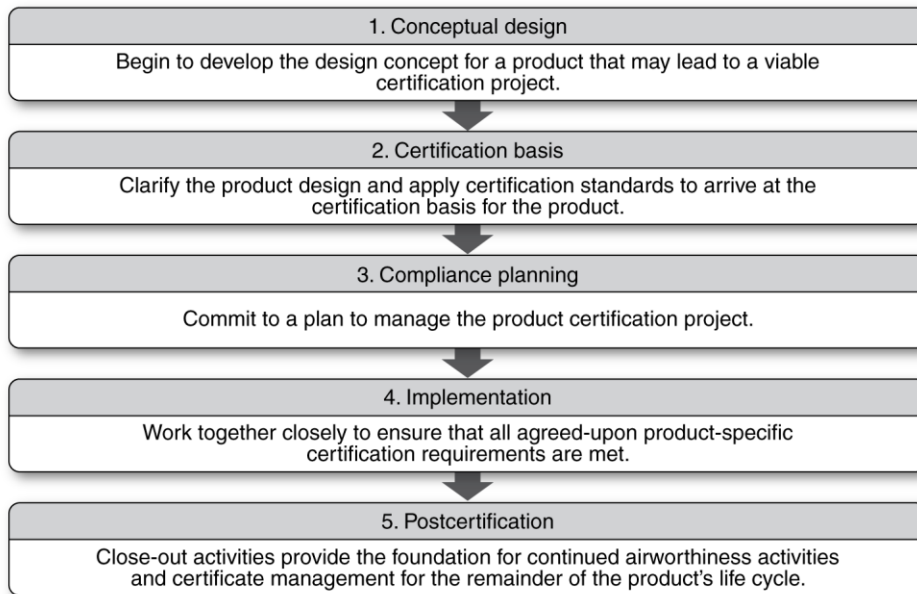
⁵ Sections 312 and 313 of the *FAA Modernization and Reform Act of 2012*. (P.L. 112-95.)

⁶ U.S. Government Accountability Office testimony before House Subcommittee on Aviation, October 30, 2013. "Status of Recommendations to Improve FAA's Certification and Approval Processes." pg. 12

⁷ 14 C.F.R Parts 21, 23 and 25.

aircraft design comports with the regulations. The FAA then reviews the data and conducts a risk-based review of the manufacturer’s work. If the FAA finds that a proposed new type of aircraft and aircraft component comports with minimum safety standards, it signifies its approval by issuing a type certificate. Aircraft components can also be approved by the FAA through a supplemental type certificate, which has a similar process for approval as a type certificate. Figure 1 provides a basic overview of key FAA aircraft certification processes.

Figure 1: Key Phases in Aircraft Certification’s Process for Approving Aviation Products



Source: FAA.

Organization Designation Authorization

In order to ensure that all parts meet quality standards, the FAA also has the ability to issue a company an Organization Designation Authorization (ODA). The ODA allows a company to set up an organization of airworthiness representatives (AR) who act on behalf of the FAA with respect to certain FAA certification actions. The FAA, in conjunction with the approved ODA, develops a manual which specifies the procedures, processes, and practices to be used. The ARs are authorized by the FAA and carryout routine certification actions. The FAA inspectors have the authority to perform any of these activities themselves should they wish to, or they can delegate the responsibility to the AR. An AR is approved by the FAA after going through a review process and is responsible for ensuring the manufacturers’ compliance with FAA standards. The FAA has multiple processes that must be met to ensure that a new aircraft meets the standards of aircraft design and manufacturing. Ultimately, the FAA remains responsible for safety oversight.

FAA Modernization and Reform Act of 2012

The *FAA Modernization and Reform Act of 2012* (P.L. 112-95) (*Reform Act*) contains two key provisions (sections 312 and 313) which seek to streamline and improve the FAA's certification process. Section 312 requires the FAA to conduct a review of certification approval processes and develop recommendations to improve efficiency and reduce costs through the streamlining and reengineering of the certification process. After developing the recommendations, the Administrator is directed to submit a report to Congress containing the results of the assessment and an explanation of how the FAA will implement the report recommendations. The *Reform Act* required the implementation of these recommendations to begin by February 2013. In April 2012, the FAA chartered the Aircraft Certification Process Review and Reform Aviation Rulemaking Committee (ARC) to perform the review and assessment and to make recommendations. The ARC submitted a report with recommendations to the FAA on May 22, 2012.⁸ The FAA developed an implementation plan to address the six recommendations contained in the report that was developed in consultation with industry.⁹ The FAA will be updating the Section 312 implementation plan this summer outlining the status of their efforts to implement the ARC recommendations.

The FAA's Aircraft Certification Service is responsible for certifying design and production of aircraft and aircraft components, while the Flight Standards Service is responsible for issuing certificates and approvals for airmen, air operators, air agencies, commercial air carriers, repair stations, designees, pilot schools and training facilities. Manufacturers have raised concerns in some cases over what they describe as inconsistent application of standards and requirements by various units of the Aircraft Certification Service and Flight Standards Services. In response to these concerns, Congress included Section 313 in the *Reform Act*. Section 313 requires the Administrator to establish an advisory panel of government and industry representatives to review the GAO's October 2010 report on certification and approval processes and develop recommendations to address GAO's findings and other concerns raised by interested parties.¹⁰ In its 2010 report, the GAO found as it relates to inconsistencies in regulatory interpretation that "variation in FAA's interpretation of standards for certification and approval decisions was a long-standing issue within the FAA."¹¹ Section 313 further directs the advisory panel to develop plans to increase consistency of interpretation of regulations by Flight Standards Service and Aircraft Certification Service. In April 2012, the FAA established the Consistency of Regulatory Interpretation Aviation Rulemaking Committee (CRI ARC). On July

⁸ "A Report from the Aircraft Certification Process Review and Reform Aviation Rulemaking Committee to the Federal Aviation Administration: Recommendation on the Assessment of the Certification Approval Process", May 22, 2012.

⁹ United States Department of Transportation, Federal Aviation Administration "Detailed Implementation Plan for the Federal Aviation Administration Modernization and Reform Act of 2012, Public Law no. 112-95, Section 312". July 31, 2013.
http://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/ACPRR.ARC.Implementation%20Plan.20130731.pdf

¹⁰ U.S. Government Accountability Office "GAO-11-14, Aviation Safety: Certification and Approval Processes Are Generally Viewed as Working Well, but Better Evaluative Information Needed to Improve Efficiency." October 2010.

¹¹ U.S. Government Accountability Office testimony before House Subcommittee on Aviation, October 30, 2013. "Status of Recommendations to Improve FAA's Certification and Approval Processes." pg. 1.

19, 2013, the FAA submitted the CRI ARC's November 28, 2012 report¹² to Congress.¹³ The FAA planned to submit an Action Plan on implementation of these measures by the end of September 2013; however, the plan is still in progress.

International Certification

The FAA requires that all aircraft, aircraft components, and aviation systems that are manufactured or operated within the United States are certified to have met specific safety and operational standards. When a person or company seeks to operate or manufacture aircraft, aircraft components and aviation systems that have been certified by a foreign aviation authority in the United States, the FAA will work to validate that the product's foreign certification is sufficient to meet FAA standards. When a foreign aviation authority has already completed an extensive certification process, the FAA does not always need to go through its own full and duplicative certification process (the same can be said for foreign aviation authorities duplicating the FAA's certification process for an FAA certificated product). The FAA's validation of foreign- certified products is dependent upon its confidence in the foreign aviation authority's certification processes.¹⁴ When the FAA accepts the certification of products from another country, it is often dependent upon a bilateral agreement between the United States and the exporting country. These bilateral agreements are concluded after the FAA has determined that the partner civil aviation authority is competent to make technical decisions about its aircraft's compliance with FAA requirements.¹⁵ Bilateral agreements are also utilized when an American manufacturer wishes to produce or operate their products in a foreign country. In that case, the FAA will work with the foreign aviation authority to explain its certification of the product. The FAA works with the aviation authority of the foreign country involved on a case by case basis to ensure that appropriate design and manufacturing standards are in place, and the proper oversight is exercised. Manufacturers have reported that they can run into costly challenges should the validation process, either here in the United States or in the foreign country, be unnecessarily delayed.

Education and Training

The development and manufacturing of aircraft and aircraft components depends upon a workforce of innovative, educated, properly trained and dedicated individuals. In 2010, a report issued by the "Future of Aviation Advisory Committee" (FAAC) led by the Department of Transportation (DOT) recognized the important role that a well-trained and educated workforce plays in aviation manufacturing. The FAAC report provided 23 recommendations on ways to keep the aviation industry healthy and innovative. One key recommendation that the FAAC

¹² "A Report from the Consistency of Regulatory Interpretation Aviation Rulemaking Committee to the Federal Aviation Administration: Recommendation on Improving Consistency of Regulatory Interpretation", November 28, 2012.

¹³ United States Department of Transportation, Federal Aviation Administration "Report to Congress: Consistency of Regulatory Interpretation, FAA Modernization and *Reform Act* of 2012 (P.L. 112-95)- Section 313." July 19, 2013.

¹⁴ Federal Aviation Administration. "Fact Sheet: How the FAA Certifies Foreign Aircraft."

¹⁵ ["http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=6266"](http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=6266)

¹⁵ Id.

issued to the DOT focused on the importance of STEM education programs¹⁶ in order to meet the future needs of the aviation industry.¹⁷ The recommendation in the report builds upon current DOT efforts to recruit and train the future aerospace workforce.

Unmanned Aircraft Systems

The Department of Transportation’s Inspector General (IG) reported that FAA may face increased certification challenges associated with the Agency’s mandate to integrate UAS into the national airspace because any UAS that will operate in the United States will first need to be certified by the FAA.¹⁸ The Aerospace Industries Association anticipates that the growth of unmanned aircraft systems (UAS) will continue with spending to nearly double and the industry to generate roughly \$89 billion over the next decade.¹⁹ UAS have a number of promising commercial and civil uses, including mapping, agriculture, law enforcement and search and rescue. In the *Reform Act* Congress also recognized the growing demand for and forecasted use of UAS within the national airspace. The *Reform Act* contains provisions that direct the FAA to develop plans, regulations and pilot programs to enable the safe integration of UAS into the national airspace system. The *Reform Act* requires the FAA develop a roadmap for the integration of UAS in the national airspace system which would include regulatory standards, policies, and certification and operational procedures required to address full UAS integration into the national airspace system. The *Reform Act* also directs the FAA to issue special rules for small UAS. In the IG’s recent report on FAA’s progress with implementing the congressional mandates for UAS contained in the *Reform Act*, the IG found that while FAA has made some progress, it is significantly behind schedule in meeting most of the mandates in the law.²⁰

WITNESS LIST

PANEL I

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¹⁶ STEM (Science, Technology, Engineering and Mathematics) is a larger government wide initiative to foster the education of individuals in the fields of science, technology, engineering and mathematics.

¹⁷ United States Department of Transportation. “The Future of Aviation Advisory Committee.” 2010. Pg. 45-48

¹⁸ Office of Inspector General, Department of Transportation, Testimony before the House Subcommittee on Aviation, “FAA Can Improve the Effectiveness and Efficiency of Its Certification Process,” CC-2014-003, (October 30, 2013)pg. 7.

¹⁹ Aerospace Industries Association. “2013 Year-End Review and Forecast.” Pg. 2.

²⁰ Department of Transportation Inspector General, AV-2014-061, June 26, 2014. “FAA Faces Significant Barriers to Safely Integrate Unmanned Aircraft Systems into the National Airspace System.”

PANEL II

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