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DOMESTIC AVIATION MANUFACTURING: CHALLENGES AND OPPORTUNITIES

(113–77)

HEARING

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

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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

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[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.

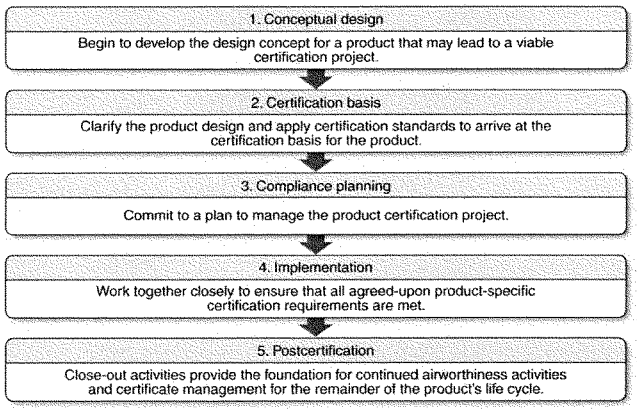
[5] Sections 312 and 313 of the *FAA Modernization and Reform Act of 2012*. (P.L. 112-95.)

[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' 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

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[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 report[12] 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

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[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." "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 programs[16] 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

Ms. Peggy Gilligan
Associate Administrator for Aviation Safety
Federal Aviation Administration

Dr. Gerald Dillingham
Director of Civil Aviation Issues
Government Accountability Office

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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."

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PANEL II

Ms. Marion Blakey
President and CEO
Aerospace Industries Association

Mr. Pete Bunce
President and CEO
General Aviation Manufacturers Association

Mr. Joseph W. Brown
President
Hartzell Propeller Inc.

Mr. Dave Cox
Lead Administrator
Air Washington Project

DOMESTIC AVIATION MANUFACTURING: CHALLENGES AND OPPORTUNITIES

WEDNESDAY, JULY 23, 2014

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON AVIATION,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:01 a.m. in Room 2167, Rayburn House Office Building, Hon. Frank A. LoBiondo (Chairman of the subcommittee) presiding.

Mr. LOBIONDO. Good morning. The subcommittee will come to order. I would like to thank you all for being here.

Before my statement, I would like—Ms. Gilligan, I would like you to think about possibly making some comments to us. We are all very concerned about the—some of the situations around the world, and the decisions that the FAA made, especially in respect to suspending for 24 hours the flights into Israel, and if you could give us a little bit of an update after my statement and Mr. Larsen's statement, about how the FAA is looking at this, and what we may see in the future, and how you come to make a decision like that.

So, again, I thank everyone for being here.

The American aviation manufacturing is a critical sector of our Nation's economy, contributing billions of dollars and supporting millions of jobs annually. We are the world leader in aviation safety, standards, and manufacturing, delivering thousands of aircraft, aircraft components, and systems worldwide every year.

Today this subcommittee will look at the state of domestic aviation manufacturing and some of the challenges that it faces. Since recently encountering a hit during the economic downturn, our aviation manufacturing sector has seen positive growth, and key economic indicators support this. We in Congress want this vital component of the aviation sector to succeed and surpass where it was prior to 2008. However, despite the industry's success, manufacturers continue to face some challenges as they work to bring products to the market.

All aircraft, aircraft components, and aviation systems which operate and are manufactured in the United States must meet specific design and operational certification standards set by the Federal Aviation Administration. The role of the—that the FAA plays is absolutely critical and necessary to ensure our standards continue to be the gold standard, and provide for the safest air system in the world.

As manufacturers design and build to meet these standards they can experience delays in approval, both internationally and domestically. These delays can result in the loss of real dollars and jobs for our aviation manufacturing sector. And we have had some very specific instances that have pointed to that, which concern us a great deal.

The previous FAA reauthorization bill required the FAA to develop and implement plans to address inefficiencies and inconsistencies in the certification process. Currently the FAA, along with industry, is working to implement these plans in a cooperative fashion. We look forward to hearing what progress is being made on this front.

In regard to aviation certification, the FAA is truly the gold standard across the world. As the aviation industry continues to push technological boundaries, it is important that the FAA certification processes also adapt to accommodate for this innovation. Furthermore, as American manufacturers compete in a global market, it is vital that the FAA's leadership is recognized and maintained globally, and we in Congress do all that we can to help ensure that it stays that way, and true.

In addition to an effective and efficient certification process, the manufacturing industry relies upon a dedicated and well-trained aerospace workforce. Today we will hear from a witness who can speak directly to some of the important work that is being done to respond to the need for innovation and skilled aerospace workforce.

In my own district, Atlantic Cape Community College has recognized the need for a well-trained workforce in the growing industry of unmanned aerial systems. Under the leadership of college president Peter Mora, they are currently working to develop a curriculum that will bring the next generation of an already technologically savvy youth into this growing industry.

In addition, I have the privilege of representing the FAA's Tech Center, which is the premier FAA facility in the Nation for research and development, and for safety and security. Through their important research, experts at the Tech Center assist manufacturers as they work to bring innovative products to the market. For instance, CSC and dozens of other companies utilize the expertise of Tech Center employees and laboratories as they develop their innovative technologies.

I am interested in hearing what role the Government can play to promote the aviation manufacturing industry's success. It is key we listen to the input of those in the real world, and what they have to offer to us. Today we are fortunate to have a company who has been part of America's aviation manufacturing industry since the Wright Brothers first took flight, and who can speak to the day in and day out complexities of the industry and the challenges they face.

I look forward to hearing from our witnesses on these topics, and thank them for joining us.

Mr. LOBIONDO. Before I recognize Mr. Larsen, I would like to ask unanimous consent that all Members have 5 legislative days to revise and extend their remarks, and include extraneous material for the record.

[No response.]

Mr. LOBIONDO. Without objection, so ordered. Now I would like to recognize Mr. Larsen.

Mr. LARSEN. Thank you, Mr. Chairman, for calling today's hearing to discuss domestic aviation manufacturing.

U.S. aviation is vital to our economy. Domestic aviation manufacturing, the reason we are here today, is one of the major reasons why the aviation industry in this country is such a powerful economic engine. In 2012, U.S. aviation manufacturing generated a total output of over $150 billion.

This topic, obviously, is close to home for me. In my home State of Washington, about 650 aerospace companies support as many as 209,000 jobs. These companies range from Boeing to the many small businesses that are a critical part of the aviation supply chain. Aerospace is the State's largest exporting sector, accounting for over 40 percent of the State's exports in 2011.

The issues we are exploring today are the ones we have explored before, and I want to thank Chairman LoBiondo for remaining focused on them. Last October we had a subcommittee hearing about FAA's certification process, where we discussed opportunities to make these processes more efficient, and to bring more consistency to FAA's interpretations of regulations. I look forward to an update today about the FAA's progress from that hearing.

The predictable and timely certification of aircraft and aircraft components is critical for domestic manufacturers to get their products to market. We must also ensure FAA does not cut corners so it continues its critical mission of ensuring the highest level of safety. The FAA reauthorization, enacted in 2012, included two provisions directing the agency to conduct an assessment of the aircraft certification and approval process, section 312, and addressing FAA's personnel's inconsistent regulatory interpretation, section 313.

As we continue to conduct our oversight of FAA's implementation, I hope to learn more today about the progress FAA has made in these areas, and where the agency's efforts have stalled. Specifically, I hope to hear about how the labor unions and affected FAA inspectors and engineers have played a part in FAA's efforts, and if they have signed on to the agency's certification reform efforts.

Labor involvement is critical. FAA leadership can say one thing, but the people doing the day-to-day work need to be—need to buy in before moving forward with major changes. We also have to work to be sure that FAA has adequate staffing resources to do the job, and to keep pace with new technology. For example, I understand the workload of FAA's 204 manufacturing inspectors continues to increase, while the size of its inspector workforce does not.

And there is no question that FAA must streamline the process under its Organization Designation Authorization, or ODA program, because of growing workload and limited resources. But we must continue at all times to ensure that certification efforts are subject to thorough and proper oversight, so that the high level of safety the FAA maintains is not compromised.

Another common theme I continue to hear from manufacturers is that our neighbors abroad are unnecessarily delaying their validations of FAA-certified products. We must make sure that other

countries do not question FAA's gold standard, so that our manufacturers remain competitive in an increasingly crowded global market.

More broadly, we must do all we can to avoid disadvantaging U.S. manufacturers, as they compete vigorously with foreign manufacturers. To this end, last year Chairman LoBiondo and I asked GAO to explore the FAA certification process in the U.S., as it compares with those of its counterparts around the world. And I look forward to reviewing that report when it is issued later this year.

Global competitive demands depends on having a high—sorry, a robust pipeline of well-trained and highly skilled workers. A Government industry panel convened in 2010 by then-Secretary of Transportation LaHood recommended several measures to improve the training and development of the Nation's aerospace workforce.

To speak to this issue, I want to extend a special welcome to Dave Cox of the Air Washington project. Dave is on a later panel. The Air Washington project is a unique consortium of community colleges that are working together for the sole purpose of training and educating workers in a wide variety of aviation jobs, such as aircraft maintenance, manufacturing, and assembly. In Washington State we have made investments in the people that will keep our manufacturing base strong. And I look forward to Mr. Cox sharing those lessons with the panel.

So, Mr. Chairman, I want to thank you for holding this hearing. I look forward to hearing from our witnesses.

And, if I may, Mr. Chairman, just ask—perhaps ask unanimous consent—it is a little bit of a surprise—that Ms. Gilligan's comments on the FAA's decision with regards to air travel not be included in her 5 minutes, so she can brief us on that. Yes.

Mr. LOBIONDO. Yes, that was not intended for you to be in your 5 minutes. Good point, Mr. Larsen.

Mr. LARSEN. Thank you.

Mr. LOBIONDO. And we have Ms. Peggy Gilligan, Associate Administrator for Aviation Safety at the Federal Aviation Administration. And if you could, give us some comments on this crisis we are seeing around the world, and then get into your statement after that, please.

Ms. GILLIGAN. Certainly, Mr. Chairman. First, let me just make a small comment on the Ukraine. As you know——

Mr. LOBIONDO. Can you pull your mic a little closer, please?

Ms. GILLIGAN. Sure. As you know, there is an international effort underway to secure the site of the crash of the Malaysian Flight 17. FAA does not have technical experts in Kiev at this time. The National Transportation Safety Board has sent an expert, and we remain ready to support any investigation, once—if necessary, once the site is secured. That airspace over eastern Ukraine continues to be closed to all operators, because the Ukrainians have actually closed that airspace.

As to yesterday's initiative, as you might imagine, this is a very fluid situation. We are in close contact, the FAA is in close contact with the civil aviation authority in Israel. We initiated the action after it was confirmed that there had been a rocket attack that occurred within just beyond a mile from the airport.

Obviously, our mission is to ensure the protection of our operators and the passengers on those operations. And it was determined that it was—and the appropriate action was to close access to Ben Gurion Airport for U.S. operators for a 24-hour period. And we continue to monitor the situation.

The Administrator has been, again, in close contact with his own counterparts, with the State Department, with the U.S. Embassy in Israel. And we will monitor the situation and make a determination before 12:15 this afternoon, which is the 24-hour period, for the original Notice to Airmen concerning the airport.

We have also been in close contact with our operators, the airlines, U.S. airlines that operate into Ben Gurion. There was a United aircraft on the ground after the NOTAM took effect. We did authorize that aircraft to be moved from there. As you know, most of the other aircraft that were in flight diverted and did not continue their flights into Israel. That continues to be the situation at this point.

Mr. LOBIONDO. OK, thank you. Now, if you would, proceed to your statement.

TESTIMONY OF MARGARET M. GILLIGAN, ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY, FEDERAL AVIATION ADMINISTRATION; AND GERALD L. DILLINGHAM, PH.D., DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Ms. GILLIGAN. Thank you again, Mr. Chairman, Congressman Larsen, and members of the subcommittee. Thank you for the opportunity to appear before the subcommittee to discuss the FAA's role in supporting domestic aviation manufacturing. Through our high safety standards, rigorous certification processes, and strong collaboration with industry stakeholders, the FAA operates the most complex and the safest airspace system in the world.

Civil aviation manufacturing is vital to the U.S. economy. Last year, civil aviation supported 11.8 million jobs, accounted for $1.5 trillion in total economic activity, and contributed 5.4 percent to the U.S. GDP. Civil aircraft manufacturing represents a top U.S. net export. Between 2009 and 2012, the growth in new civilian commercial aircraft sales in both domestic and overseas markets averaged 9.2 percent per year, outpacing the overall U.S. economic growth. That underlies the fact that people around the world buy and rely on U.S. aviation products because the FAA sets the gold standard for aircraft design and manufacture.

For more than 50 years, FAA has certified all civil aviation aircraft, aircraft engines, propellers, and parts that operate in the U.S. airspace. FAA has played a key role in the safe operation and growth of the aviation industry. The FAA oversees the life cycle of an aircraft, from design and manufacture to the operation and maintenance of the aircraft, once it enters service. As the aviation industry continues to grow, it is incumbent upon us to improve our processes and make them as efficient and effective as possible, while maintaining the highest safety standards.

The FAA Modernization and Reform Act of 2012 contained a provision, section 312, that required the FAA to work with industry and representatives—with industry representatives, and to develop

recommendations to reform the aircraft certification process. The FAA and industry agreed on six recommendations that we believe will streamline and re-engineer the certification processes. FAA developed an implementation plan that mapped the recommendations to 14 agency initiatives.

Since the original release of the Implementation Plan in January of 2013, we have made progress on all of the initiatives. And to assure transparency on our progress, we post an update on the FAA Web site every 6 months. The next update will be published by the end of this month.

FAA encourages and facilitates the growth of U.S. aviation manufacturers, both domestically and internationally. We continue to authorize expansion of production facilities in the U.S., and ensure that we have sufficient resources to oversee domestic manufacturing.

We have bilateral aviation safety agreements with over 47 countries, including an agreement with the European Union that covers 28 nations in Europe. These agreements allow U.S. manufacturers to export their products and expand their business all around the globe.

The agreements also allow aircraft and components produced in other countries to be imported for use in U.S. products. But products manufactured in other countries must still meet FAA safety standards to operate in the U.S. We ensure the safety of all civil aviation components and aircraft that operate in our airspace, wherever they are produced.

Bilateral agreements also allow foreign manufacturers to establish production facilities in the U.S., which creates additional jobs and stimulates local economies. FAA recently issued a U.S. production certificate to Embraer to establish a manufacturing facility in Florida. Airbus also recently opened a manufacturing facility in Mobile, Alabama, through an extension of its European production approval.

In this era of growing technological sophistication and globalization, we collaborate with our industry partners to more efficiently oversee the certification and production process. We use a risk-based approach to improve aviation safety by focusing our resources on the areas of highest risk.

And to leverage our workforce, we use the designee system, which was established by Congress in 1938, and is critical to the success and effectiveness of the certification process. The designee program plays a critical role in our ability to efficiently certify the wide range of aviation products designed and manufactured in the U.S.

There are currently over 600 engineers in the aircraft certification service, and over 200 inspectors. But we have over 5,000 individual designees, and over 80 organizational designations. Without the designee program, we could not complete the volume of work we have today or in the future. Assuring that we have a robust and successful delegation system is imperative to the continued growth of domestic aviation.

Aviation is a constantly evolving industry, and our certification process must evolve with that industry. We know that we cannot remain static. We continue to work with our industry partners to

foster innovation and economic development so the United States will remain the global leader in aerospace.

Mr. Chairman, that concludes my testimony for today. I look forward to answering any questions.

Mr. LOBIONDO. We thank you very much. Next we are pleased to welcome back Dr. Gerald Dillingham, Director of Physical Infrastructure Issues for the U.S. Government Accountability Office.

Dr. Dillingham, you are recognized.

Dr. DILLINGHAM. Thank you, Mr. Chairman, Ranking Member Larsen, Chairman Shuster, members of the subcommittee.

We have conducted several reviews examining the efficiency of FAA's aircraft certification and approval processes, and industry's concerns about inconsistent regulatory interpretation. FAA has implemented several initiatives to address these longstanding issues, but they do persist.

As the ranking member noted, Congress established requirements in sections 312 and 313 of the 2012 FAA Reauthorization Act to spur additional actions on these items. In response to those requirements, FAA chartered two rulemaking committees: one on the aircraft certification process, and another on the consistency of regulatory interpretation. Both committees produced a series of recommendations to assist FAA in addressing these issues.

My statement today focuses on, one, FAA's progress in implementing the certification process and regulatory consistency recommendations; and, two, the challenges affecting successful implementation, and how they might be addressed.

Regarding the certification process recommendations, FAA has established 14 initiatives to address these recommendations. These initiatives include developing a comprehensive roadmap for major change initiatives; improving the project sequencing process; and updating the aircraft certification regulations. Most of these initiatives are scheduled to be completed within the next 3 years.

However, FAA has established performance metrics for only 5 of the 14 initiatives, and has not developed metrics to measure the overall effectiveness of the collective efforts. These metrics are essential in helping FAA and the industry determine whether these initiatives are leading to improvements.

Moreover, although several initiatives are said to be on track, we are concerned that FAA expects to miss interim milestones for two of the most critical initiatives, due to concerns raised by the unions representing inspectors and engineers. Missing these milestones increases the risk of delays in scheduled implementation of the initiatives.

Turning to the regulatory consistency recommendations, FAA has begun implementing these recommendations. In its July 2013 Report to Congress, FAA included a preliminary plan for implementing these recommendations. FAA has indicated that its final plan would include an implementation strategy, assign responsibilities to individuals and offices, and establish milestones and measures of effectiveness. The plan is now projected to be completed next month, which is about 8 months beyond the initial target date.

Looking ahead to potential implementation challenges, FAA will likely be under increased pressure to establish more efficient proc-

esses as new aircraft materials, aircraft types, and NextGen avionics are introduced into the National Airspace System. FAA could significantly increase its chances of improving its processes and successfully adapting to changes in the industry by working to address some key challenges.

Specifically, FAA should focus on, one, identifying the necessary resources to sustain these efforts when faced with fiscal pressures. Two, making the cultural shift required to implement a risk-based approach in making certification and approval decisions. This shift necessitates buy-in, support, and accountability throughout the agency, from the highest FAA management levels, to the designees and safety inspectors in the field. Additionally, FAA must ensure early and continuous involvement of industry stakeholders, and establish and use performance metrics that measure outcomes, rather than outputs, to help show what is actually being achieved through these initiatives, and to hold those responsible for implementation accountable for the results.

Thank you, Mr. Chairman. This concludes my statement.

Mr. LOBIONDO. Thank you very much. Dr. Dillingham, what—you covered a lot of territory there, I am trying to sort of digest some of that. Pretty concerning.

But what—can you sum up what you would say are the biggest challenges the FAA faces in implementation and recommendations related to sections 312 and 313 of the Modernization and Reform Act?

Dr. DILLINGHAM. Yes, sir, Mr. Chairman. I think the recommendations that the two ARCs produced are basically a roadmap to making significant improvements in both the regulatory interpretation issues, as well as the approval issues.

I think—leave aside—assuming that the resources are available—because it will take some resources to implement all of the things that FAA has on its plate—but a major issue is the cultural change that is involved in this. FAA is moving from the way it used to do business, where you had a more hands-on approach, to where they are using risk-based safety management system kinds of principles that—it is different for the inspectors, different for the designees. And that culture change takes time, and it is very, very—it is a tough thing to do.

But I think, you know, implementation of the recommendations is the first step and to be consistent with implementing those recommendations over time.

Mr. LOBIONDO. So when you talked about the FAA possibly missing these key milestones, what effect would these delays have? What is the downside to this?

Dr. DILLINGHAM. I want to be clear that the issues that were raised by NATCA and PASS either have been resolved or are being resolved with collaborative discussions between FAA and the unions. But when FAA set their initial milestones, they set them without knowledge that they were going to need as much discussion as has been necessary with those two unions.

So, the idea is that if, in fact, FAA does miss the milestones, or those interim milestones, the final completion date may be expanded, as well. But again, those issues have been worked, and are continuing to be worked with the two unions.

Mr. LOBIONDO. OK, thank you. Ms. Gilligan, the aviation manufacturing industry is constantly innovating and growing. What steps has the FAA taken to ensure that the certification process is able to respond to such innovation and growth, while maintaining safety?

And I am asking this question because Mr. Larsen and I have heard from some stakeholders, where they are very concerned that the FAA is not keeping pace with what the real-world industry needs, and it is potentially costing us jobs and a downturn in economic activity.

Ms. GILLIGAN. Yes, Mr. Chairman, we have certainly heard those same concerns, that the industry, as I noted in my testimony, and we are all well aware, the aviation industry in the U.S. is a very innovative industry. They are always looking for ways that they can improve their products. And we work with them hand in hand, in being able to support that.

So, there are a couple ways that we approach staying up with that. First, on the technical side, obviously, our standards aren't prepared to address every new innovation that comes along. And so, we have a process in place that allows our manufacturers to innovate and to document a way—working with FAA, to document a way that their new whatever it is will be able to be safely introduced into the system.

So, we have always been mindful that we don't want our regulations to be a hindrance to innovation, because innovation tends to improve safety. New concepts tend to enhance safety. So we do have a technical way of being able to do that. So, as we move toward composites, as they bring in new avionics systems, or whatever it might be, we have a process to document with the applicant what is the safety standard that will need to be met, and how they will go about demonstrating that they can actually meet it. So, technically, I think we are ready to do that.

I think your—the bigger concern is, as has been highlighted in some of these recommendations, and as Dr. Dillingham highlighted, we need to look differently at the work we do. We need to think differently about what it is—FAA's role, and what is the role of the manufacturer. And I think these recommendations and the plan that we have to implement the changes under section 312 recognize that.

So, as you have highlighted, we do have a new plan for how we will sequence new applications. We are working with our unions to finalize that. But it is a tool that will allow our workforce to evaluate what is the safety value of this new product. How widely does it affect the system? Because those are important things. We want to get safety products in, we want to get in changes that affect the larger part of the system.

So, it will give our employees a way to prioritize the work with nominal timeframes for when they, then, should take certain actions. In addition, we always enter agreements with our applicants, with the manufacturer. When they bring us a new product, we and they agree to a schedule. They tell us when they are going to present information or tests or data, and we tell them when we will be able to review that and return it. And we hold each other accountable to those schedules.

So, we have learned that the better planning we can do upfront, along with the manufacturer, the more successful we and they can be at managing those projects. So we are approaching it, I think, from a number of ways to just try to continually be more efficient.

Mr. LOBIONDO. Mr. Larsen?

Mr. LARSEN. Thank you, Mr. Chairman. Can you discuss a little bit about the inspectors' workload increasing beyond their headcount, especially as it relates to managing the demand for that oversight, while accelerating the use of ODAs? Can you put it in that context? And then, maybe outside of that context, as well?

Ms. GILLIGAN. No, I think that is exactly the context. So, again, as I said, this industry is very innovative. And the Federal workforce and the resources that we have will always be limited. I appreciate Dr. Dillingham putting aside the question of resources. But, unfortunately, we really can't.

So, given what we know to be the resources we have available, that is why the FAA is turning toward this risk-based approach. We want our employees working on and overseeing those elements of design and manufacture that have the highest safety risk, and we want to use our designees, the thousands of people who have been designated to work on behalf of the Administrator, to take care of those more—the more well understood, the more mundane activities that are a regular part of certifying products. We think that that is the right balance.

So, the approach that we are taking is for our employees to focus on those high-risk elements, things like new applications of composites, for example. That is something that we, at the FAA, want to work with our manufacturers on closely. But the fundamental of physics for flight are very well understood. And approvals of systems and designs that meet those fundamentals can certainly be handled by designees on our behalf.

Mr. LARSEN. You mentioned that—to Mr. LoBiondo, Chairman LoBiondo, a few examples. But can you just be just even more crystal clear about the specific actions that FAA has taken to provide more clarity on what activities would be delegated, specific activities would be delegated?

Ms. GILLIGAN. Yes. The approach that we are putting in place is for our engineers, actually, to assume that the project can be delegated, and that then they must really look at what are the high-risk elements, and they must document why it is they—we, FAA—need to retain certain elements for our own approval. And I think it is—as Dr. Dillingham indicated, it is a different way to think about the process. There are many, many very highly skilled designees throughout the system. They have very much the same training as our engineers, and they are competent to make findings on our behalf.

So, it is really up to the FAA to determine what are those unique characteristics, those particularly high-risk elements, the new and novel applications where the FAA needs to retain that determination. And, other than that, we should allow for designees to make findings on our behalf.

Mr. LARSEN. Dr. Dillingham, in your testimony last October you explained FAA had not developed performance measures to track the success of improvements that the agency makes in its certifi-

cation process. Today you described that continued lack of performance measure as a missed opportunity. Why would you call this a missed opportunity?

Dr. DILLINGHAM. Mr. Larsen, the reason we called it a missed opportunity, it relates to the adage of, you know, success builds upon success. And a couple of things are associated with that.

As FAA moves forward and implements the various recommendations that are associated with approval and certification, and it has some success in improving those processes, that, to the extent that the industry is made aware of that, to the extent that FAA can point to, with metrics, that success is being achieved, that increases the likelihood, as FAA moves forward with what could be some more difficult changes along the change management chain, there is the idea that this can happen, this can make a difference, and you are more likely to get industry buy-in with—when you move towards that risk management, change management that would be necessary to overhaul the whole process.

Mr. LARSEN. Yes, good. That is fine. Thank you very much, and I yield back.

Mr. LOBIONDO. Chairman Shuster, thank you for joining us.

Mr. SHUSTER. Thank you very much, Mr. LoBiondo. I am confused. The FAA comes before us and says they are moving in a certain direction. Mr. Dillingham tells us that this risk-based approach, for instance, that they are not moving fast enough, or you are not moving in that way. Industry tells me that they don't sense—there is no sense of urgency they see moving towards this, and that is where they want to move to.

So, Mr. Dillingham, are they moving to a risk-based approach, or is it just so slow that it is going to take years and years to get there?

Dr. DILLINGHAM. They are absolutely moving towards a risk-based approach, not only in this area, but in many other areas that FAA has oversight over. Data-based risk management, safety management systems, all those things are the new FAA.

I think what you hear, and what we hear, is that it may not be happening fast enough, or, in some cases, what we just talked about a moment ago is that communications can be improved so that industry and others can see that this is going on. And I think it is important to recognize that—and we have said this a number of times, and others have said it—that cultural change is not an overnight thing. It is going to take some time. We know it has been some time——

Mr. SHUSTER. How long, 20 years?

Dr. DILLINGHAM. Well, I can't put a date on it, Mr. Chairman. But change is taking place. But, as we just said, sometimes it is——

Mr. SHUSTER. Well, that is my concern, that we are going to lose our lead in the industry if we don't make these changes.

The other thing that I have heard over and over again is an inconsistency throughout the country of the FAA. So people shop the different regions to find somebody that is going to be easier to deal with, not sacrifice safety, but just be able to move through the process.

The other thing that I heard just recently, a small rebuild firm, they take small aircraft and they rebuild them, they get it done quicker and cheaper, or less expensive, in other countries. Now, I can get my head around why Brazil may be faster, because they are an emerging economy. Or Canada has to deal with a giant right next door to them, so they are nimble and fast. But when they tell me they are taking their planes to Germany because it is easier to deal with, less expensive, more efficient, I can't understand that. Germany is a country that is loaded with regulations. But they are able to do it.

So can you talk to me about—you said the FAA is working with their partners. But why would an American firm go to Germany to do a rebuild on a plane, when it should be doing it right here, in America?

Ms. GILLIGAN. Mr. Chairman, I am not familiar with that example. And, if you would, I would ask that we talk to your staff, because I would like to look at that one, in particular, because we and the Germans have exactly the same standards. We have a bilateral agreement. And through that agreement, they accept when FAA has certified a product, and we accept when the Europeans have certified a product.

So, it is an example I am not particularly familiar with, and will definitely be glad to look into it, and get back to you with what those specifics might be.

Mr. SHUSTER. Right, and I am pretty confident we can get a number of those. But, again, if we have the same standards, it has to come down to the process and the people, as they apply the standards, it seems to me. You know, and that is something I talked about. Throughout the United States I hear that they shop around to the different regions, where they know that it is a more efficient process. Can you talk about standardization across the FAA regions?

Ms. GILLIGAN. Yes, sir. We also, as you know, from the reauthorization bill, we did have a direction to look at how to improve standardization. The recommendations that came from that committee are really quite all-encompassing, and they are much more robust, much broader, than the recommendations that came, as it related to aircraft certification process.

Standardization is an important initiative, and we have focused on that. And, actually, I think we have made good improvements over time. We have put in place opportunities and tools to elevate issues or questions if at a particular field office there is a disagreement between the applicant and our inspector. We have a process in place to elevate that to get an accurate and consistent answer. That can take time, and so we are looking at how we can refine that.

The recommendations on improving consistency, the fundamental one is to start with a much broader database that will allow us to integrate all of the information about a particular regulation, for example, so that our inspector or engineer, and the industry, can go to a single source and find out what is all the information to help them understand how to implement or how to apply that regulation.

We have a prototype program under—that will be underway in the fall, which I find very exciting, that is a—you know, new technology has allowed us to find ways that we can search the many databases that we already have to start to address that particular concern. And I think you are going to see us starting to make real headway on some of those initiatives.

But it is an issue that is well known to us at the FAA, and that we are constantly working with industry to bring those to our attention. If there is inconsistency, we will—we want to work with them, and we want to get to a single solution.

Mr. SHUSTER. Well, and then I will just finish up by saying, you know, we really got to move fast on these things. Because I have a great concern that we are going to lose our lead in the industry across the board, and all the aviation industry. And we need to do things differently. And on my watch, and on Mr. LoBiondo and Mr. Larsen's watch, I don't want to sit here and watch our aviation industry go the way of the textiles and the auto industries, and every other industry that we put these hurdles and these burdens on that they are not able to move forward and be innovative.

So, again, we need to consider things differently. And, you know, one of the things I sit here today and think about is, it has been customary for as long as I have been in Congress, we always let the administration come up and testify first, and industry goes second. I think we need to take into consideration letting industry go first to help the Members here understand the problems, so we can have example after example, so that the administration comes before us and then defends itself, and hears these problems firsthand.

So, that is something we need to take and consider. We need to do a different approach across the board on everything we do when it comes to aviation. And again, we are going to be doing that here in the next months and years. Thank you.

Mr. LOBIONDO. Well, Mr. Chairman, with your permission, this is going to be a big focus of what we do with the reauthorization bill, to try to understand how all this is coming together, and then with very specific language make sure that we can keep ourselves on the cutting edge of things. So thank you.

Ms. Johnson?

Ms. EDDIE BERNICE JOHNSON OF TEXAS. Thank you very much, Mr. Chairman, and thanks to both of our witnesses for being here.

As I have listened to the dialogue, it appears to me that you could easily say that staffing resources and funding necessary to both maintain safety and make these ambitious improvements could be a problem. Has the agency grasped the fact that you might have to do more with less?

Ms. GILLIGAN. Congresswoman, absolutely. We believe—and Congress has always been very supportive of the aviation safety program, and we appreciate that. But we are also realistic, and we read the newspaper, and we know there are pressures on the Federal budget. And that is exactly why we are pursuing some of the initiatives that we have been talking about. We want to make sure that our technical experts are focused on those areas of highest risk, and that we at the FAA are overseeing the safety of those programs.

And it is important to keep in mind it really is the manufacturer's responsibility to assure that they are designing and building a safe product. It is the airline operator's responsibility to provide safe transportation. The role for FAA is to set the standards that allow them to do that, and then make sure that they are meeting those standards. And we believe that we can manage our resources to effectively continue to build on our safety mission. I think our record is clear. We are very good at what we do now, and we intend to maintain that.

Ms. EDDIE BERNICE JOHNSON OF TEXAS. Are you current with the reports that you are supposed to send to Congress on your progress?

Ms. GILLIGAN. Yes, ma'am. I believe at this point we are. The followup reports are not required to be submitted to Congress. That is why we are posting them on our Web site, so that we and the industry can track our progress.

But as—the reports related to certification, I believe, have been properly submitted.

Ms. EDDIE BERNICE JOHNSON OF TEXAS. What would you consider your major handicap right now in trying to get up to par?

Ms. GILLIGAN. Well, I think the challenges are as we have been discussing. Bringing all of our workforce along on this change is something that, as leaders, we are required to do. But, as Dr. Dillingham has suggested, it is a challenge.

Employees are comfortable doing work as they have done it in the past, and as they understand it. And it is up to us to make sure they are properly trained and have the tools ready to be able to make these changes. We believe we are putting those kinds of tools and training in place, and that, in fact, the employees, our engineers and inspectors, will be able to focus on those higher risk areas, and allow designees to perform other activities on our behalf.

Ms. EDDIE BERNICE JOHNSON OF TEXAS. Thank you very much.

Dr. Dillingham, prior GAO studies dating back to 2004 raised some concerns about the strength of FAA's oversight of designers, including FAA's staff workload. Can you provide us some of the specifics of those concerns, and how you see the progress being made?

Dr. DILLINGHAM. Yes, ma'am. When we first looked at the designees and the organizational delegation issues, our concerns were that FAA may not have enough resources to adequately oversee the actual designees, and that, in fact, some of the designees were not actually trained as they should have been to do the job that they were being asked to do. And it was a question of whether—how difficult it was for FAA to remove those designees when it was determined that they were not meeting the standards.

Since that time, those issues have been addressed by FAA, and they are continuing to be addressed by FAA and industry as well. So those issues are on the wane.

Ms. EDDIE BERNICE JOHNSON OF TEXAS. Thank you very much.

Thank you, Mr. Chairman.

Mr. LOBIONDO. Mr. Meadows is not back yet. Mr. Ribble?

Mr. RIBBLE. Thank you, Mr. Chairman. Thank you both for being here this morning. I just really have one question I wanted to address to Ms. Gilligan.

Thank you for being here. The FAA air certification service—I am quoting out of page 3 on your written testimony—the FAA aircraft certification service has both a high volume and wide range of certification applications under review at any given time. In fiscal year 2013 alone, the FAA approved 189 revisions to aircraft type certificates, 440 new supplemental type certificates, STCs, for aircraft components, and an additional 397 amended STCs, and over 2,200 parts manufacturer approvals for replacement parts on aircraft.

I am curious. Do you know how many of these approvals were done with the ODA certification process?

Ms. GILLIGAN. I don't offhand, sir, but I am sure we can get you that data.

Mr. RIBBLE. Could you give me your take on how the ODA is working?

Ms. GILLIGAN. Yes. We are very encouraged by how it is working. We think that there are some that have been very successful. Certainly the larger manufacturers that we see are able to implement them more effectively so far.

I think one of the concerns you may have heard is that it needs to be a scalable process, and we agree with that. So we are looking at how we can continue to improve the use of the organizational delegation, because we do see it as a tool in the future that allows us to delegate even more of the decision—of the findings of compliance.

So, I think we are learning as we go. I think we have seen some, again, that have been very successful, and there are still improvements that can be made.

Mr. RIBBLE. In your opinion, is the ODA pretty much fully implemented now?

Ms. GILLIGAN. I think——

Mr. RIBBLE. And why wouldn't you use it, if it is not?

Ms. GILLIGAN. Well, again, I think it is fully implemented at some of the larger manufacturers, when they have applied for it, and they have put in place the process that is necessary for it.

I know we have heard concerns raised by some of our smaller manufacturers, that it is overwhelming for them to put in place, and so they are not pursuing it. And that, I think, is something we need to continue to work with, those manufacturers, to scale it so that it is appropriate for their needs, so that we and they can take better advantage of it.

Mr. RIBBLE. OK. Thank you very much.

And, Mr. Chairman, I yield back.

Mr. LOBIONDO. Mr. Nolan?

Mr. NOLAN. Thank you, Mr. Chairman. I just got a short statement and a couple of things.

One is I want to add my concern to the concern expressed by other members of this committee, with regard to the need to expedite the certification process, the need to find—I am not sure it was addressed, but, you know, better training and education programs for the workforce that is necessary for this industry, and express

my concern about the FAA workforce and the workload that is required to meet this incredibly rising demand.

My question is this committee and the Congress here this past year passed a new regulatory regime for the manufacturers of small aircrafts. And, Ms. Gilligan, I would appreciate if you would kind of update us on how that is progressing. That is very important to many of us, including those up in Duluth, Minnesota, where Cirrus Manufacturing exists, and it is doing a remarkably good job in creating a new aircraft, both for the domestic and the international market. Thank you, please.

Ms. GILLIGAN. Yes, sir. Part 23, the rewrite of part 23, is an extremely important initiative for the Administrator and our Deputy Administrator. It is also a first of its kind project, to take an entire part of our regulations and rewrite all of it.

As you might imagine, there is a lot of interaction among all the parts. And as we do this, we want to be certain that we are improving the certification process, and not losing any of the safety requirements that we have in place. We have a very dedicated team led by one of our executives in Kansas City, who is responsible for small aircraft certification. He brings a personal dedication to this project.

The schedule is somewhat slower than the legislation had envisioned. But going through notice and comment rulemaking, and then through final rulemaking, it does take a period of time. But we monitor this project on a monthly basis at our executive level. I keep the Administrator informed, as well.

We are meeting our internal schedule. We are identifying and solving issues that come along, so the team can continue to make progress. And we will be glad to keep you and your staff informed of the progress as we proceed.

Mr. NOLAN. Thank you. Can you give us a date as to when you project——

Ms. GILLIGAN. Yes, sir. The final rule is right now planned for—I believe it is December of 2017. That is later than the statute, which called for a final rule by the end of 2015. But again, first, the complexities of writing the rule, and then getting it published for notice and comment, and considering those comments, and finalizing the project, will take a considerably longer period of time than was anticipated in the statute.

We are—we have a detailed schedule. We are meeting that schedule at this point. And, again, we will be glad to keep you informed about that schedule.

Mr. NOLAN. Well, thank you for that. And, please, I know it means a lot to all the members of this committee to have that whole process be a focus of important attention for your agency to get that done as soon as possible. Thank you.

Mr. LOBIONDO. Thank you, Mr. Nolan.

Mr. Rodney Davis?

Mr. DAVIS. Thank you, Mr. Chairman. Ms. Gilligan, thank you again for being here. It is great to follow the chairman and Mr. Nolan, because they took my two questions for you.

Ms. GILLIGAN. I appreciate their efforts on my behalf.

Mr. DAVIS. But I do want to also let you know I too am concerned with the section 313 implementation, or lack thereof in many cases.

And I am also concerned, as Mr. Nolan was, with getting the Small Airplane Revitalization Act, you know, implementation moving along much more quickly.

So, I will move to Dr. Dillingham. Welcome again, sir. It is good to speak with you again. Your testimony reinforces that change is tough, and the FAA's workforce seems to be a little reluctant to implement some significant changes to the way business is currently being done there. The GAO usually provides good recommendations. But what can you recommend to change the culture of an agency?

Dr. DILLINGHAM. Thank you, sir. What we have found from our work is that it—although change takes time, if in fact there is commitment and accountability for that change from the top all the way through to the field locations that have to implement it, that is helpful. If that change is incentivized, that is also helpful.

It is, in fact, a tough thing to do. But what we said earlier this morning is that when FAA has some successes, those successes need to be communicated broadly and widely. And FAA is also currently working with major industry partners to implement that cultural change, which is also very critical.

So, we are guardedly optimistic that, although it may take some time, it will, in fact, happen.

Mr. DAVIS. OK. My next question. Industry is concerned about the FAA's lack of performance measures. Nine out of fourteen of those measures have yet to be developed. What is the overarching factor holding the FAA back from establishing these performance measures?

Ms. GILLIGAN. I would be glad to answer that one. I think, as Dr. Dillingham has identified, first of all, performance metrics are very difficult. And so, we are working with industry to try to develop what are the right ways to measure this.

I understand there was a discussion within the last 2 weeks between our aircraft certification leadership and industry leaders. And, again, what we tend to come down to are counting things. How many of these did we do, or how many of that did we do? And I think, as Dr. Dillingham's testimony makes clear, that is not a measure of your performance, or the effectiveness of your changes. It is simply a number. And what we are trying to do is understand how do you really measure that if we make this change, it has effectively made the process more efficient.

So, we will continue to work with industry so that we and they can reach an agreement on these are the right measures. You know, if you implement this thing, and you get to this outcome, we will know we were successful. And that is what we are struggling with.

Mr. DAVIS. Well, and that is what we are struggling with, too, as policymakers. We want to see the performance measures put in place, but I don't want to create a new bureaucracy that discusses performance measures and how to measure performance measures, and et cetera, et cetera. So that is our concern, too.

And, Dr. Dillingham, issues with the FAA certification approval process has obviously resulted in delays and higher costs for the aviation industry. And as a policymaker, I want to push the FAA to become more efficient more quickly. What are some rec-

ommendations you have for future FAA reauthorizations that would get us this result?

Dr. DILLINGHAM. I think the—probably the most important thing, and probably the most efficient thing that could be done, is to make sure that those recommendations that have been made, those initiatives that have been identified to address those recommendations, that there is actual implementation of those, that there is accountability associated with them.

The recommendations that are on the table from the 2012 reauthorization are pretty robust, and cover most, if—cover most of all the issues that have been brought to the Congress over the last few years, and have been identified by our study. So that is the first thing, is do what is already on the table. Accountability and oversight, as this hearing is doing.

Mr. DAVIS. Well, thank you both for being here, and thank you for your testimony.

I yield back, Mr. Chairman.

Mr. LOBIONDO. Thank you. Ms. Titus?

Ms. TITUS. Thank you, Mr. Chairman. When you go last you get to hear all the questions, so you can kind of look for themes. And it seems to me that every question kind of has the same theme: FAA is understaffed, it is too slow, it is too old fashioned, it can't keep up with the industry, and it just needs more time.

Well, the industry doesn't have a lot of time. They are moving rapidly. And one of the areas where you see this that impacts domestic aviation is in the unmanned aircraft development. Nevada—I represent Las Vegas—was one of the six States, as you know, chosen as a test site for the integration of these UAVs, and we are no stranger to that. We have Creech Air Force Base, we have the Predator, we have the Reaper, we are ready to go. But it doesn't seem like a lot of people are starting to test, because of the uncertainty. They don't know what the rules are, or what is going to happen.

So, Ms. Gilligan, could you kind of update us on how the test site program is progressing, and the—what is happening with the development of the UAV small vehicle rule that you all were going to develop? Tell us where we are with that, so we can kind of go back and give folks some reassurance that we are moving forward in this area.

Ms. GILLIGAN. I would be glad to, Congresswoman. As you know, four of the test sites are already up and operational, and we are working closely with them to understand what research and development initiatives they are undertaking, and how we can learn from and take advantage of that data.

As you know, we will be sharing the data that they collect. We will be using the Technical Center up in New Jersey to help us do the analysis of all of that data. And all of that will help inform what standards, both for operation and as well as for design and manufacture, that we need to put in place.

On the manufacturing side, or the design side, we actually have approved two aircraft systems already. They are operating up in Alaska. They started last summer. They are operating this summer. Obviously, that is a low-risk environment. But they are—we are learning a lot about the design requirements that we had for

those systems that can help us better understand how to set the design standards for sort of a more robust operation.

And the small UAS rule is making—I will tell you—making great headway. We have completed our review at the FAA. It is in the executive review process now. It is a top initiative for our Administrator. And so, I think we will see some—we are hoping to see strong support in getting it through the process and published, so we can begin to get comments. And I think that will begin to answer a lot of the questions that I know some of the applicants at the test sites are concerned about.

Ms. TITUS. And will that be this year? Next year? By Christmas? What——

Ms. GILLIGAN. Our schedule calls for it to be—for the notice to be published by the end of this year. And, as I said, the Administrator is pushing hard to see if we can beat that schedule.

Ms. TITUS. I appreciate that. And my second part of the question is this is going to open up a whole new industry, new myriad of products and procedures that will fall under your domain. How do you see this affecting the other work that you do that we have been talking about this morning? Have you got the personnel and the resources to take this part of the industry on, and still keep up with these other things that have been asked about?

Ms. GILLIGAN. Well, certainly, in future budget years we will need to look at whether this is driving a new need for resources, both in numbers and in skill sets. We may need a different kind of skilled employee, as well. And so that will be addressed in the budget process.

But in the meantime, yes, I think we are confident, as you know, I believe, at the test centers we are arranging four designations there, for us to be able to designate representatives to be able to make safety findings at the test sites, so that those operations can be determined to meet the appropriate safety standard without additional FAA oversight. So we are looking at how we can take advantage of the designee system to begin the support for UAS systems right now, from the ground up.

Ms. TITUS. I hope that will be some kind of standardization, and we won't see a problem of shopping the test sites, like we heard earlier about shopping the different areas because different regional offices do different quality of work.

Doctor, were you going to say something?

Dr. DILLINGHAM. Yes, I wanted to just note that this subcommittee has asked us to conduct a pretty comprehensive review of UAS integration into the NAS. And, as a part of that review, a lot of focus is on research and development. So we are going to be looking at the issues and concerns of the test sites, and how that process is going. We are going to be looking at what are going to be the resource needs and timelines involved in integrating UAS into the NAS.

So, hopefully, by the end of the year or early next year, we will have that comprehensive report for this subcommittee.

Ms. TITUS. Thank you. Would you keep our office updated as you move forward with that study?

Dr. DILLINGHAM. Absolutely.

Ms. TITUS. Thank you. Thank you, Mr. Chairman.

Mr. LOBIONDO. Mr. Hanna?

Mr. HANNA. Thank you. Thank you, Ms. Titus. I have Griffiss Air Force Base, which is one of the 6, and the 174th, and of course, Watertown.

But I have a different question. Correct me if I'm wrong, Ms. Gilligan, but you stated that you have adequate resources. And Mr.—Dr. Dillingham has said that there are cultural issues. We have heard from the FAA director of flight standards that there is a backlog of over 1,000 certifications and authorizations for the national airspace. And then we go on to find—to hear from the manufacturers the FAA has made some progress towards addressing—this is Mr. Dillingham's statement, but we are hearing—but this committee is hearing the absolute opposite from interested parties and stakeholders. So, if you have adequate resources, maybe I misheard you.

The other problem—the other thing I want to ask you, just fundamentally, is there a difference between a risk-based approach that you talk about, and the outcome-based approach that Dr. Dillingham talks about? You both use a different language, but it isn't clear to me that you mean the same thing. So I am kind of curious.

Ms. GILLIGAN. I think actually, Congressman, there are two parts of the process.

When we talk about a risk-based approach, we mean that we want to make sure that we are focused—we a the FAA, the limited resources that we have are identifying where a manufacturer may be adding a new element to their process, or a new product that might introduce risk into the system that we haven't fully understood and analyzed. And that is the project that our inspectors or our engineers should be focused on. That is how we determine what work we should take on and determine what work can be left to the designees who work on our behalf to make certain findings. That is kind of at the front end of the process.

Mr. HANNA. Dr. Dillingham, would you like to comment about that? Am I reading something into this that doesn't exist? You talk about the cultural issues. And, of course, Ms. Gilligan admitted that there were cultural changes going on that present some issues, which are, I guess, understandable. But how big a barrier to getting this whole thing moving forward is there between those two elements?

Dr. DILLINGHAM. It is hard to put an exact percentage on it. But let me talk a little bit, and see if I can add some clarity to what we said before.

The resource issue for FAA is—it is there. There is a resource issue. And that—I think that is why the designee program, which has been going on for, you know, many years now, and now being expanded to organizational designees, is there to supplement those resources and to address that resource constraint.

When we talk about culture change, we are talking about the difference between what FAA has traditionally done, where they had the inspectors who could go out and touch each wheel, touch each cert that it needed to, that was a part of its portfolio, as well as do its other surveillance activities. That day has long since passed.

And the idea now is to move towards, you know, delegating more of those kinds of things to the industry with FAA oversight.

The outcome versus output that we were talking about referred more to—or at least in part to the metrics, that when FAA talks about, you know, "We are implementing various and sundry recommendations," and—or, "We are installing certain amounts of equipment," we are saying that that is not the measure. The measure is what difference does it make in the certification process. How much more efficient—what are the gains for industry?

And so, all of those concepts are sort of——

Mr. HANNA. So you are kind of saying to me that—correct me if I am wrong—that they have lost their ability to be practical in their work process, that they have become excessively bureaucratic. Is that close, or——

Dr. DILLINGHAM. I wouldn't say that. I think they are being practical by recognizing that they can't do everything that is required of them, and moving towards this ODA process in concert with industry. I think I would say it that way.

Mr. HANNA. Thank you. My time has expired.

Mr. LOBIONDO. Thank you. Mr. Meadows?

Mr. MEADOWS. Thank you, Mr. Chairman.

Dr. Dillingham, I want to come to you with regards to the certification process. And if you could help me understand a little bit better, I guess, sequencing and why that has worked or has not worked.

Dr. DILLINGHAM. I think the—one of the major concerns with the project sequencing was that it was——

Mr. MEADOWS. Now you are saying "was." It probably should be "is."

Dr. DILLINGHAM. Yes, is.

Mr. MEADOWS. OK.

Dr. DILLINGHAM. Is.

Mr. MEADOWS. All right.

Dr. DILLINGHAM. That—or at least the concern has been expressed is that it took a—it came from headquarters, or was centrally located, whereas another—an alternative would be to be more locally based, where the decisions could be made quicker and more efficiently.

Mr. MEADOWS. So, do you see the prioritization program as being an improvement?

Dr. DILLINGHAM. I would say it is an improvement. And although it is early on in the process, I think the efforts that FAA has made to work with the unions and work with industry will make it get better in the future, as we go on.

Mr. MEADOWS. So right now, though, in terms of if I were a civil aerospace company, would I know with certainty whether I was going to get a certification or not, based on either first come first served—how do I plan? I mean can I properly plan? Because it doesn't appear that I could.

Ms. GILLIGAN. If I may, Congressman, I think you have identified exactly what we have seen, as well.

The issue is not—it is a little less about timing, and much more about predictability. So the process that we had in place notified the applicant every 30 or 60 days—I forget what the interval was—

whether we could or could not begin their project until we could. And so, the dilemma for the manufacturer was they didn't know if it was going to be in 60 days or 6 months.

The new process——

Mr. MEADOWS. So you are telling me there is no certainty whatsoever, and we are investing millions and millions of dollars, and they have to hope that one day they get a letter and say, "Oh, by the way, we are going to certify you," or start the process?

Ms. GILLIGAN. So that was the way we were doing it. And we were also trying—we had a metric to approve projects within, I believe, a 90-day timeline. And for most of the projects, we actually made that. But the applicant may not know that that was what the measure was.

What the new process will do is allow for that predictability. When we receive the application, the engineer involved will analyze how—what the value of the project is, from a safety perspective, and some of the other criteria that we have in place, and determine when that project can be turned on. The applicant will be given a project number, which means that the project is underway. And they can use their designees in the interim. We can enter the agreement for what the schedule will be.

What we are trying to address is that concern about predictability, so that the applicant, the manufacturers, can know when they can expect that the project will move forward. We believe that that will go a long way to improving—or to addressing the concerns.

Mr. MEADOWS. OK. You identified this—am I correct, Ms. Dillingham? You identified this back in—Gilligan, I apologize—in 2011. Is that correct? The FAA recognized that this was a problem, and then again in 2012.

Ms. GILLIGAN. Well, we had the sequencing program in place for a number of years. And throughout all that time we were always trying to find ways to improve it and enhance it. So we moved it away from where the local office would say, "No, we don't have the technical skills so we have to delay your project," to a national approach, where we could see does the—do we have the appropriate skills somewhere around the country, so that we can get the project started more quickly?

So, over time we have made improvements. And this will be the next——

Mr. MEADOWS. OK. Tell me why you are not going to meet your milestone. I think that is—according to testimony, it looks like—that you are not going to meet the milestone for implementation this year. Is that correct?

Ms. GILLIGAN. No, sir. We actually disagree with Dr. Dillingham. It is true we had interim milestones in order to get this in place by the end of the year. One of the interim milestones has been delayed because of additional consultation with our unions. But we are still focused on implementing this by the end of this calendar year.

Mr. MEADOWS. Yes, but the milestone was July. So we have got 8 more days. So that milestone, you are going to meet that milestone, as well?

Ms. GILLIGAN. No, the final milestone for implementation has been the end of the——

Mr. MEADOWS. The milestones are exactly that, they go——

Ms. GILLIGAN. Yes——

Mr. MEADOWS [continuing]. One step at a time——

Ms. GILLIGAN. Yes.

Mr. MEADOWS [continuing]. So you don't have to wait until the end.

Ms. GILLIGAN. I agree.

Mr. MEADOWS. So you are not meeting your milestones. So he would be correct.

Ms. GILLIGAN. There is the interim milestone that has been delayed. We acknowledge that, and we agree. We are now working, though, to assure that we have it—the program in place by the end of the year.

Mr. MEADOWS. We will be waiting for those results. I appreciate the patience of the Chair.

Mr. LOBIONDO. Mr. Williams?

Mr. WILLIAMS. Thank you, Mr. Chairman. I want to thank both of you for being here today, as always.

I am from Texas. And Texas is home to two major rotorcraft manufacturers, Bell Helicopter and Airbus Helicopters. My question today concern the challenges in the certification. We have talked about that, installation of equipment and safety-enhancing technology to rotorcraft, compared to large transport airplanes and small airplanes.

So, Dr. Dillingham, my question would be to you. In the course of your review of the certification process, have you found any particular concerns or frustrations expressed by rotorcraft manufacturers? And if so, can you discuss the concerns and why they are happening?

Dr. DILLINGHAM. I think, to the extent that we have looked at certification and had a chance to do some interviews, the rotorcraft manufacturers had similar concerns as did the regular aircraft manufacturers, in terms of delays or different regulatory interpretations.

I think the thing—the example that I remember was more on the international front, in which an approval was granted by FAA here, but when that rotorcraft was taken overseas, the time that it took, and the cost, was similar to what the original cost and time was for the FAA certification. And the concern was expressed that this was sort of duplicating and having a very negative effect on that manufacturer.

We propose to look at that issue for rotorcraft manufacturers and others, as we pursue the committee's request to look at international issues and how international certification is going.

Mr. WILLIAMS. I know they would appreciate that. And just one additional question. Are there any initiatives that could help address some of these things we are talking about, like making progress on reducing regulatory inconsistency, which we talked about? Are there any best practices that could be learned from directorates like transport or small airplane?

Dr. DILLINGHAM. I think the key initiative that we have heard from, you know, almost unanimously, is the idea of setting up this

automated database that brings all of the regulations and all of the guidance under one umbrella, where it can be searched by both industry and FAA inspectors, so that that inconsistency will start to go away.

When an inspector can punch up, you know, the various and sundry ways that certifications and approvals have been made in the past, and they don't have to start anew, or impose their own particular interpretation on something, and the next move up is if there is a disagreement, then there is a procedure being developed that will address that. We think that that is the most critical element necessary to move forward on regulatory interpretation.

Mr. WILLIAMS. New concept. Make it easier, right?

Dr. DILLINGHAM. Yes, sir.

Mr. WILLIAMS. I appreciate you being here, and I yield back, Mr. Chairman.

Mr. LOBIONDO. Mr. Lipinski?

Mr. LIPINSKI. Thank you, Mr. Chairman. I want to thank you for holding this hearing on domestic aviation manufacturing. And very pleased that our subcommittee continues to remain active in monitoring of the work to improve FAA's regulatory process, and also the domestic manufacturing sector.

I am a big promoter of American manufacturing. Aircraft manufacturing is also especially important to me, and maybe it goes back to 35, 40 years ago, when I played little league baseball at Aircraft Gear Field in Bedford Park. I know how important—especially aviation aircraft manufacturing is to the American economy.

Now, we are all mindful that the FAA reauthorization is coming up. We need to get that done next year, and welcome this opportunity to learn more about what has been done and what is being done.

And one of the biggest issues that I focused on during my time on this subcommittee is streamlining the FAA's certification process to make sure that manufacturers can move innovative, safety-enhancing ideas from the design table to assembly line into the cockpit without months of delays and unnecessary costs. I was the lead Democrat cosponsor of the Small Airplane Revitalization Act, which requires the FAA to streamline its certification process of small aircraft by December 2015, and I hope to learn how Congress can continue to support other parts of the aviation manufacturing sector.

Whether it is implementing this bill, developing regulatory certainty under section 312, or finalizing the competition to develop a new aviation gas, progress in this area is absolutely necessary to improve aviation efficiency, enhance safety, and help support America's status as a global leader in aviation, which leads me into a question for Ms. Gilligan.

As you know, the American aviation industry, the FAA included, has set the standard for innovation, quality, and safety. But there are always challenges to our leadership on this. You noted that the FAA facilitates the import and export of aircraft components in a global economy, and cited the establishment of bilateral agreements with 47 countries. I am interested to learn what efforts the FAA has made to advance the reputation and standing of its stand-

ards in American aviation products generally, and how our bilateral partners view the FAA's type certifications.

So, how do the FAA's efforts measure up in comparison to those of its bilateral agreement partners? Are there ways this can be improved? And also, you know, what constraints in improving this does the FAA face? I think this is all vitally important that we make sure that America remains the gold standard here. So just interested in what the FAA is doing right now in this area.

Ms. GILLIGAN. Thank you, Congressman. First, I think it is quite widely accepted that the actual standards for design and manufacture of aircraft originated in the United States, and in only a few other countries around the world. And they—we—continue to lead the world in setting what is the safety standard against which one designs and builds an aircraft. So I don't think there is really a question about whether the U.S. standards for design are the gold standards.

I do think what we are seeing is a phenomena around the world, where other countries are expanding, trying to build their own technical expertise in aviation safety. And we have seen countries where they are taking a more active part in the review of product certification before they allow that product into their country. Those authorities have the same responsibility we in the FAA have of determining that a product that is coming into their country is safe.

Now, we believe that that will change with time, and that those emerging economies will understand that it can be much more efficient for them to take advantage of the expertise of the U.S., or if it is a European product, of the Europeans. Now, just as we and the Europeans have already made that—come to that realization. So, when the U.S. certifies a—a product, rather, it is not at all uncommon for the Europeans to issue their approval the very same day, or the next day, because we and they have worked together with the manufacturer throughout that project to determine compliance with the appropriate safety standards.

Now, we continue to work with the bilateral partners, who are at times, we believe, interposing or asking for more than is necessary for them to accept a U.S. approval. And we are making headway.

Mr. LIPINSKI. Not to interrupt you, I am just running out of time. I just want to ask one other question. Why is there going to be a 2-year delay? What is the cause of the 2-year delay in the implementation of the Small Airplane Revitalization Act?

Ms. GILLIGAN. Yes, sir. The deadline that was given in the statute, in our opinion, was not—was just too difficult to meet. The part 23 is a very big, complex part of our rules. And a complete rewrite is—this is really the first time we have ever taken on a project like this.

So, what we want to make sure is that we are, in fact, streamlining the process, but that we are not reducing the level of safety in those standards. We have a dedicated team that is working hard to keep this project moving forward. But we do need to do the rewrite, we need to put it out for comment. We do expect that the industry will want a fair amount of time, because it is such a complex project. And then we need to consider those comments, and

make whatever changes are necessary to the final rule. And that, we believe, will take an additional 2 years.

Mr. LIPINSKI. And I want to—I am over time. I thank the chairman for letting me go here. But I just want to say I would like to follow up later on, you know, what we can do here, so that we can move this process forward more quickly. Thank you.

Ms. GILLIGAN. We will be glad to follow up with you, sir.

Mr. LOBIONDO. OK. Mr. Bucshon?

Dr. BUCSHON. First of all, thank you both for being here. It is very much appreciated. I have—you know, most of my questions have been answered, except for the—what I am hearing a lot of is that part of the delay process is a "cultural change" that is required at the FAA, at a Federal agency. And almost every Federal agency I have ever had testify in front of Congress, they have said the same thing.

And so, at some point, you know, my question basically is, you know, the leadership at the FAA knows what needs to be done, Congress has mandated it, put it into law. And so, what are the cultural impediments to change? I mean if you were at a private company—and I know I am not naive enough to think that it is not a totally fair comparison—and a new CEO came in, and there was going to be a cultural shift, it doesn't happen overnight, first of all. But people that are working at the company that don't feel comfortable with that working environment leave or—and, at the end of the day, ones that are impediments to that cultural shift are fired.

So, what is the real—I mean what is the impediment? You mentioned, you know, you are in discussions with your unions about, you know—discussions with the unions about what? I mean there needs to be a cultural change at the FAA. It is mandated by Congress. It is put into law. What is the discussion?

So, yes or no, is that the main impediment to a cultural change at the FAA?

Ms. GILLIGAN. No, sir. I think that the reality is change is always difficult. But I can assure you that the Administrator has, as one of his significant initiatives, that FAA will move to a risk-based decisionmaking process. The leadership at FAA understands that, and the workforce is actually coming to understand what that means for them.

So, we have, I think, taken—we have made good steps in bringing this change. And we just need—I think Dr. Dillingham's point is we need to manage it actively. We need to not assume this will just work its way out. And that is why the action plans that we have, for example, with the milestones are a way that we can continue to measure that we are making progress at bringing about this change.

Some of the recommendations are that we need to change the training we provide to our inspectors, or to our engineers, so they can better understand what it means to identify risk, and how to mitigate it, and those kinds of things. We agree. That training is under development. And that will be provided. That will begin—excuse me. That will support this continued move forward toward this kind of approach.

I can tell you, broadly, the workforce wants to make this move. They believe that there are risks that they can understand and mitigate, and they want to focus on that. They are a conservative workforce, in that when you are a safety professional, change introduces risk. And you want to make sure, before you make the change, that you are doing the right thing. So that is what we have to—we have to bring them along to be confident that they have the skills to make this—to take this kind of an——

Dr. BUCSHON. And I am not criticizing the workforce at all. I am just saying that, you know, that—themselves, but maybe the leadership of the workforce maybe I am slightly criticizing. But, you know, how long is this type of thing—because we—I do hear almost every Federal agency say the same thing. When Congress has put something in the law, set a deadline, and the deadline is not met, they say it is because there is this big, difficult cultural shift that has to happen, and we have to make all these changes.

And then, frequently, hide behind safety issues. Well, it is a safety issue because if we quickly change this process, you know, it might impair safety, and there might be something—I mean this is a common narrative. And frankly, I think, you know, Congress gets frustrated by that, both political parties, sometimes, when, you know, when you have an issue like this.

And, clearly, when industry is frustrated—and, honestly, when American competitiveness is at risk, not only in aviation, but across our manufacturing sector, when—you know, when we can't quickly change—I mean just use FDA as an example. I was a medical doctor before. Businesses in Indiana, in my district, are introducing their new products in foreign markets before they are in the United States. Why? Because they can't get approval fast enough to introduce them here. It is a travesty when you have American manufacturers can't produce their own products and release them in their own country because a Federal agency, you know, has cultural changes that have to be made, and that are—I think somebody mentioned might be 20 years ago.

For example, Cessna is building planes in China. You know? And so I would just implore the FAA to do everything they can to comply with what Congress has asked FAA to do. Let's help American manufacturing and continue to make America the best place in the world to manufacture. I yield back.

Mr. LOBIONDO. Thank you. Ms. Gilligan, you touched on this with, I think, Ms. Titus, but I would like you to try to expand a little bit. Given the many different types of small, unmanned aircraft, will each need to be certified, each platform need to be certified? Or how are you going to—I know you started this in Alaska, but this is an area where technology is moving very quickly. Can you shed any light on this for us?

Ms. GILLIGAN. Yes, sir. I think, as you know in the reauthorization bill, you provided us some guidance on how to address small UAS, up to 55 pounds. Those will be covered in the small UAS rule that we expect to publish by the end of the year. And I think you will see there that we have hit a good balance in terms of what the safety standards or determinations need to be for the operation of those small systems.

For larger systems—and, as you know, these systems can be as large as any of our standard aircraft—we believe that there will be safety design requirements and manufacturing requirements that will be appropriate. The two certifications that we issued for the aircraft systems up in Alaska gave us an opportunity to look at our standards and to identify those that would seem appropriate to apply to this kind of system.

So, for example, we have a number of design standards that apply to making the aircraft safe for people or crew who are in the aircraft. Obviously, those standards don't need to apply in this setting. So that is what we are really working on.

We have three other applicants for certification right now in our L.A. office. We believe that there may be another one or two that will come along. And we will work through that process to identify what are the applicable standards, and what are standards that they don't need to meet in order to demonstrate that the system is safe, both in design and for manufacture.

Mr. LOBIONDO. OK. I would like to thank you, Ms. Gilligan, Dr. Dillingham. We will recess briefly while the first panel moves out, and welcome the second panel.

[Recess.]

Mr. LOBIONDO. I would like to welcome our second panel today. And our second panel includes Ms. Marion Blakey, president and CEO of Aerospace Industries Association of America; Mr. Pete Bunce, president and CEO of General Aviation Manufacturers Association; Mr. Joe Brown, president of Hartzell Propellers; and Mr. Dave Cox, lead administrator of Air Washington project.

Ms. Blakey, you are now recognized.

TESTIMONY OF MARION C. BLAKEY, PRESIDENT AND CHIEF EXECUTIVE OFFICER, AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA; PETER J. BUNCE, PRESIDENT AND CHIEF EXECUTIVE OFFICER, GENERAL AVIATION MANUFACTURERS ASSOCIATION; JOSEPH W. BROWN, PRESIDENT, HARTZELL PROPELLER INC., AND CHIEF OPERATING OFFICER, TAILWIND TECHNOLOGIES; AND DAVE COX, LEAD ADMINISTRATOR, AIR WASHINGTON PROJECT, AND DEAN OF INSTRUCTION, TECHNICAL EDUCATION DIVISION, SPOKANE COMMUNITY COLLEGE

Ms. BLAKEY. Thank you, Mr. Chairman. And I do want to thank not only our chairman, but Ranking Member Larsen. I am delighted to see Congressman Lipinski here, and others that I know we have worked very closely with, in terms of aviation safety and manufacturing issues.

I am also very pleased to be able to discuss our views, from the standpoint of the Aerospace Industries Association on the state of domestic aircraft manufacturing and, frankly, the challenges that we face in an increasingly competitive global market.

We are proud that commercial aviation manufacturing remains the leading contributing sector to U.S. net exports, and that domestic aircraft sales continue to climb. Last year, we had a positive trade balance of $72 billion, our best in history. This healthy export record underscores our industry's deserved reputation for both safety and quality.

But it is also a testament to an industry that invests billions of dollars in R&D in order to keep our competitive edge. The use of higher strength, lighter weight materials, nano technologies, 3D printing, and cleaner biofuels all help to make our aircraft more durable and efficient, and illustrate our commitment to being second to none.

But as much as the United States leads the pack, we face stiff competition in a global market, often by foreign firms that are highly subsidized by their governments. However, if we have the support of strong U.S. Government policies to streamline the regulatory environment, provide equitable financing terms, and invest in the modernization of our air transportation infrastructure, our industry can then continue to do what it does best: innovate, compete, and create jobs for literally hundreds of thousands of high-skilled workers.

Let me discuss some of the challenges our industry faces. First, we appreciate this committee's strong support for streamlining FAA's aircraft certification processes. Now it is imperative that the FAA follow through and ensure, at the working level, that their organization designation authorization, ODA, is used as intended. This will allow the FAA to take advantage of industry expertise, and increase the collaboration and partnership that leads to improved aviation safety.

Secondly, we are concerned by the millions of dollars it costs our manufacturers to get other nations to certify equipment that the FAA has already certified. We are eager to work with the FAA to improve the acceptance of FAA-approved beyond our own borders.

Let's turn to the big issue before Congress right now, and that is the reauthorization of the Export-Import Bank of the United States. I can't stress enough that our industry counts on Ex-Im guarantees and credit assistance to compete with international sales on a level playing field. Thousands of U.S. workers who build our wide-body and general aviation aircraft and helicopters at companies up and down the supply chain owe their very jobs to that support. If Congress fails to reauthorize Ex-Im by September 30th, there will be fewer workers at plants across our country, and more at the plants of foreign countries. It is just that simple.

The future of our aviation infrastructure is another major concern. As this committee well knows, because you all have worked on this a great deal, our Nation's air transportation system is experiencing serious capacity challenges. Ongoing NextGen modernization efforts are making a huge difference in helping to reduce congestion, delays, and improve safety. But to be fully effective, NextGen must be fully funded.

Unfortunately, FAA's NextGen budget request for the coming year is $200 million below the administration's request of only 2 years ago. If sequestration returns in fiscal year 2016, we urge the Congress to take a hard look at needed investments for the future, and ensure that NextGen doesn't fall behind.

We also hope to see additional progress toward the integration of the beneficial use of unmanned aircraft systems in the domestic airspace. The FAA has taken initial steps on UAS integration, but more needs to be done. For example, the agency needs to ensure that the proposed rule for the development of equipment and oper-

ating standards for small UAS remains on track for later this year, and isn't further delayed.

Finally, for our industry to meet future market demand, we need to address an aging workforce with a major commitment to STEM education and customized workforce training.

In conclusion, we believe that U.S. aviation manufacturers are in a strong competitive position today. With appropriate policies to spur innovation, improve air transportation infrastructure, and replenish the workforce, our industry can continue to lead the world in aviation progress. Thank you.

Mr. LOBIONDO. Thank you.

Mr. Bunce, you are recognized.

Mr. BUNCE. Thank you, Chairman LoBiondo, Mr. Lipinski. I just want to again commend this committee for the deep dive that you continue to do into certification, and our ability to be able to get product to market. It is vitally important to us, as manufacturers, and for the jobs that we provide in the Nation.

It is a lot of jobs, 1.2 million jobs. And the world has really changed since the economic downturn. We now export 50 percent in virtually every segment of general aviation. So even piston aircraft, 50 percent of those aircraft are going overseas, because it is an expanding market. It is a growing pie. The rest of the world is waking up to general aviation, as well as commercial aviation. And that is why I would like to start with just voicing my extreme frustration in what we heard in the first panel today.

The United States Congress unanimously last year passed the Small Airplane Revitalization Act. Both chambers, unanimously. The President signed into law the Small Airplane Revitalization Act Thanksgiving last year. It requires that the FAA have this rule done by December of next year, 2015. And yet, we have the Associate Administrator come up here this morning and say, "No, we are going to be 2 years late."

Now, we have worked on this whole initiative since back in 2007. So it is nothing new. And the FAA coined the term, "Twice the safety at half the cost." So think about that. We are talking about doubling the amount of safety in the light end of general aviation and reducing the cost by half to both the Government and industry, and yet the bureaucracy is saying, "We don't care what you, Congress, say. We don't care what the President says. We are going to get it done when we want to get it done, and it is going to be 2 years late." And that is exactly what we have to put up with with industry.

One of the questions earlier today was predictability. We have no predictability. And when you are in a development program that you are trying to certify aircraft, and your burn rate in a large aircraft program is $10 million a month, and yet you don't have any predictability of when it is going to get done, how are you going to be profitable in this industry? How are you going to continue to employ folks in this industry? We have got to make this change.

And to Chairman Shuster's comment about 20 years for cultural change, we don't have that amount of time. And we heard about this continually in the last panel, cultural change. We have got to be able to give tools to managers to drive this change. This is the

new world. We are not going to get more resources for the FAA. We have got to let managers manage.

We have got to measure the workforce. There is resistance within the workforce to be individually measured. We have got to incentivize these different offices, so that those that underperform and are not allowing industry to use their delegation authorities don't get the same bonuses that those that are at the other end of the scale, that are allowing us to use those.

And we have to be able to force the FAA to do things that they tell industry that they are going to do, such as sequencing, as you heard this morning. Again, they are well behind, after talking about it for 2 years.

Now, on the consistency of regulatory interpretation, the 313 portion that you all wrote into the law in the last reauthorization. Our frustration is very high there, too. A thousand authorizations and certifications are awaiting through the flight standards portion of the FAA right now. Think about that. A thousand road blocks are in place. Now, this is for new charter operators, it is for new flight schools to be able to go and train more pilots. And it is for repair stations. Each one of those is directly translatable to jobs.

And now you put that in the context of the fact that you have an FAA that duplicates expertise in many offices around the country. And if you have one inspector that says, "OK, it is all right to do it," another inspector in another office can say, "No, I don't accept what that FAA inspector said, that is not good enough for me, this is the way I look at it," how are we in industry supposed to do business in an environment like that?

So it is vitally important to us of the work that this committee is doing, the great questions that you all ask in the previous panel, and we ask you to continue the pressure, because it is only through pressure from the United States Congress that is going to drive the change that we need for industry to be able to keep moving in aviation. Thank you, Mr. Chairman.

Mr. LOBIONDO. Thanks. I wish next time you could be a little more clear about how you feel on this whole thing.

[Laughter.]

Mr. LOBIONDO. Very well done, sharing a lot of our frustrations, capsulizing it. That is part of what we are continuing to attempt to do here.

Mr. Brown, you are recognized.

Mr. BROWN. Thank you, Mr. Chairman. Thank you, Mr. Lipinski. I am delighted to be here today. It is an honor. Frankly, let me start——

Mr. LOBIONDO. Could you pull your mic just a little closer, please?

Mr. BROWN. I will.

Mr. LOBIONDO. Thank you.

Mr. BROWN. So I said some thank-yous, and that it was an honor. And I would like to start by saying I really think we are talking about the right things. I am a small manufacturer in Ohio, and this subject matter resonates with me perfectly, and I find that very encouraging.

So, the company that I am representing here primarily today is called Hartzell Propeller. It has a storied history. It was founded

to furnish propellers to the Wright Brothers. Our first recorded sale is 1917. We are approaching 100 years of manufacturing in Piqua, Ohio. We have high-tech jobs, engineers and machinists, machinists who bring home $75,000 a year in income, own Harleys, have fishing camps, live pretty well.

We are a global leader, and our business in the last 5 years has really, really had to reposition, as a global exporter. Sales retracted tremendously during the recession, North American sales. And we have filled that in with sales to foreign countries. We have about the same revenues today that we had at the peak, but our export sales have gone from 30 percent to 50 percent of total revenue. And that means that we are competing in a much more complex environment than what we have been accustomed to over almost a century of business.

Why is it complex? Because we have to go make markets for ourselves in over 30 different countries. We have to engage with customers there. We have to engage with civil authorities there. We have to develop product support, systems, and propeller shops there. Much more complicated. In a little company in Ohio with 300 people, we have two native Chinese speakers on our payroll to help us make a market, and to help us engage with the civil aviation authorities.

We travel to about 30 countries a year, and export to all of them. And significantly, in order to make those exports, we need foreign validations. Since 2007, we have gotten approximately 300 foreign validations, 150 in the last 2 years. So we are fully invested and growing our sales internationally. We are all in.

I would like to just say I am a big proponent of Ex-Im financing for our customers. We don't engage it directly, but I have these validations because I am following my customers to market, and my customers appreciate Ex-Im. It levels the playing field, and it creates great jobs in the States.

I would like to turn quickly to the fact that, in order to get to market, whether it be in the United States or in a foreign country, we must get some form of certification. In the United States we get a type certificate, just like an air frame or an engine manufacturer. And then, to sell internationally, that type certificate needs to be validated. So we are engaged regularly with the FAA and civil authorities across the world, and we have an ODA to do that.

I think the ODA subject was very interesting today, particularly from the first panel. I think ours is about 7 years old. We were asked to adopt the ODA system, and we traded one delegation system for another. And after 7 years, I think the main point for me is that we have about the same level of service, which was good to begin with, but it costs us more to get the job done. ODAs are more expensive. So, if you don't get better efficiency, it is a net loss to the business. And I think that we can make ODAs more efficient. And in Q&A I hope I will have a chance to opine on that some more.

Let me talk also about foreign validations. It takes an enormous amount of time to have a foreign country tell us that the FAA did a good job. We have put 300 validation requests in, we have gotten 300 affirmatives. FAA's bat 1,000 with their type certificates. But it takes us, on average, 21 weeks to receive that validation letter.

Now, our design cycles are often 8 to 9 months. So think about a 5-month additional delay to follow a customer into a foreign market. It is very, very significant. And some of the longest validation processes come from bilateral countries. So I think this is a wonderful opportunity; I would appreciate your help.

Let me just finish with the AVGAS initiative. I make propellers. We put a lot of them on piston aircraft. This Congress, this committee, and the FAA have been super in driving a transition process for a fuel that does not use lead. We have lots to do, but we are making great progress. And in Q&A it is my hope that I could encourage us to stay on point. It is critical to the light end of general aviation. Thank you.

Mr. LoBiondo. Thank you, Mr. Brown.

Mr. Dave Cox, you are on.

Mr. Cox. Thank you, Mr. Chairman. Thank you, Congressman Larsen, for inviting me here today. Very anxious to talk to——

Mr. LoBiondo. Could you pull the microphone up a little bit, please? Thanks.

Mr. Cox. Very anxious to talk to the committee today about a very exciting project that we have been a part of for the last 3 years, going on our fourth year now, the Air Washington project. And if you look at the screen, I will use three short slides—will not create death by PowerPoint here today—to illustrate what the project is, and hopefully answer some interesting questions that the committee might have for me.

[Slide]

First of all, in—next slide—in early 2011, the college system in the State of Washington recognized a need to look for a method to train our workforce, specifically in aerospace. The slide on the screen right now illustrates the scope of the Air Washington project. It is a project awarded through the U.S. Department of Labor. For us it is a $20 million, 3-year initial project, focused on the aerospace industry and aerospace workforce in the State of Washington. What is not on this slide—and I won't read it to the committee, but what is not on this slide is Washington State actually produces 25 percent of all aerospace exports for this country. So it is a pretty big deal for us in the State of Washington. Next slide, please.

[Slide]

In preparation for my testimony, I understood that—and I am happy to talk about why we have had such a successful project with this grant. And I am going to zero in on five different points that myself and my staff and managers have identified universally as the reasons why this project has been so well received by both business industry and our workforce.

First of all, the fingerprint business. We matched, in this case, a significant grant opportunity to the fingerprint of the State of Washington. Again, I mentioned that 25 percent of all U.S. exports come from—in aerospace—come from the State of Washington. This was a form-fit, square peg-square hole of a project to a need.

Second was industry connection. We did not move forward with this project, we didn't even start thinking about this project, without being closely connected with all of our industries in our area, in our State. And that is from large, from the Boeings, all the way

down to the small Unitechs, even stretching over the border to Idaho.

Number three, State government connection. This is one of the—what I will claim is one of the advantages of working in the State of Washington. In the community college system we have an organized community college system for the State. It was a relatively easy process for us to get a consensus of the colleges that needed to—wanted to and needed to be a part of the consortium for this project, and work within that construct. So State government and the organization of the State community college system really facilitated us getting off to a good start.

Fourth, project management. This is something we have learned over time, how to manage a project of this size and this scope. A consortia of colleges is somewhat like cat herding, depends on the day, sometimes there is more cats, sometimes there is fewer. But we learned how to do this pretty effectively, and we are pretty happy to share those lessons learned and best practices with anybody who is willing to listen to us.

And finally, navigation services. This is really a connection with the WIBs, our workforce development centers in the State. They are critical functions for the project that have, quite frankly, validated to business and industry what we are doing, how we are doing it, and the successes we are having, so that the buy-in, if you will, or the trust level of business and industry is extremely high with this project and what we are doing.

So, those are the five points that I would be happy to expand on in Q&A, when we get a chance. And at this point I would like to finish my spoken testimony.

Mr. DAVIS [presiding]. Thank you to each of you for your testimony. I will start with my questions.

And I enjoyed your lively testimony, Mr. Bunce. I do share some concern, as you saw with the last panel, with Chairman LoBiondo, and I think the rest of my colleagues here, on what you have to go through as an industry.

Ms. Blakey, I enjoyed reading in your testimony about an example of a 50-year-old regulation that your folks have to make changes to a configuration, just to pass the test, and then have the configuration put back in its normal state. I am interested, Ms. Blakey. What recommendation do you have, besides the fact that we have—I have cosponsored legislation to—called the Bipartisan Regulatory Improvement Act. Is anything short of a new law to go through these outdated regulations—can you give us a recommendation that can fix this now?

Ms. BLAKEY. Well, certainly, the work that is being done on the small aircraft regulations is something that we all have great energy behind, and we think this kind of comprehensive overhaul is a great thing.

You also heard how much time it is taking, and how complicated it is.

Mr. DAVIS. Yes.

Ms. BLAKEY. So I think we, as industry, need to also call to your attention specific areas, specific regulations and problems that we think need to be addressed, where FAA does not seem to be able to do this on their own.

I will say, though, that the FAA, through the CAST program and others, does collaborate. And the ARCs that they set up with industry can be highly effective. So I would call attention to that, because I think there is a great deal of incentive on both sides to try to set aside regulations that are simply no longer valid in this day and age.

Mr. DAVIS. So quicker implementation of 313 is obvious.

Ms. BLAKEY. Absolutely.

Mr. DAVIS. All right. Mr. Bunce?

Mr. BUNCE. Mr. Davis, just to reiterate Ms. Blakey's point, so what the Small Airplane Revitalization Act did was, in this instance that you spoke of, where we had to modify an engine and make it do something it physically is not able to do, to be able to meet a test point that is for engines that were built 20 years ago that don't have sophisticated electronic controls and software, it is just crazy.

So what this new method of doing business allows for is it lets international regulators sit down with industry and keep regulations fresh. So if there is new technology, or new engines, or new composites that come online, all the regulators get together with industry and say, "This is the method of compliance that you can use here."

So that is why this is so important to get it right and get it out on the small airplane side, because the next step is to expand it to rotorcraft. And, as Ms. Blakey just said, we want to extend it to the commercial side, because it is the right way to do it, and we can keep regulations fresh, and we don't have to rule-make continually, which we all know takes way too long. We can keep them fresh this way, and it will be tremendously helpful for regulator and for the industry.

Mr. DAVIS. Thank you. And, Mr. Brown, you said in your testimony you would like to expand on your frustrations with the ODA process. Feel free to do so.

Mr. BROWN. Well, I would say that our relationship with the FAA is pretty healthy. We have a great relationship with the folks in our ACO. They understand what we are trying to do.

But we put in an ODA because we were asked to. And I think my issue is that approximately 7 years later we should not be talking about the hard-to-gain efficiencies because of culture change. Had somebody said to me, "If you put this system in and spend more annually to manage it, but 7 years from now we will be talking about whether we can make an efficiency 3 years forward," I would have said, "No, thanks. I will stick with my current program."

So, you know, I consider them allies, but I also consider them with a narrative that doesn't quite work, and that is that there is no culture change problem. It is a will to apply the delegation authorization, as written. And I will just give you some quick examples.

I think Ms. Gilligan hit it on the head when she said the assumption is a project is delegated. That should be the governing theme.

I would also suggest that if a company has an ODA project whose testing qualification methods are the typical way to take a

product to market for that company, then by nature the project cannot be new and novel. We have had occasions where we are going to use exactly the same test and qual methods that we normally use to get a product to market, but we have been told that our product is new and novel. And that makes no sense to me. And we could be very specific in that regard.

And then, last and finally, I guess I would say that there has to be a passionate advocate, or more than one, in the FAA who is likely to say something like, "ODAs are a competitive advantage for our leading manufacturers. They are winning in the world, and ODAs are part of that strategy. They will be efficient, offices will deploy them effectively, and the measurements will say so." But I don't hear that language. The language I hear is, "We are working on culture change." And that leaves me feeling uncertain whether or not the payoff is to be found.

Mr. DAVIS. The gentleman from Illinois is recognized for 5 minutes.

Mr. LIPINSKI. Thank you, Mr. Chairman. Since everyone enjoyed Mr. Bunce's comments earlier, I think I will give you an opportunity to expand on that, and see if anyone, any of the other witnesses want to speak to this. The frustration is obvious amongst all of you and all of us here, up on the dais, with some of the issues with the FAA.

So I want to just ask, as I said, Mr. Bunce first, and see if anyone else has a comment. What is the issue that—what is going on at the FAA, from your perspective? What can we do as a legislative body here, besides, you know, maintaining our oversight? Is there anything else that can be done? We have the FAA reauthorization coming up, as I mentioned. You see anything else that we can do to help the FAA—I will put it nicely—help the FAA work better on some of these issues? And certainly the 2-year delay is really unacceptable. But what do you think can be done? What do you recommend?

Mr. BUNCE. Thank you, Mr. Lipinski. Industry has delivered everything that is required for the FAA to issue a notice of proposed rulemaking by the end of this year, beginning of next year, for part 23. This would mean that the rule actually could be out by December of next year.

What we are hearing is delaying this process are the lawyers with—inside the FAA. It is not—this has nothing to do with the other issue, the cultural change and the certification. This has to do with the legal entities within the FAA that think this is major sweeping change.

And, in fact, because the process had stalled so much was one of the reasons why we were so encouraged that Congress took up the issue of passing the law, versus allowing just the rulemaking process to trudge along, or go through this long slog.

So, I think it would be particularly helpful for us to—in response back to the answers that the Associate Administrator gave in the first panel, was to ask the questions why. What is the delay? Because industry has delivered our first portion enough to be able to give the notice of proposed rulemaking. And I actually think that we, industry, will be able to provide very valuable feedback if they

got the NPRM out, to be able to meet the intent of the law and get it out by the end of next year.

As far as the larger cultural change issue with certification is concerned, again, trying to drive the workforce and the managers to be managers. We had—one of our aircraft manufacturers from Olney, Texas, that builds crop dusters was in here yesterday. And it was great to see. We had over 100 staffers show up for a briefing on Ex-Im Bank, and how important—6 of the 7 aircraft on his line are all Ex-Im-financed. So, right now, with seven airplanes being built, six of them are Ex-Im-financed. And the point he was making is he will go and submit a program to his aircraft certification office, and the manager, instead of managing it and saying, "This is the risk-based approach we want to take," just throws it over to the engineers and says, "What do you think?"

So, basically, there isn't this process of trying to drive change, and trying to give them an overall direction and goal of how can we get this program through quickly, and how can we improve safety as we go through it. It is just, OK, what do you guys think?

And then, what that encourages is it encourages the engineers to go down with the sharp pencil and do what they have always done, which is be down there in every little minute detail, instead of using resources productively and saying, "I am going to be a safety manager of systems," and when a company has demonstrated its capability, as Mr. Brown's company has, with their ODA, to say they know how to do it, let's overall manage their safety processes to make sure that they can consistently do that, but not be down in that level of detail. And I think that will really help us.

Mr. LIPINSKI. Ms. Blakey?

Ms. BLAKEY. May I add to this just a moment? Because the ODA was put in place in 2005 on my watch, when I was FAA Administrator. I believe in it tremendously, and our manufacturers believe it can be highly effective, if fully implemented. So please understand that. We also experience a tremendous amount of frustration at the fact that it is not being fully implemented.

I give as an example we met just the other day with the Secretary of Transportation, with several of our manufacturers. One of them has experienced 200 days of delay on a rotorcraft project, and said that if the decision were before him again, he would have contacted the manufacturer, taking the jobs and the certification outside the country, because this is the failure of ODA in actual fact. So this is real.

I do want, though, to point out, having been in that position, and understanding some of the dynamics, that when we talk about culture change we have to remember that the FAA is a highly unionized workforce, with highly effective unions. And leadership there matters, as well as leadership within the FAA's own management team. Trying to put in place incentives and accountability is something that has to be worked on both sides. And at this point I do think that we, as an industry, are advocating metrics, we are advocating specific measurements as to whether things are moving forward, and we are also advocating a gated approach so that everyone says that there are gates to be passed through, and both man-

agement and the team that is working on it recognizes that those are incentives, to hit those gates.

So, there are mechanisms, and I do think there are things that you all can do in the reauthorization to help address this.

Mr. LIPINSKI. Thank you. I will yield back.

Mr. RIBBLE. Thank you, Mr. Chairman. Thanks for being here.

Mr. Brown, I am going to go ahead and start with you. Give you a word of caution. Ten years ago I owned a commercial roofing company just outside of Appleton, Wisconsin, and I was invited to come and testify before a House subcommittee, and now here I am.

[Laughter.]

Mr. RIBBLE. Just a word to the wise here. You never know where frustration can lead you.

I want to read something out of your testimony, because you didn't do it, and I appreciate that, but I think it deserves to be heard. On page 1, "In addition to Hartzell Propeller, we own three other aviation manufacturing businesses and employ about 1,000 people in total. Joining Hartzell Propeller and our family of companies, Hartzell Aerospace is based in Valencia, California, and manufactures cabin environmental control products and subsystems for business, military and commercial aircraft. Mayday Manufacturing is located in Denton, Texas, and produces specialty bushings for the entire aviation industry. Hartzell Engine Technologies is located in Montgomery, Alabama, and manufactures aircraft starters, alternators, turbochargers and fuel pumps for general aviation aircraft. In all of our companies, we sell globally but manufacture all of our products in the U.S. and buy all of our materials from U.S. producers." Thank you for doing that.

I don't think—in many cases, I don't think American business people hear it often enough from Members of Congress and from their Government, the appreciation that they deserve for what they do.

I am concerned when I sense your frustration, Mr. Bunce. You and I have spoken a number of times, and your frustration was so eloquently presented here this morning, without even notes. You came well prepared. We get frustrated because Congress meets and laws are passed, and Presidents even sign them, and then sometimes they just get ignored.

But you mentioned something, and Ms. Blakey mentioned something regarding the Export-Import Bank. Could you tell me, if you know, approximately what percent of your business, your customers—what percent of your customers who are purchasing from your companies here in the U.S. are using some form of Export-Import financing? Is it a large percent? Is it a small percent?

Mr. BROWN. The answer is I don't know with the specificity that would be helpful to this conversation, in part because, until a few months ago, I would have never imagined this would have been an issue in my business. Ex-Im is very, very old. It is an established way to incent exports. And the idea that it may not be reauthorized is new to me.

What I can tell you is that when the reauthorization came under question, 3 or 4 of my top 10 customers told me that this was a big deal, and that a lot of my sales in my export growth was, in fact, flowing through their products, which were getting Ex-Im fi-

nancing, particularly in the agricultural aircraft market, where two of my customers are the leaders.

And they called to tell me that, in part, so I was aware, but in part to tell me that the forecast after 2013, the month-by-month unit forecast for their build rate is in question. And they wanted me to understand that my assumptions for 2014—I am sorry, for 2015—may not be founded. We heard from Air Tractor that six of their seven aircraft on the line right now are bound for foreign market with Ex-Im financing attached.

So, going into 2015 we have taken a totally defensive position on hiring, and we have cut our capital budget plan in half, project by project. And not to be alarmist, but to be prudent. And so, I guess my best answer for you is it is significant enough that my customers called me and said, "Watch your forecast. Let's be a little bit more cautious here, because I don't want you investing in things I can't deliver on as your aircraft manufacturing partner."

Mr. RIBBLE. Thank you. Ms. Blakey, do you have any idea, industrywide, what role the Export-Import Bank plays?

Ms. BLAKEY. It has an enormous role to play, because essentially it is what fills the gap, if you will, between what the commercial banks are able to do and what, in fact, is needed. When you are exporting, as we all are, more and more, to a wide variety of countries, some of which there simply is not available good commercial financing—in the developing world sometime the risk factors are considered to be too high. In some cases, those customers need to diversify their financing. And so, across the board, we find, whether it is parts manufacturers or it is full aircraft, rotorcraft, et cetera, that it is very critical.

And remember that also, when Export-Import Bank financing helps make a sale possible, there is the whole aftermarket, which really isn't even calculated into the figures that are now being used. But that keeps us selling U.S. products out there.

So, it is enormously important, and something that I could not agree with Mr. Brown more. None of us imagined that we would find ideological rhetoric somehow coloring what should be a very straightforward support for America's competitiveness and our business community. And it is taking a while, frankly, for the business community to even realize that this is in jeopardy.

So, we are very worried about this, because September 30th is coming very quickly.

Mr. RIBBLE. Thank you for your testimony, thank you for being here. I yield back.

Mr. HANNA [presiding]. Ms. Blakey, we have—referring to the Export-Import Bank for a moment longer, it has been referred to here widely as somehow corporate cronyism. I would like you and Mr. Brown and Mr. Bunce to—if you quickly could—respond to that. It is not something I necessarily agree with, and even understand, frankly. The phrase doesn't exactly strike me as meaningful.

But the idea, I guess, behind it is that it helps larger companies more than smaller companies, and that—maybe you would like to talk about that. Because my personal opinion is—and I am a pilot, owned a small airport, I have waited years for certifications on planes that I have ordered. So—and I am watching the industry that I care about die on the vine in this country, but yet we know

that it is growing in other countries. And we have the most open airspace in the world. We are lucky for that.

But maybe you would like to speak to any part of that.

Ms. BLAKEY. It is a phrase that isn't at all apropos or relevant, and obviously works on talk radio. It seems to pick up a little popularity here and there. But when you think about the fact that Ex-Im's support is going 90 percent to small businesses—70 percent of Boeing aircraft, to use our largest manufacturer, in fact, comes from suppliers. It is not as though there is some giant entity out there that doesn't have enormous dependence upon a lot of small companies all over this country.

And when you look at the fact that they are trying to sell abroad to other countries who are providing massive amounts of not just loans, but real subsidy out there, the amount of money that Ex-Im is providing is very meager, relative to the competitive landscape that we face worldwide.

And it is about small businesses. The idea that we are talking about some sort of cronyism of enormous corporations——

Mr. HANNA. What you are really saying is there are thousands of people like Mr. Brown's company, Hartzell, who contribute to these massive and hundreds of millions of dollars airplanes that trickle all the way down the food chain, so that the basic notion is wrongheaded. Is that fair?

Ms. BLAKEY. That is fair. The 787 stands on the shoulders of thousands of small businesses.

Mr. HANNA. Mr. Brown?

Mr. BROWN. I wear the hat of Hartzell Propeller in one respect, and there is no question in my mind Ex-Im generates pull-through sales for my company.

But I also serve as COO of Tailwind Technologies, which has these other aviation concerns, and we are deep in the supply chain for companies like Bell Helicopter and Boeing. And when they win, we win, period. And that is about 700 employees who did not understand how much the Ex-Im Bank was facilitating our local jobs until it came into question. And those companies are not walking around with their hand out.

For example, to be ready to sell to the 787 in our small businesses, we had about a million-and-a-half dollars' worth of nonrecurring R&D. We paid for it. We grew our workforce and our capacity and our machining business ahead of the curve, so we were in for about 7 multihundred-thousand-dollar machine tools, and we hired about 15 people. We did that so that when the 787 went to market, we could meet their schedule. That is investment. That is market risk. That is not walking around with your hand out.

Mr. HANNA. Can I ask you, Mr. Bunce, and Mr. Cox, too? It is implicit that the extra cost associated with this approval process, which you have indicated is—the cost has grown, even though the process is somewhat satisfactory—how does that—kind of self-answered a question here—but how does—how do you see that impacting our ability to grow our aviation industry abroad?

And, Mr. Cox, in Washington State how many of the people that you are training are working for companies—not Boeing, but all other smaller companies?

Go ahead, Mr. Bunce.

Mr. BUNCE. Well, Mr. Hanna, when we go and invest in the ODA, and get it stood up, as Mr. Brown mentioned, it cost the companies money. But the reason they did it was on the promise that they would be able to be more efficient to get product to market, to have that predictability that they could control their destiny, but when they have new and novel technology that they bring on board, they can still go in to the FAA, have the expertise come over, in some cases train that expertise on the project that they are working on, and then collectively the FAA and industry go and work this together.

And it is absolutely essential for us to be able to meet the demands of time in the market to be able to make the ODA work, because there are no more resources available to add engineers, like we had——

Mr. HANNA. So you are paying more and getting nothing more.

Mr. BUNCE. We are paying more and, as Mr. Brown said, it is static, at best. But in some cases, actually less.

And then, imperative in that calculation is also that training for the workforce. The workforce at the FAA, they are good people. They want to do the right thing. But, by nature of the fact that they are in a bureaucracy, they are risk-averse. So they are going to take the path that is the most conservative.

So, if we give them training to be able to say, "This is what it means in a risk-based approach," we think they can produce for us. But that training is the key, and to let them know that they have the backing to make the change, and that the risk doesn't fall on each and every one of their careers, that they have the backing of FAA management and, of course, the Congress.

Mr. HANNA. Mr. Cox? Thank you.

Mr. COX. Thank you. So, as I remember the question, it is kind of the ratio of——

Mr. HANNA. Yes, that is right.

Mr. COX [continuing]. Big employer to small employer. We have trained through this project a little over 3,500 folks at this point in time. At—breaking that down, probably 500 or less are employed by the Boeing Company in our service areas. And the vast majority are employed by tier 1, tier 2 suppliers like Mr. Brown's company, the vast majority. That is where we find our real traction in our State. It is not to minimize the impact of the big manufacturer, of Boeing——

Mr. HANNA. I understand.

Mr. COX. But it is—really is a driven-by-the-small-company kind of an industry.

Mr. HANNA. OK, good. Thank you. Thank you. Thank you for your indulgence, Ranking Member Larsen. I think that might have even been one of your questions.

Mr. LARSEN. But I have a few more. First off, I want to commend the panel for its—their comments on the Export-Import Bank. Obviously, it is important in Washington State, but—and it is very important beyond aviation manufacturing, as well. And I can go through a myriad of examples in Washington State with companies with no relation to aviation that need Export-Import Bank because their local bank that, you know, lives on deposits, has no idea how to do export financing. But they have these small businesses who

increasingly have their—a lot of their business model dependent upon export.

Mr. Cox, I have a few questions for you. So, you know, we have talked Export-Import, and we have talked certification, all these very important roles that they play in supporting domestic aviation. But the workforce and workforce training is important, which is why we have asked you here. And I wanted to ask you kind of specifically over these last 3 years, how has the demand signal for specific kinds of aviation work changed? Or are you still doing mainly maintenance, or mainly assembly, or mainly this, or mainly that over the last 3 years?

Mr. COX. Probably the most significant change that I think I have observed is in the area of composites technology. We have seen that, we started out knowing that it was going to be important, and it has kind of proven itself—that is, increasing in importance for what we train inside the project, and for our workforce. So, that would be the big change.

We are probably seeing pretty stable, as compared to before need for our aircraft, air frame, and power plant mechanic side of things—general aviation, specifically. however, there has been an increase in demand for assembly, for instance, with the major manufacturer, Boeing as a great example.

And then, probably a smaller but growing piece that we identified early in the development process of our proposal to the DOL that has been a little bit surprising to me is the avionics and fiber optics piece. Now, we kind of—back in the day, when myself and my three colleagues put this proposal together, we kind of looked at that and said, "Yes, I think we can see something, a glimmer of something coming on the future," or on the horizon. It turns out that there is a pretty significant demand for those two pieces of what we have been doing.

Mr. LARSEN. Yes, right. I don't have the exact numbers with me, but we have looked at this in Washington State, in terms of the supplier network, and the percentage of work they provide to the major manufacturers of Boeing, Airbus, Embraer, and Bombardier, and when you add up the percentage of work, it adds up to over 100 percent. The point being that suppliers are not just supplying to one manufacturer in the State. They are supplying, many of them, to all four—a few of them to all four, certainly many of them to at least two of the major manufacturers. So there is a real ecosystem of aviation manufacturing in the State.

Do you run into any issues with training for a—one company over the next? Or is it generalized and you let them, the employer, do what they need to do with that employee that you provide?

Mr. COX. Less so one company over another. I mean we get fairly specific in assembly, because that really is centric to the one company. However, in the other areas that are a focus of the project, we really are pretty diverse, I think, in the population of businesses that we serve.

And something that you mentioned, I would also illustrate or highlight one of the things we have seen as an indirect outcome of this project has been an increase in the number of companies in the State of Washington to have AS 9100 certification, and now can

get into the market of being suppliers to—you know, tier 1 suppliers, or sub-tier 1 suppliers.

All of that kind of gets us more into staying tuned in to the general market, and identifying where we might need specific or point issues addressed, whether it is a specific composites company, or specific avionics company. We can kind of dive into that on a local level. But that is the beauty of the project, the project is statewide and it gives real flexibility to the 11 colleges that do this, to kind of jump in and do point issue addressing, rather than a one-size-fits-all kind of an approach.

Mr. LARSEN. Yes. I see my time is up. But if you will indulge me, Mr. Chair, I have one more question for Mr. Cox.

The subtitle of the hearing is "Challenges and Opportunities." What is your number one challenge, going forward, other than the grant runs out at the end of the year and you need to re-up it?

Mr. COX. And even that is less of a challenge, because, again, part of our winning strategy is the fact that the State of Washington internal government has picked up the mantle on this thing, and is moving it forward with independent State funding to keep it going into the future. And that was never a requirement of the DOL, as a continuation or sustainment piece.

Our biggest challenge, I honestly think, is going to be in the navigator role. We have found that to be so, so important to building trust, building confidence in the businesses and industries that are going to work with us as higher education. And that is not built in to our sustainability piece that the State is looking at. They are looking at sustaining our—basically, our capacity expansion that we have created.

So, if I can figure a way out to get my navigators at my 11 colleges—and actually, quite frankly, it is larger than that in our State—I would say that is our biggest challenge.

Our win, going forward, is we have set a great example. We have, I think, in the case of this project, shown not only our State, but nationally, how to do one of these projects correctly. And I say that pretty humbly, actually. But I think it is very true. Our results are proof of that. And I think, if anything, it will give confidence to law-makers like yourselves to positive consider those types of projects——

Mr. LARSEN. Sure.

Mr. COX [continuing]. In the future, and balance that against maybe some that aren't working so well.

Mr. LARSEN. All right. Great, good. Thank you. Thank you, Mr. Chairman.

Mr. HANNA. Dr. Bucshon?

Dr. BUCSHON. Thank you. We have talked about the regulatory climate, but I want to just take this opportunity for your industry to discuss other impediments to American competitiveness in manufacturing.

So, Mr. Bunce, I mean, do you have any comments about maybe what your members think in the area of taxation, and how maybe that is having some impact on your ability to be competitive? Or other issues, you know, other than we have talked—I think we have talked about the regulatory impediments, but there are other

big issues, right, out there that are making American manufacturers not as competitive as they could be?

Mr. BUNCE. Absolutely, Mr. Bucshon. Something that we have been paying attention very closely is the accelerated depreciation, or bonus depreciation issue that Congress just dealt with, so we were very gratified to see that. The R&D tax credit, huge for us.

I think when you look at other nations out there, and the amount of money that they provide or incentivize their industry to do research and development for aviation absolutely is so essential to us. And anything that we can do to make that permanent, to be able to go and get folks to invest in R&D, that directly translates to new technology and new jobs out there.

And then, I think also, from the nontaxation area, just also keeping pressure on the FAA to make sure that validation programs, as Mr. Brown mentioned, are very important. You know, obviously, in Indiana you have got a producer of engines that is a global producer. It is very important that nations that we have a bilateral relationship with, where we have recognized their competencies to be able to regulate, they have recognized ours, that that is very efficient across the ocean, so that if they have a product coming in, that we don't waste a whole bunch of FAA resources looking at it, and vice versa, that if Mr. Brown's company were to go over there, that he very quickly can get his validation, because that delay in time in the market has significant impact.

Dr. BUCSHON. Ms. Blakey, do you have any comments, anything to add on other impediments to American manufacturers?

Ms. BLAKEY. Well, I would certainly foot-stomp the R&D tax credit, which, of course, the House has supported and passed. But we desperately need that to be in place. Corporate tax reform is certainly a big part of what we would like to see.

But let me turn also to the need for this body and the Congress as a whole to be supportive of areas where America's industry really does exceed. And I do have in mind the unmanned aircraft systems. You know, we sometime get distracted by issues that surround these things when you are introducing new and disruptive technology. But this is an area right now where this country has an enormous lead. And we should look at it as something that is going to bring tremendous public benefit. And I am talking about in all sorts of areas that really matter, you know, search and rescue, firefighting, public law enforcement. There is a lot to this.

But when we realize that this technology, right now, we actually could export as well as—we could see it grow dramatically in this country. And we have got some pretty artificial clamps on introducing it into the NAS at this point, and also in being able to export. And we need your help and support. I will be very straight up.

Dr. BUCSHON. Thank you. Mr. Brown, you want to comment? I mean you have obviously tried to—you have an export market. What do you see as some of the impediments out there? There are some obvious ones, too, American manufacturing.

And I will make these comments before I have you answer, because I am very concerned about this. When you have companies in Indiana like Cook Medical Group, that need to expand, and unfortunately are—have so many impediments that they decide not to

expand in Indiana or neighboring States, that is a big problem. And, you know, we hear this all the time, that companies right now, as you know, are buying smaller foreign companies and then, you know, the merged company will be based not in the United States. This is a growing trend. It is accelerating quickly because of our tax code. Your comments?

Mr. BROWN. I think they have largely been made. I like your phrase, "foot-stomp." I will foot-stomp the validation issue. It is very, very significant to us. And I think putting it on the radar today sets the stage for more discussion during reauthorization. And I think the FAA would be very inclined to focus on the speed with which their TCs are validated. Because, eventually, there is a quid pro quo. And so, I think that they can be more demanding of foreign partners.

I am a big fan of the R&D tax credit. I look at my income statement, and I make investment decisions in part because I know the Government is incenting me to do that. Very important.

I would add, at a higher level, not just with export sales, but with all of my sales, it would help a lot if there was greater clarity in Washington rhetoric. In the past couple of years there have been a number of times where what is going on here ends up in my conference room on Mondays with staff. Are we going to have an FAA during the sequester, or are they going to be shut down? Can we get type certificates out and validation support letters out, or not?

Can my customers sell those six airplanes out of seven with Ex-Im financing or not? Are we going to do accelerated rate of depreciation, or are we going to talk about jets as fat cat transport equipment? And I guess I would say, somehow or another, we have lost sight of the fundamental thing, which is that the U.S. aviation industry is winning. We are the world leaders. We generate a surplus in trade. We are the good guys.

Dr. BUCSHON. I would agree with that. I just would say I personally support Ex-Im, and I realize the importance to jobs in Indiana and in our country. And with that I yield back.

Mr. HANNA. Thank you. So we have a situation where we have the largest exporter in our country, the biggest net beneficiary to our balance of trade, and we are hamstringing it. If there are no further questions, I thank the witnesses for being here today, and for your participation. This committee stands adjourned.

[Whereupon, at 12:30 p.m., the subcommittee was adjourned.]

T&I Aviation Subcommittee Hearing
Domestic Aviation Manufacturing: Challenges and Opportunities
Congresswoman Elizabeth H. Esty Statement and Question for the Record
July 23, 2014

Thank you, Chairman LoBiondo and Ranking Member Larsen, for holding this hearing on aviation manufacturing.

Connecticut is—and has always been—a leader in aviation and aerospace manufacturing. Pratt & Whitney was founded in 1925, and began manufacturing air-cooled, low-weight airplane engines the following year. Almost a century later, nearly 40,000 folks in Connecticut are employed in the aerospace industry, and our manufacturers export more than $6 billion in civilian aircraft, engines, and parts.

As part of this Committee's work to reauthorize the FAA Modernization and Reform Act, we are closely tracking the implementation of NextGen, which will make our skies safer and our airplanes more efficient and environmentally friendly. Mr. Bunce, you testified about NextGen technologies, including ADS-B In and ADS-B Out. Can you explain the importance of ADS-B Out to the success of NextGen? As manufacturers, do you believe the 2020 mandate for ADS-B Out is feasible in terms of production, installation, and affordability? And finally, how can Congress and the FAA promote and support NextGen's implementation?

Elizabeth H. Esty
Member of Congress

STATEMENT OF MARGARET M. GILLIGAN, ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY, FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTTEE ON AVIATION, DOMESTIC AVIATION MANUFACTURING: CHALLENGES AND OPPORTUNITIES, JULY 23, 2014.

Chairman LoBiondo, Congressman Larsen, Members of the Subcommittee:

Thank you for inviting me to discuss the Federal Aviation Administration's (FAA) role in supporting domestic aviation manufacturing. The FAA operates the safest and most complex airspace system in the world. The level of safety in the U.S. National Airspace System (NAS) is directly linked to the FAA's high safety standards, rigorous certification processes, and strong collaboration with industry stakeholders. Equally importantly, U.S. aircraft and products operate throughout the world. In this way, we export our level of safety and provide protections to U.S. citizens wherever they travel. Our standards are designed to be rigorous without being overly burdensome. The FAA continuously reviews its certification processes in an effort to increase safety and efficiency.

FAA Certification

The FAA certifies all civil aviation aircraft and components. Some version of our certification process has been in place since 1964 and it has served us well. This does not mean, however, that the process has remained static. Over the past 50 years, the regulations covering certification processes have been under constant review. As a result, the regulations governing the aviation certification process set forth in 14 C.F.R. Part 21 have been modified over 90 times and the rules applicable to large transport aircraft have been amended over 130 times. FAA regulations and policies have evolved to adapt to an ever-changing industry that uses global partnerships to develop new, more efficient, and safer aviation products and technologies.

We utilize a risk-based approach to improving aviation safety by focusing our certification resources and efforts on those areas that have the highest risk. Whenever a particular decision or event is critical to the safety of the product or to the determination of compliance, the FAA is involved in some manner. The FAA may be involved directly or it may utilize the designee system, which was established by Congress in 1938 and is critical to the success and effectiveness of the certification process. In accordance with Congressional direction, we have advanced from individual to organizational designees, which was a natural progression of the designee system. The designee program plays a critical role in our ability to efficiently certify the wide range of aircraft and components developed and manufactured in the United States.

Before an aircraft, engine, propeller, or other component is certified by the FAA, the applicant is required to develop plans and specifications, and perform the inspections and tests necessary to establish that the design of an aircraft or article complies with FAA regulations. The FAA is responsible for determining that the applicant has shown that the design meets FAA standards. We do that through review of data and by conducting risk based evaluations of the applicant's work.

When a new design of aircraft is being proposed, the designer must apply to the FAA for a type certificate. While an applicant usually works on its design before discussing it with the FAA, we encourage discussions with the FAA well in advance of presenting a formal application. Once an applicant approaches us, a series of meetings are held both to familiarize FAA with the proposed design, and to familiarize the applicant with the applicable certification requirements. A number of formal and informal meetings are held on technical and procedural issues. Once the application is made, issue papers are developed to provide a structured way of documenting the resolution of technical, regulatory, and administrative issues that are identified during the

process. The applicant must show that its design meets applicable existing airworthiness requirements.

The FAA is responsible for determining that an applicant has shown that its design meets the required standards. If the FAA finds that a proposed new type of aircraft, engine, or propeller complies with safety standards, it issues a type certificate. The FAA may subsequently issue a production certificate, allowing the manufacturer to produce duplicate products under the FAA-approved type design. Before a production certificate is issued, our inspectors conduct a rigorous review of the applicant's quality system, production tooling, manufacturing processes and controls, inspection methods, and supplier control procedures.

The FAA Aircraft Certification Service has both a high volume and a wide range of certification applications under review at any given time. In Fiscal Year 2013 alone, the FAA approved 189 revisions to aircraft type certificates, 444 new Supplemental Type Certificates (STC) for aircraft components, an additional 397 amended STCs, and over 2,200 Parts Manufacturer Approvals for replacement parts on aircraft. At the same time, we issued 383 Airworthiness Directives (ADs) to correct unsafe conditions and 54 Special Airworthiness Information Bulletins (SAIBs) to alert operators to potential risks.

Domestic Manufacturing in a Global Economy

Domestic manufacturing of civil aviation aircraft and components plays a critical role in the U.S. economy. The FAA has facilitated the expansion of domestic manufacturing by certifying new production facilities across the country. We also facilitate international expansion by domestic manufacturers through Bilateral Aviation Safety Agreements. These agreements allow certain aircraft components to be imported and exported, while ensuring that safety standards are met.

The U.S. has bilateral agreements with over 47 countries, including an agreement with the European Union that covers 28 nations in Europe. These agreements allow U.S. companies to import aircraft components and also allow domestic manufacturers in the U.S. to export their products.

It is important to note, however, that even if an aircraft or component is designed or manufactured in a country with whom we have a bilateral agreement, it must meet the same stringent safety standards as if it were designed or manufactured in the U.S. While the FAA facilitates the import and export of aircraft components in a global economy, it never compromises safety.

When an aircraft, propeller, engine, or other component falls within the scope of one of our bilateral agreements with a foreign state, they are eligible for importation. Each state with whom we have a bilateral agreement has an aviation authority that has overseen and approved the design and production of the product. But before it can be imported or used in aircraft in the U.S., the foreign authority must send us a request to validate the product. That request must comply with the FAA's validation order and the bilateral agreement under which it arises. We then validate the item before issuing a type certificate or letter of design approval, which allows the item to be imported and used in the NAS. Through this process, U.S. companies can leverage the assets, innovation, and resources from around the world. These same bilateral agreements allow domestic manufacturers to expand their business internationally by exporting goods manufactured in the U.S.

In order to manufacture aviation components in the U.S., a company must obtain a production certificate for each location or manufacturing plant at which they produce aircraft components.

The FAA encourages and facilitates the growth of domestic manufacturing by issuing production certificates to U.S. companies who wish to expand the number and location of production facilities in the U.S. As we authorize expansion we must assure we have resources to exercise proper oversight and ensure the items produced and used in the U.S. meet the high safety standards established by the FAA.

Streamlining Certification

The FAA continues to seek ways to make our certification process more efficient and cost-effective, while maintaining the highest levels of safety. In February of 2012, Congress passed the FAA Modernization and Reform Act of 2012. Section 312 directed the FAA to work with industry representatives to review and reform the aircraft certification process. In response to Section 312, we formed the Aircraft Certification Process Review and Reform Advisory Rulemaking Committee (ARC). Through the ARC, industry representatives developed consensus recommendations on ways to reduce the time and cost of certification without compromising safety. The ARC developed six recommendations, which are mapped to 14 specific FAA initiatives. These initiatives include expanding the use of delegation and designees, updating the system for sequencing certification projects, developing metrics to measure the effectiveness of process improvements, and other efforts. The process has been both transparent and collaborative. We meet regularly with industry representatives, including the Aerospace Industries Association (AIA) and General Aviation Manufacturer's Association (GAMA), to continuously update them on the status of the initiatives. We publish implementation updates on the FAA web site every six months. Our next update will be posted by the end of this month.

Since the original release of the Implementation Plan on January 7, 2013, the FAA has made progress on all of the initiatives. One that has been of particular interest to industry is the organizational designation authorization (or ODA) Action Plan. The FAA published an order that included a number of enhancements requested by industry to increase the efficiency of organizational designation authorization certification processes and improve the utilization of ODA authority. The order provides for better communication between FAA and ODA holders, as well as more flexibility for the ODA. Greater flexibility translates into the ODA having more control over its projects timelines. The effectiveness of the changes made to the order were discussed last week with industry.

Another initiative under the Section 312 Implementation Plan was the part 23 reorganization. In August 2011, the FAA chartered the Part 23 Reorganization Aviation Rulemaking Committee to provide recommendations in this area. We believe that transforming the design standards for small aircraft into requirements that are based on airplane complexity and performance will provide for streamlined approval of safety advancements. This will improve safety and reduce the regulatory cost burden for both the FAA and manufacturers. This approach is expected to advance the safety of general aviation by spurring innovation and the adoption of technical advancements.

Section 313 of the FAA Modernization and Reform Act of 2012 directed the FAA to standardize its regulatory interpretations. In response, we formed the Consistency of Regulatory Interpretation Aviation Rulemaking (CRI ARC). The FAA collaborated with industry stakeholders to develop recommendations to address issues related to the consistency of regulatory interpretations. These recommendations call for systemic, long-term improvements that will have lasting impact, as well as meaningful metrics that can be tracked internally and by

industry. These large scale efforts will lead to increased standardization by assuring that FAA staff have access to FAA regulatory interpretations, including those that address the regulations governing the certification process.

In addition to large-scale initiatives to continually improve the certification process, the FAA is undertaking efforts to facilitate the efficient approval of certain aircraft components. For example, the FAA recently developed a policy to streamline approval for angle of attack (AOA) indicators for general aviation aircraft. AOA devices, which are common on military and large civil aircraft, can be added to small aircraft and supplement airspeed indicators and stall warning systems. This alerts pilots of a low airspeed condition before a dangerous aerodynamic stall occurs, especially during takeoff and landing. Although AOA systems have been available for some time, the effort and cost associated with gaining approval has limited their installation in general aviation. Installation of these systems may aid in preventing loss of control accidents, which is a common cause of fatal accidents in GA and is a top focus area of both the FAA and the general aviation (GA) community. The streamlined requirements for AOA indicators are expected to reduce the cost of AOA indicators, which should lead to greater use of the devices and increased safety in general aviation.

Conclusion

Mr. Chairman, I hope this serves to illustrate the ways in which the FAA supports the certification of new and innovative technologies and domestic manufacturing. I am proud of the safety record we have achieved together and I look forward to our continued partnership.

This concludes my prepared statement. I'd be pleased to answer any questions you may have at this time.

Question for the Record
Hearing on Domestic Aviation Manufacturing

Question 1:

What is the status of the comprehensive change management plan for the certification workforce? How does the FAA plan to implement and track progress?

Answer:

The FAA has initiated a range of activities in response to recommendations from the Consistency of Regulatory Interpretation Aviation Rulemaking Committee (ARC 313). To improve internal regulatory and policy development processes, the agency is developing a comprehensive document management framework that will map each of the standards set out in Title 14 of the Code of Federal Regulations to existing guidance material, and deploying a standardized change management process for ongoing review and revision of guidance documents. A document mapping process will be used to develop a Requirements Document for an electronic platform to automate the document management process and allow the search parameters recommended by the ARC.

A related task is to conduct a gap analysis of training for AVS personnel with regulatory application/interpretation and rulemaking/policy development responsibilities, as well as training for FAA personnel with rulemaking and policy development/revision responsibilities (e.g., Aviation Safety Inspectors (ASI), Aviation Safety Engineers (ASE), and regulatory support personnel). The FAA will determine if existing training (including the current Compliance & Enforcement training course for ASIs) can sufficiently address all gaps identified.

Question for the Record
Hearing on Domestic Aviation Manufacturing

Question 2:

The FAA is changing how it conducts certification oversight, with a move to a safety management system. In light of this shift in oversight approach, how has the FAA changed its recruitment, hiring, and training programs?

Answer:

To successfully operate in the Safety Management System (SMS) environment, the FAA is building a workforce adept at risk-based decision-making, as well as systematic and critical thinking. For recruitment and hiring, the FAA defines business, technical, and interpersonal competencies required for key positions. The Automated Vacancy Information Access Tool for Online Referral (AVIATOR) is used to facilitate the overall application and selection process. The goal is to develop a pipeline of skilled employees who possess the skills needed to support SMS implementation.

With respect to training, Flight Standards has created a competency-based training curriculum for current aviation safety inspectors, and we are revising mandatory new-hire training as well. In addition, we are now training our workforce to use the Safety Assurance System (SAS) risk-based oversight tool to conduct initial certification, routine surveillance and certificate management.

Question for the Record
Hearing on Domestic Aviation Manufacturing

Question 3:

The Director of Flight Standards has stated that there is a backlog of over 1,000 certifications and authorizations pending in the national queue. What actions has the FAA taken to address this backlog?

Answer:

Earlier this year, the FAA created a national workgroup to address the backlog of certifications. We are incorporating that workgroup's recommendations into the Certification Services Oversight Process (CSOP). In addition, we have revised and disseminated the CSOP Standard Operating Procedures document to the field. This guidance includes a new CSOP Resource Analysis Process, as well as Wait-List Advancement Tools to enable the best use of AFS resources through a common sense approach to sequencing certification activities. The revised CSOP also requires a broader analysis of resources that may be available to support certification activities and provides better reporting to allow Flight Standards management at all levels to see certification activities. We are revising additional documents and automation to support the new approach and provide improved visibility to managers. We expect to complete the automation changes by October 1, 2014.

Question for the Record
Hearing on Domestic Aviation Manufacturing

Question 4:

In your written testimony you state, "In Fiscal Year 2013 alone, the FAA approved 189 revisions to aircraft type certificates, 444 new Supplemental Type Certificates (STC) for aircraft components, an additional 397 amended STCs, and over 2,200 Parts Manufacturer Approvals for replacement parts on aircraft." Do you know how many of these approvals were done with an Organizational Designation Authorization (ODA) certification process?

Answer:

The FAA has worked to build a delegation system that augments certification resources, leverages the industry's expertise, and allows the FAA to focus resources on critical safety issues. The reported numbers of revisions to Type Certificates (TCs), STCs and Amended Type Certificates (ATCs) issued in FY 2013 have been verified, but the method by which the data is collected does not differentiate between approvals issued by an Aircraft Certification Office (ACO) and an ODA. When an ODA issues a design approval, it is acting on behalf of the Administrator, so it is performing an FAA function and considered to be part of the FAA. The FAA retains the issuance of new and Amended Type Certificates, so the referenced 397 ATCs were not issued by ODAs. A percentage of the design approvals for FY 2013 were issued by ODAs, but exact numbers are not available.

Question for the Record
Hearing on Domestic Aviation Manufacturing

Question 5:

In addition to aircraft manufacturers, the United States is also home to a significant number of aftermarket manufactures and maintenance providers that support maintaining aircraft over their entire life. What steps is the FAA taking to make maintenance and installation of aftermarket equipment more streamlined and cost effective?

Answer:

The FAA realizes the increasing need for aftermarket maintenance and manufacturing support of a rapidly expanding population of civil aircraft. In addition to aftermarket part approval under the existing Parts Manufacturing Approval (PMA) process, recent regulatory changes allow an appropriately rated maintenance provider to fabricate replacement parts for consumption into a repair or alteration, eliminating the need for a PMA in some cases.

The FAA has been looking for ways to streamline the certification of safety enhancing equipment. In 2013, the FAA published the Policy Statement Concerning Non-Required Safety Enhancing Equipment (NORSEE) in Rotorcraft that encourages the use of optional, non-required safety enhancing equipment. In a related effort, AIR and AFS worked together to review the design, production and installation requirements for angle of attack (AoA) indicator systems that could provide pilots with greater situational awareness. The agency identified ways to streamline approval of the design and production of supplemental AoA equipment, as well as the process for installation of this optional but beneficial equipment. Building on the lessons learned from the AoA effort, the FAA is positioned to assist manufacturers of other safety enhancing aftermarket equipment by finding appropriate ways to simplify certification and installation procedures.

United States Government Accountability Office

Testimony

Before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

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AVIATION SAFETY

FAA's Efforts to Implement Recommendations to Improve Certification and Regulatory Consistency Face Some Challenges

Statement of Gerald L. Dillingham, Ph.D.
Director, Physical Infrastructure Issues

GAO-14-728T

GAO Highlights

Highlights of GAO-14-728T, a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

July 23, 2014

AVIATION SAFETY

FAA's Efforts to Implement Recommendations to Improve Certification and Regulatory Consistency Face Some Challenges

Why GAO Did This Study

Among its responsibilities for aviation safety, FAA issues certificates for new aircraft and parts, and grants approvals for changes to air operations and aircraft, based on federal aviation regulations. Various studies, GAO's prior work, and industry stakeholders have raised questions about the efficiency of FAA's certification and approval processes, as well as the consistency of its staff in interpreting aviation regulations. Over time, FAA has implemented efforts to address these issues, but they persist as FAA faces greater industry demand and its overall workload has increased. The 2012 FAA Modernization and Reform Act required FAA to work with industry to resolve these issues. In response, FAA chartered two committees—one to address certification and approval processes and another to address regulatory consistency—which recommended improvements in 2012. In 2013, FAA published an implementation plan for addressing the certification and approval process recommendations and promised to publish an implementation plan for addressing the regulatory consistency recommendations at a later date.

This testimony provides information on FAA's progress in implementing the (1) certification and approval process recommendations and (2) regulatory consistency recommendations. It also discusses future challenges industry stakeholders believe FAA will face in implementing these recommendations. This testimony is based on GAO products issued from 2010 to 2014, updated in July 2014 through reviews of recent FAA and industry documents and interviews of FAA officials and industry representatives.

View GAO-14-728T. For more information, contact Gerald L. Dillingham, Ph. D. at (202) 512-2834 or dillinghamg@gao.gov.

What GAO Found

The Federal Aviation Administration's (FAA) Aircraft Certification Service (Aircraft Certification) is responsible for addressing the certification and approval process recommendations, and has made progress. Aircraft Certification is implementing and has set milestones for completing 14 initiatives, several of which were originally begun as part of earlier certification process improvement efforts. The initiatives range from developing a comprehensive road map for major change initiatives, to improving Aircraft Certification's process for prioritizing requests for certifications and approvals (project sequencing), to reorganizing the small aircraft certification regulation. According to an update prepared by FAA in May 2014, one initiative has been completed and most are on track to be completed within 3 years. However, according to this update, two initiatives will not meet planned milestones, including the one for improving FAA's program for delegating authority to organizations to carry out some certification activities. Also, a third initiative for improving consistency of regulatory interpretation was at risk of not meeting planned milestones. Two additional initiatives, while on track for meeting planned milestones in May 2014, faced challenges because of opposition by FAA's labor unions, including one for improving Aircraft Certification's project sequencing process. GAO found in October 2013 that Aircraft Certification continued to lack performance measures for many of these initiatives, a condition that persists. In 2010, GAO had previously recommended that FAA develop a continuous evaluative process with performance goals and measures. FAA agreed but has not yet fully addressed the recommendation. Aircraft Certification officials discussed plans to develop metrics in three phases, beginning in July 2014 and in the future, for measuring (1) the progress of implementing the initiatives throughout FAA, (2) the outcomes of each initiative, and (3) the return on investment for FAA and the industry resulting from implementing the initiatives as a whole.

FAA's Flight Standards Service (Flight Standards) is responsible for addressing the regulatory consistency recommendations, is finalizing plans to do so. FAA has not published a detailed plan with milestones and performance metrics, and officials told GAO that they intend to publish a plan by August 2014. Flight Standards officials said they were making progress in addressing the committee's top priority recommendation—mapping all FAA policy and guidance to relevant federal aviation regulations and developing an electronic system that maintains this information and that is accessible by FAA and industry users. As part of this effort, officials told GAO that Flight Standards has begun eliminating obsolete guidance and linking existing policy and guidance to the regulations.

Going forward, Aircraft Certification's and Flight Standards' efforts may face challenges that could affect successful implementation of the committees' recommendations. Many of these recommendations represent a significant shift in how FAA normally conducts business, and if the workforce is reluctant to implement such changes, FAA's planned initiatives for addressing the recommendations could be delayed. Also, the fact that FAA has not yet implemented performance measures for most of the initiatives is a concern for both GAO and the industry. As GAO concluded in October 2013, without performance measures, FAA will be unable to gather the appropriate data to evaluate the success of current and future initiatives.

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

I appreciate the opportunity to testify today on the status of the Federal Aviation Administration's (FAA) efforts to improve its certification and approval processes. As you know, FAA is responsible for aviation safety, and part of this responsibility entails issuing certificates for new aircraft and aircraft parts and equipment and granting approvals for such things as changes to air operations and aircraft, based on federal aviation regulations. FAA's current efforts to improve these processes are aimed at (1) improving its decision-making process for issuing certificates and approvals, (2) keeping pace with emerging technology, and (3) enabling industry growth and innovation. Studies published since 1980,[1] our prior work,[2] industry stakeholders, and experts have long raised questions about the efficiency of FAA's certification and approval processes and varying interpretations and applications of its regulations in making certification and approval decisions. More recently, several aviation industry groups have asserted that these issues persist, resulting in delays and higher costs for their members. These delays have been generally attributed to heavy staff workloads and a lack of staff resources to begin new work on certifications and approvals. With greater industry demand and the introduction of new aircraft, equipment, and technology into the national aviation system, FAA's workload has increased and is expected to grow further over the next decade. We previously concluded that it will be critical for FAA to follow through with reforms to its certification and approval processes to meet industry's future needs.[3]

[1]See National Academy of Sciences, *Improving Aircraft Safety: FAA Certification of Commercial Passenger Aircraft*, National Research Council, Committee on FAA Airworthiness Certification Procedures (Washington, D.C.: June 1980); Booz Allen & Hamilton, *Challenge 1000: Recommendations for Future Aviation Safety Regulations* (McLean, VA: Apr. 19, 1996); RTCA Task Force 4, *Final Report of the RTCA Task Force 4 "Certification"* (Washington, D.C.: Feb. 26, 1999; and Independent Review Team Appointed by Secretary of Transportation Mary E. Peters, *Managing Risks in Civil Aviation: A Review of FAA's Approach to Safety* (Washington, D.C.: Sept. 2, 2008).

[2]See GAO, *Aviation Safety: Certification and Approval Processes Are Generally Viewed as Working Well, but Better Evaluative Information Needed to Improve Efficiency*, GAO-11-14 (Washington, D.C.: Oct. 7, 2010) and GAO, *Aircraft Certification: New FAA Approach Needed to Meet Challenges of Advanced Technology*, GAO/RCED-93-155 (Washington, D.C.: Sept. 1993).

[3]GAO, *Aviation Safety: Status of Recommendations to Improve FAA's Certification and Approval Processes*. GAO-14-142T (Washington, D.C.: Oct. 30, 2013).

Over time, FAA has initiated various efforts and initiatives to improve its certification and approval processes and interpret regulations more consistently, including efforts in response to findings and recommendations we made in 2010.[4] However, to bring further attention to these issues and spur additional action, Congress included the following requirements for FAA in the FAA Modernization and Reform Act of 2012:[5] (1) work with the industry to assess and recommend improvements to the certification and approval processes (Section 312) and (2) address the findings from our 2010 report related to FAA interpreting regulations more consistently (Section 313). To meet these requirements, FAA chartered two aviation rulemaking committees in April 2012—the Aircraft Certification Process Review and Reform Aviation Rulemaking Committee (Certification Process Committee) and the Consistency of Regulatory Interpretation Aviation Rulemaking Committee (Regulatory Consistency Committee)—which made recommendations to FAA in May 2012 and November 2012, respectively. In an October 2013 statement, we made preliminary assessments of the two committees' recommendations and FAA's responses,[6] finding that both FAA-chartered committees took reasonable approaches in their work and made relevant, clear, and actionable recommendations to FAA. However, we also discussed challenges to making further improvements to the certification and approval processes, most notably that FAA has not developed performance metrics for measuring the outcomes of the initiatives.[7] In 2010, GAO made two recommendations requiring, among other things, that FAA develop a continuous evaluative process with performance goals and measures for assessing its actions to improve the efficiency of

[4]GAO-11-14.

[5]Pub. L. No. 112-95, §§ 312 and 313, 126 Stat. 11, 66 and 67 (2012).

[6]GAO-14-142T.

[7]GAO-14-142T.

its certification and approval processes, and a method to track submission approvals.[8]

This testimony discusses FAA's continuing efforts related to its certification and approval processes. More specifically, it provides information on (1) FAA's progress in implementing the Certification Process Committee recommendations, (2) its progress in implementing the Regulatory Consistency Committee recommendations, and (3) future challenges that others and we identified that FAA faces in implementing these recommendations. This statement is primarily drawn from several GAO products issued since 2010.[9] We have updated the information in July 2014 related to our previous work on the certification and approval processes through a review of more recent FAA and industry documents, including the committees' reports to FAA, FAA's reports to Congress in response to the committees' recommendations as well as additional government and industry documents and reports related to this topic. This review included the May 2012 Certification Process Committee's and the November 2012 Regulatory Consistency Committee's report to FAA; FAA's August 2012 and July 2013 reports to Congress on the results and plan for implementing recommendations made; and FAA's implementation plans to address the committees' recommendations. We also conducted interviews with FAA officials and industry stakeholders—including Boeing, the largest U.S. aircraft manufacturer—and representatives from all eight trade associations that participated in the two aviation rulemaking committees. Related GAO products are footnoted throughout the statement. The reports and testimonies cited in this statement contain detailed explanations of the methods used to conduct

[8]GAO-11-14. Specifically, we recommended that FAA develop a continuous evaluative process and use it to create measurable performance goals for the actions, track performance toward those goals, and determine appropriate process changes. We also recommended that FAA develop and implement a process in Flight Standards to track how long certification and approval submissions are wait-listed, the reasons for wait-listing them, and the factors that eventually allowed initiation of the certification process. FAA partially addressed the first recommendation and fully addressed the other.

[9]GAO-11-14; GAO, *Aviation Safety: Additional FAA Efforts Could Enhance Safety Risk Management*, GAO-12-898 (Washington, D.C.: Sept. 12, 2012); GAO, *Aviation: Status of DOT's Actions to Address the Future of Aviation Advisory Committee's Recommendations*, GAO-13-657 (Washington, D.C.: July 25, 2013); GAO-142T; GAO, *FAA Reauthorization Act: Progress and Challenges Implementing Various Provisions of the 2012 Act*, GAO-14-285T (Washington, D.C.: Feb. 5, 2014); and GAO, *Aviation Safety: Additional Oversight Planning by FAA Could Enhance Safety Risk Management*, GAO-14-516 (Washington, D.C.: June 25, 2014).

our prior work. We provided a draft of the new information contained in this statement to the Department of Transportation (DOT) for technical review and addressed its views in the body of our statement where appropriate.

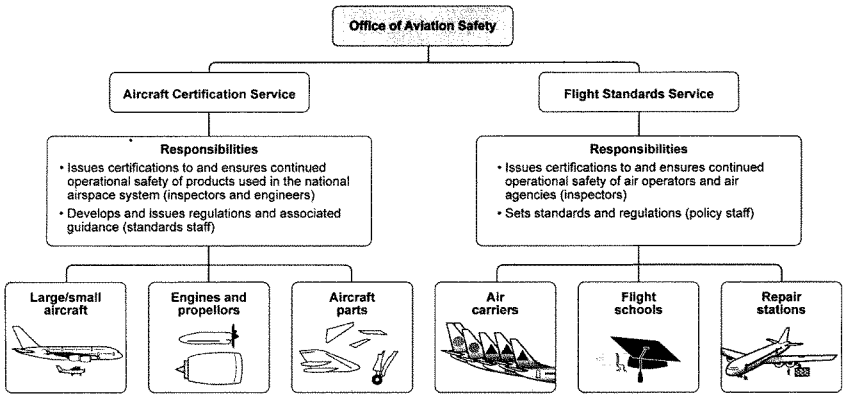
The work upon which this testimony is based was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Located in FAA's Office of Aviation Safety (Aviation Safety), the Aircraft Certification Service (Aircraft Certification) and Flight Standards Service (Flight Standards) issue certificates and approvals for new aviation products to be used in the national airspace system as well as for new operators in the system, such as air carriers, based on federal aviation regulations (see fig. 1 below). FAA inspectors and engineers interpret and implement these regulations governing certificates and approvals through FAA policies and guidance, including orders, notices, and advisory circulars. Additionally, FAA also has the authority to use private individuals and organizational entities, known as designees, to carry out many certification activities on behalf of the FAA Administrator in order to enable FAA to better concentrate its limited staff resources on safety-critical functions.[10]

[10]Administered under 14 C.F.R. Part 183, FAA has the authority to designate private individuals to act as representatives of the agency for examining, inspecting, and testing persons and aircraft for the purpose of issuing certificates. In 2005, FAA established the organization designation authorization program to consolidate all existing organizational delegation types into this single program. 70 Fed. Reg. 59946, Oct. 13, 2005.

Figure 1: Federal Aviation Administration's Organizational Structure for Processing Certificates and Approvals



Source: GAO presentation of FAA information. | GAO-14-728T

Note: The Flight Standards Service's oversight responsibilities include air operators (e.g., air carriers and air taxi services) and air agencies (e.g., flight schools and repair stations).

In Aircraft Certification, approximately 880 engineers and inspectors issue certifications and approvals to the designers and manufacturers of new aircraft and aircraft engines, propellers, parts, and equipment, including the avionics and other equipment required for modernizing the air traffic control system under the Next Generation Air Transportation System (NextGen).[11] Since 2005, Aircraft Certification has used a project sequencing system to nationally prioritize certification submissions on the basis of available resources. In fiscal year 2013, Aircraft Certification issued 3,496 design approvals, 57 production approvals, and 536 airworthiness certificates.

[11]NextGen is a federal effort to transform the U.S. national airspace system from a ground-based system of air traffic control to a satellite-based system of air traffic management.

In Flight Standards, approximately 4,000 inspectors issue certificates and approvals allowing individuals and entities to operate in the national airspace system. These include certificates to commercial air carriers, operators of smaller commercial aircraft, repair stations, and flight training schools and training centers. Flight Standards field office managers in over 100 field offices initiate certification projects within their offices on a first-come, first served basis. In fiscal year 2013, Flight Standards issued 259 air operator certificates and 159 air agency certificates.

When FAA receives aviation industry submissions for certificates and approvals, it must determine whether or not resources are available to begin the project. According to FAA, the agency considers its highest priority to be overseeing the continued operational safety of the people and products already operating within the national airspace system. The same staff that provide this oversight are also tasked with other oversight activities, such as processing new certifications and approvals that FAA considers to be lower priority. FAA wait-lists new certification and approval projects when resources are not available to begin the work. Flight Standards, in particular, has historically had difficulty keeping up with its certification workload across its regions and offices, a problem that persists.[12] FAA has considered ways to supplement its annual budget by expanding its sources of funding to deal with its increasing workload and staff shortages. However, FAA has limited options as it cannot levy fees on its customers for most of the services it provides to industry, including aviation product certifications and approvals.[13]

Attempts have been made to provide FAA with additional funding from industry stakeholders for processing certifications and approvals. In 2007, the administration submitted a reauthorization proposal to Congress that called for major changes to FAA's funding and budget structure. These changes were intended to provide a more stable, reliable basis for funding in the long term, in part by allowing FAA to impose fees on

[12]According to a recent DOT's Office of Inspector General (OIG) report, as of October 2013, Flight Standards faced a significant backlog of aviation certification applications, with 138 applicants wait-listed for more than 3 years. See DOT OIG, *Weak Processes Have Led to A Backlog of Flight Standards Certification Applications*, Federal Aviation Administration, Report Number AV-2014-056 (Washington, D.C.: June 12, 2014).

[13]Congress has historically prohibited FAA from collecting additional funding through the implementation of new aviation user fees. The latest prohibition is contained in the Consolidated Appropriations Act, 2014, Pub. L. No. 113-76, 128 Stat. 5, 578 (2014).

manufacturers for the various activities and costs related to aircraft certification and approval. Congress has previously authorized other agencies to charge these types of "user fees" for services rendered for processing product certification and approval. For example, the Medical Device User Fee and Modernization Act of 2002 authorized the Food and Drug Administration (FDA) to charge and retain a fee for providing services related to reviewing medical device products.[14] However, this broad authority has not been granted to FAA.

Most FAA Initiatives to Improve Its Aircraft Certification and Approval Process Are on Track

In May 2012, the Certification Process Committee made six recommendations to Aircraft Certification to streamline and reengineer the product certification and approval processes, improve efficiency and effectiveness within Aircraft Certification, and redirect resources for support of certification. The Certification Process Committee further recommended that FAA develop measures of effectiveness for its activities and a means of tracking its progress. In August 2012, FAA reported its plan to Congress for addressing the Certification Process Committee's recommendations, and, in July 2013, the agency issued an implementation plan with 14 initiatives. FAA updated this plan in January 2014 and plans to issue further updates on the status of the initiatives periodically.[15]

Most Initiatives Are on Track for Meeting Planned Completion Milestones

Since the January update, Aircraft Certification has continued its efforts to address the recommendations to improve its certification and approval processes and is implementing the 14 initiatives. These initiatives touch on various aspects of Aircraft Certification's work and, according to FAA several predate the committee's recommendations and were part of on-going continuous efforts to address long-standing certification issues and to improve the certification process. The initiatives range from developing a comprehensive road map for major change initiatives, to improving the

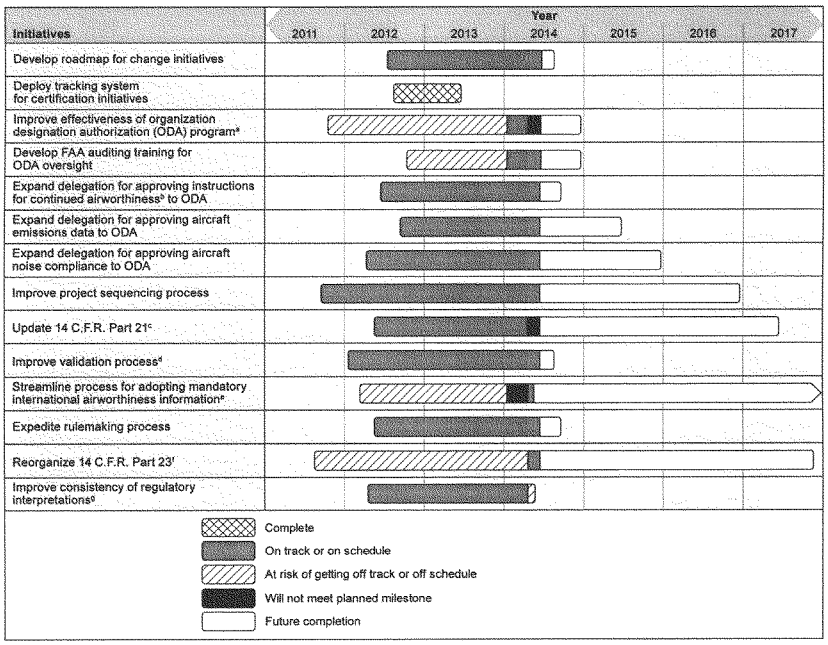
[14]FDA reviews applications from manufacturers that wish to market medical devices in the United States. To facilitate prompt approval of new devices and clearance of devices that are substantially equivalent to those legally on the market, Congress passed the Act to authorize FDA to collect user fees from manufacturers. In return, the Act requires FDA to meet performance goals tied to the agency's review process. Pub. L. No. 107-250, 116 Stat. 1588 (2002).

[15]FAA, *Detailed Implementation Plan for the Federal Aviation Administration Modernization and Reform Act of 2012, Pub. L. No. 112-95, Section 312*, Jan. 31, 2014.

project sequencing process, to reorganizing the small aircraft certification regulation.[16] Figure 2, based on an interim May 2014 update that FAA provided to us, summarizes FAA's determination of the status of the 14 initiatives.

[16] 14 C.F.R. Part 23. In June 2013, a joint FAA-industry committee recommended to FAA changes to part 23. According to FAA officials, FAA will devise a plan to implement the recommendations and initiate new rulemaking for part 23 in 2015.

Figure 2: Status of the Federal Aviation Administration's Certification Process Initiatives (Section 312), as of May 2014



Source: GAO presentation of FAA information. | GAO-14-728T

Note: Future completion shown in the figure indicates when an initiative is planned to be completed.

[a]FAA delegates authority to organizations under the organization designation authorization program to carry out certain functions on behalf of the agency.

[b]Instructions for continued airworthiness include such things as maintenance manuals and inspection programs for maintaining operational safety of aviation products.

[c]14 C.F.R. Part 21 is the regulation under which aircraft products and parts are certificated.

[d]The validation process is a form of certification to establish compliance for airplanes designed outside their countries in order to issue a type certificate for these airplanes.

[e]No due date has been assigned to this initiative.

[f]14 C.F.R. Part 23 is the regulation under which small airplanes are certificated.

[g]This initiative is on hold until issuance of the implementation plan for addressing recommendations to improve regulatory consistency.

According to the May 2014 update that FAA provided to us, 1 of the 14 initiatives has been completed, and 10 initiatives are on track for completion within planned time frames. FAA deployed a tracking system to monitor the implementation of the initiatives in June 2013, but the agency indicated it is still finalizing the mechanisms for authorizing staff with the appropriate level of review and approval rights in the system. Also, ten of the initiatives were on track for meeting their planned completion milestones. For example, the initiatives to expand the authority for approving aircraft emissions data and noise compliance under the organization designation authorization (ODA) program are on track to be completed in 2015.[17] In addition, the initiative to expedite rulemaking by, among other things, adopting a rulemaking prioritization tool to update airworthiness standards for special conditions is scheduled to be completed in September of this year.[18] Further, three of the initiatives were in danger of getting off track between 2011 and 2013 and are now back on schedule.

Some Initiatives Will Not Meet or Are at Risk of Not Meeting Planned Milestones

Although most initiatives are on track, according to FAA's May 2014 interim update, 2 of the 14 initiatives will not meet planned milestones:

- *Improve effectiveness of the ODA program:* FAA and two aviation industry groups—the Aerospace Industries Association and General Aviation Manufacturers Association[19]—developed a plan to improve the effectiveness of the ODA process, which is used to authorize organizations to act on behalf of FAA in conducting some safety certification work. In conjunction with the plan, FAA revised the order

[17]FAA grants ODAs for several types of certifications and approvals, including production certificates, parts manufacturer approvals, and type certificates. Some companies, such as Boeing, are granted ODA status for more than one type of certification or approval.

[18]FAA issues special conditions to address new and novel design features during the aircraft certification process.

[19]The Aerospace Industries Association represents major U.S. aerospace and defense manufacturers and suppliers, and the General Aviation Manufacturers Association represents leading global manufacturers of general aviation airplanes and rotorcraft, engines, avionics, and components.

that outlines the new ODA procedures.[20] However, this initiative was purposely delayed to provide industry with additional time to adapt to the changes in the ODA procedures. Representatives of three industry associations we interviewed for this testimony supported the use and expansion of ODA by FAA. In contrast, while the Professional Aviation Safety Specialists (PASS) agrees with the concept of ODA, it has concerns related to expanding the program because representatives contend that oversight of the program requires significant FAA resources.[21] PASS also contends that due to current staffing shortages and increased workload, FAA does not have enough inspectors and engineers to provide the proper surveillance of the designees who would be granted this additional delegation authority. On May 14, 2014, the DOT OIG announced a review of FAA's oversight of the ODA program. The OIG plans to assess FAA's (1) process for determining staffing levels for ODA oversight and (2) oversight of delegated organizations' program controls.

- *Update 14 C.F.R. Part 21:* FAA chartered another aviation rulemaking committee in October 2012 to evaluate improvements to the effectiveness and efficiency of certification procedures for aircraft products and parts,[22] along with incorporating new safety management system (SMS) concepts into the design and manufacturing environment.[23] The committee submitted its report to FAA in July 2014. FAA indicated that the government shutdown in October 2013 delayed some of the actions that the agency had planned to move this effort into the rulemaking process, including submission of the application for rulemaking. According to FAA,

[20]FAA Order 8100.15B, change 1, *Organization Designation Authorization Procedures*, Feb. 3, 2014.

[21]PASS is the labor union that represents some of FAA's inspector workforce, among others.

[22]Title 14 of the Code of Federal Regulations Part 21, *Certification Procedures for Products and Parts*, is the basis for evaluating and certifying aircraft, engines, and propellers. The steps in the certification process include the applicant's conceptual design, the application for design approval, definition of the design standards, plans to demonstrate the design meets those standards, generation and substantiation of compliance data, determination of compliance, and issuance of the type certificate.

[23]SMS is a formalized process that involves collecting and analyzing data on aviation operations to identify emerging safety problems, determining risk severity, and mitigating that risk to an acceptable level. This approach to aviation safety is becoming the standard throughout global aviation industry. See GAO-14-516 and GAO-12-898.

however, this delay will have no effect on completion of the final rule, which is planned for 2017.

According to FAA's May 2014 update, 1 of the 14 initiatives was at risk of not meeting planned milestones, which increases the risk that FAA will miss its established implementation time frames for the initiative for addressing its associated recommendation.

- *Improve consistency of regulatory interpretations:* The May 2014 interim update also indicated that the initiative for improving the consistency of regulatory interpretation is at risk of getting off track or off schedule. This initiative responds to the Regulatory Consistency Committee's recommendations for improving the consistency of regulatory interpretation within both Aircraft Certification and Flight Standards. However, Aircraft Certification is relying on Flight Standards to complete the implementation plan for addressing the recommendations. Therefore, Aircraft Certification has placed this initiative on hold. (The next section of this statement discusses in more detail FAA's response to the Regulatory Consistency Committee's recommendations.)

In addition, FAA officials told us that implementation of 2 of the 14 initiatives, while shown as being on track for meeting planned milestones in the May 2014 interim update, face challenges because of opposition by FAA labor unions:

- *Improve project sequencing process:*[24] According to the interim May 2014 update that FAA provided to us, this initiative was listed as on track. However, FAA officials told us the status for this initiative will change to "will not meet planned milestone" in the next revision of the implementation plan expected in July 2014. They explained the change in status is a result of their not expecting to obtain concurrence from the National Air Traffic Controllers Association (NATCA), which represents Aircraft Certification's engineers, among others, on the proposed process changes until December of this year. NATCA has expressed concerns about FAA's plans to change the project sequencing process. The group recommended to FAA that instead of continuing with project sequencing, it should institute a

[24]As previously mentioned, Aircraft Certification instituted a sequencing program in 2005 to prioritize the processing of all new certification and approval applications based on the availability of its resources.

system that manages projects locally on a first-come first-served basis, except for projects that fix an unsafe condition. FAA plans to implement the new process, assess its effectiveness, and modify as necessary, and issue the order for all Aircraft Certification offices' project sequencing by December 2016.

- *Expand delegation authority for approving instructions for continued airworthiness (ICA)*[25] *to ODA:* Similarly, in May 2014, FAA characterized the initiative as on track for meeting the planned milestones, but FAA officials told us this initiative may face challenges as well. The Certification Process Committee noted that the volume of ICAs is rapidly increasing and that ICA delegation is underutilized, and recommended that FAA delegate some ICA review activity to improve and streamline the certification process. However, in December 2013, PASS presented a white paper to FAA that outlined its concerns and reasons it considers this to be a high-risk area that is critical to maintaining adequate safety and aircraft maintenance. PASS strongly disagreed with FAA's plan to expand delegation of ICAs and the Certification Process Committee's decision for making this recommendation. In response, in April 2014, FAA sent a memorandum to PASS to address the concerns and questions contained in the PASS white paper, as well as justify moving forward on the initiative. A PASS representative we interviewed for this testimony told us that PASS continues to have concerns about FAA'S expansion of the ODA program. FAA considers this issue to be resolved with PASS and has decided to go forward with the initiative.

Most Certification Process Improvement Initiatives Lack Measures of Effectiveness

As of May 2014, FAA had not developed metrics for measuring the effectiveness of 9 of the 14 initiatives it has undertaken, nor has it determined metrics to measure the effectiveness of its actions as a whole. According to FAA officials, they plan to develop these metrics in three phases. For the first phase, to be included in the July 2014 update of its implementation plan, FAA will include metrics to measure the progress of the implementation of the initiatives. For the second phase, FAA plans to subsequently develop metrics for measuring the outcomes of each initiative. For the third phase, working with the Aerospace Industries Association, FAA plans to develop metrics for measuring the

[25]ICAs include such things as maintenance manuals and inspection programs that are necessary for maintaining the continued operational safety of aviation products, such as aircraft, and aircraft parts and equipment.

global return on investment in implementing all of the initiatives, to the extent that such measurement is possible. We believe that this plan for establishing performance measures is reasonable.

FAA Has Made Some Progress in Addressing Recommendations to Improve the Consistency of Its Regulatory Interpretations, but Details Are Unclear

Unlike FAA's efforts to improve the certification process, although FAA has made some progress towards addressing the regulatory consistency recommendations, the details remain unclear about how FAA will structure its efforts. In November 2012, the Regulatory Consistency Committee made six recommendations to Aircraft Certification and Flight Standards to improve (1) the consistency in how regulations are applied and (2) communications between FAA and industry stakeholders. In July 2013, FAA reported to Congress on its plans for addressing the regulatory consistency recommendations, and included its preliminary plan for determining the feasibility of implementing these recommendations. The report also indicated that FAA would develop a detailed implementation plan that would include an implementation strategy, assign responsibilities to offices and staff, establish milestones, and measure effectiveness for tracking purposes. We found in February 2014 that FAA expected to publish such a detailed implementation plan by late June 2014, more than 6 months after its initial target date of December 2013.[26] In June 2014, FAA officials told us that the implementation plan was under review within FAA and estimated that the agency would issue its detailed plan in August 2014.

Until this detailed plan is released, the specific initiatives for addressing the recommendations are unknown; thus, we cannot analyze information on the status of any planned efforts similar to the information we provided above for the certification process initiatives. Further, FAA's July 2013 preliminary plan does not specify how FAA plans to measure the effectiveness of the initiatives. FAA indicated that "although there may not be any baseline for each recommendation against which to compare improvements, FAA intends to consider: (1) identifying metrics, (2) gathering and developing baseline data, and (3) periodically measuring any changes, positive or negative, in rates of completion." FAA officials provided the following information on how the agency is planning to respond to the six recommendations.

[26]GAO-14-285T.

A Master Source Guidance System

The Regulatory Consistency Committee recommended that Aircraft Certification and Flight Standards (1) review all guidance documents and interpretations to identify and cancel outdated material and electronically link the remaining materials to its applicable rule, and (2) to consolidate Aircraft Certification's and Flight Standards' electronic guidance libraries into a master source guidance system, organized by rule, to allow FAA and industry users access to relevant rules and all active and superseded guidance material and related documents. This recommendation for creating the master source guidance system is the top priority of the Regulatory Consistency Committee. FAA officials indicated that establishing this system will require two main components:

- As a first step, for linking (mapping) all relevant guidance materials to the regulations, FAA plans to determine which "guidance" documents exist across regional and field offices—including orders, notices, and advisory circulars—outside FAA's electronic guidance libraries, which are being used to answer questions, interpret or analyze regulations, and provide guidance on regulatory matters. In December 2013, Flight Standards sent out a memorandum requesting that staff discontinue using any guidance documents outside those found in the guidance libraries, to be effective January 15, 2014. The memorandum also asked for the staff to submit any unofficial guidance worth preserving to FAA for review. Flight Standards then conducted a review to determine which of the unofficial guidance documents submitted should be added to the guidance libraries. Several members of the Regulatory Consistency Committee responded in an e-mail to FAA to express serious concerns about this approach and stated that the committee did not envision the cancellation of any guidance before FAA developed a methodology to include or exclude such guidance. The committee members further noted that FAA's memorandum provided no method to allow existing certificate holders to retain certifications that were based on any applied guidance that had been cancelled. Further, these members requested that FAA either withdraw the memorandum or address the issues they raised and extend the date for FAA staff to comply with the memorandum. However, two other Regulatory Consistency Committee members we interviewed considered FAA's actions to get staff to discontinue the use of unofficial guidance in the field to be an appropriate first step.

- Second, FAA plans to develop a master source guidance system with the capability to consolidate information from Aircraft Certification's and Flight Standards' electronic guidance libraries as well as legal interpretations from the Office of Chief Counsel into a master guidance system to allow FAA and industry users access. Specifically,

the Regulatory Consistency Committee recommended that this system be searchable so that FAA and industry users can easily access relevant rules and find the relevant guidance for the rule. FAA officials assessed the possibility of using the existing Aviation Safety Information Management System, but determined that it is not adequate because (1) users cannot search for guidance by word and (2) it is not compatible with other FAA data systems. According to FAA officials, with about $750,000 in approved funding for this project, FAA's information technology division is in the process of developing a dynamic regulatory system that should provide the needed capabilities. Officials indicated that when users conduct a search for a particular topic in this system, the search results should bring up multiple entries for specific guidance. Initially, Flight Standards plans to use an Excel spreadsheet for storing the guidance and then transition to the new system once it is deployed. Flight Standards hopes to test out a first version of this system within calendar year 2014. However, the officials were unsure of the total cost of developing and deploying the system.

Representatives from four of the committee stakeholders we interviewed for this testimony acknowledged that creating this system is a major effort for FAA because of the volume of FAA guidance that potentially exists across regional and field offices, some of which may not be in Aircraft Certification's and Flight Standards' electronic guidance libraries. Representatives of five industry stakeholders we interviewed provided insights on how FAA might devise a plan for creating and populating this system. Three of these noted that FAA will need to ensure that the various types of guidance—such as orders, notices, and advisory circulars—include links to the original federal aviation regulations. One of these stakeholders recommended that FAA develop the system to allow a user looking at FAA guidance to also see all relevant background information on related decisions, and the past actions related to the guidance in question and their relation to the original regulation. Because of the large volume of FAA guidance, some stakeholders also suggested that FAA begin by first choosing a starting date for which any new rules or other new guidance it issues would include links to the relevant original regulations. However, one stakeholder we interviewed noted that FAA should consider prioritizing its effort by first mapping the guidance materials for specific key regulations and then the guidance for less significant regulations.

Instructional Tools for FAA Personnel for Applying Policy and Guidance	The Regulatory Consistency Committee noted multiple instances where FAA guidance appeared to have created inconsistent interpretation and application, and confusion; the Consistency Committee recommended that FAA develop a standardized decision-making methodology for the development of all policy and guidance material to ensure such documents are consistent with adopted regulations. In interviews for this testimony, FAA officials also provided some updates on how the agency will respond to the recommendation to develop instructional tools for its policy staff. FAA officials told us they had not initiated any efforts yet to address this recommendation, but would begin by focusing on developing instructions for policy staff to use for populating the master source guidance system. In August 2014, FAA plans to form an internal work group to establish a document management framework and work processes that can be used by Aircraft Certification's and Flight Standards' policy division staffs as they map existing guidance documents to applicable source regulations in the master source guidance system. The officials expected the work group would issue an internal directive for FAA personnel on work processes to be used in populating the guidance system by June of 2015.
FAA and Industry Training Priorities and Curriculums	The Regulatory Consistency Committee recommended that FAA, in consultation with industry stakeholders, review and revise its regulatory training for applicable agency personnel and make the curriculum available to industry. FAA officials told us that FAA has begun to develop improved training for its field staff—the third recommendation of the Regulatory Consistency Committee—so that field inspector staffs are better equipped to answer routine compliance-related questions confidently and in a consistent manner. In addition, the officials told us starting in 2015, FAA plans to conduct a gap analysis of existing training for all FAA staff who are responsible for interpreting and applying certification and approval regulations. For this analysis, FAA plans to assess whether existing training can be modified to sufficiently address any gaps. FAA also plans to coordinate with industry to share the results of this review and analysis by the end of 2015.
Regulatory Consistency Communications Board	The Regulatory Consistency Committee made two similar recommendations for FAA to consider: (1) establish a Regulatory Consistency Communications Board comprising various FAA representatives that would provide clarification on questions from FAA and industry stakeholders related to the application of regulations and (2)

determine the feasibility of establishing a full-time Regulatory Operations Communication Center[27] as a centralized support center to provide real-time guidance to FAA personnel and industry certificate/approval holders and applicants. FAA officials also discussed the agency's conceptual approach and plans for establishing a board—likely by the end of calendar year 2014—to address these two recommendations. The purpose of the board would be to provide a neutral and centralized mechanism with a standardized process for addressing and resolving regulatory compliance issues between FAA and industry. According to the committee, this board would be comprised of representatives from the relevant headquarters policy divisions in FAA to help answer complex regulatory interpretation issues that arise between FAA inspectors and engineers, and industry during the certification and approval processes. FAA officials told us the board's process, once established, would use a modified version of the agency's current Consistency and Standardization Initiative (CSI), a process established as a means for industry to appeal FAA decisions and actions.

As we found in 2010, resolution through the CSI can be a lengthy process, with the total length of the process depending on how many levels of appeal the industry stakeholder chooses.[28] However, as we also found, industry stakeholders have generally been reluctant to use CSI for initiating appeals and raising concerns with the local field office for fear of retribution. FAA officials told us in interviews that the modified process would help address the retribution issue, because it would rely instead on multiple sources to raise issues—not just solely on industry—and would be the final arbiter for FAA and industry in disagreements on certification and approval decisions. According to FAA officials, the board could also serve the function of the proposed operations center recommended by the committee to be a resource for assisting FAA personnel and industry stakeholders with interpretation queries and establishing consistency in regulatory application. FAA officials indicated that the agency had decided not to establish the communications center because (1) the

[27]Under this operations center concept, FAA would establish a 24-hour/7-day operations center staffed (virtually) by policy and/or legal personnel trained and experienced in the regulations, policy and guidance associated with flight operations, aircraft maintenance, aircraft certification and aircraft production.

[28]GAO-11-14.

board could serve a similar function and (2) FAA has limited resources available to staff a communications center.

Several industry stakeholders we spoke with told us they support FAA's preliminary plans to establish the board and modify the CSI process as part of this effort. For example, several stakeholders told us that they support FAA's plans to modify the current CSI process. One of these stakeholders noted that a modified process would be more effective if it allowed for industry stakeholders to raise issues anonymously. Also, another stakeholder noted the board would not be beneficial until after FAA has established the master source guidance system because the board should be able to refer to that guidance in demonstrating how it makes decisions.

Clarity in Final Rules

The Regulatory Consistency Committee recommended that FAA improve the clarity of its final rules by ensuring that each final rule contains a comprehensive explanation of the rule's purpose and how it will increase safety. FAA officials told us that this recommendation has been addressed through the work of the Aviation Rulemaking Advisory Committee's Rulemaking Prioritization Working Group.[29] The officials told us that, as a result of this effort, all final rules, are now well-vetted across FAA. The industry representatives we interviewed had mixed opinions about whether FAA had addressed this recommendation as intended. For example, two stakeholders were in agreement with FAA that the agency had addressed it while two other stakeholders noted that FAA's new rules are still not as clear as they should be. Two stakeholders also said that it is often not the final rules but the guidance that accompanies or follows the final rules that is unclear and contributes to inconsistent interpretation and application among FAA staff.

[29]Specifically, in January 2013, FAA accepted the recommendation of the Rulemaking Prioritization Working Group that FAA should adopt a prioritization model across its lines of business for prioritizing rulemaking projects. In response, as we reported in prior work, FAA developed a tool that provides a standardized basis for evaluating and prioritizing potential rulemaking projects to be used by each line of business. See GAO-13-657.

Challenges that Could Affect Successful Implementation of the Committees' Recommendations

In our previous work on organizational transformations, we noted that implementing large-scale change management initiatives—like those the committees tasked FAA with—are not simple endeavors and require the concentrated efforts of both leadership and employees to realize intended synergies and accomplish new organizational goals.[30] People are at the center of any serious change management initiative because people define the organization's culture, drive its performance, and embody its knowledge base. The best approach for these types of initiatives depends upon a variety of factors specific to each context, but there has been some general agreement on a number of key practices that have consistently been found at the center of successful change management initiatives. These include, among other things, securing organizational support at all levels, developing clear principles and priorities to help change the culture, communicating frequently with partners, and setting performance measures to evaluate progress.[31] In this final section of this testimony, we discuss challenges for FAA in implementing the committees' certification and approval and regulatory consistency recommendations that relate to these key practices.

Organizational Support

FAA officials and industry representatives we spoke to noted that shifting priorities as well as declining resources may prohibit FAA from devoting the time and resources needed for completing the initiatives in the planned time frames. They agreed that a primary challenge for FAA will be having the dedicated resources that will be needed to successfully implement the committees' recommendations. We have previously found that successful organizational transformations and cultural changes require several years of focused attention from the agency's senior leadership.[32] This lesson is consistent with our previous work on organizational transformation, which indicates that support from top leadership is indispensable for fundamental change. Top leadership's clear and personal involvement in the transformation represents stability

[30]GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, GAO-03-669 (Washington, D.C: July 2, 2003).

[31]GAO-03-669, and GAO, *VA Health Care: Additional Efforts to Better Assess Joint Ventures Needed, GAO-08-399* (Washington, D.C.. Mar. 28, 2008).

[32]GAO, *National Airspace System: Transformation Will Require Cultural Change, Balanced Funding Priorities, and Use of All Available Management Tools*, GAO-06-154 (Washington, D.C.: Oct. 14, 2005).

for both the organization's employees and its external partners. Top leadership must set the direction, pace, and tone for the transformation. Additionally, buy-in and acceptance among the workforce will be critical to successful implementation of the initiatives to address the two committees' recommendations.

Additionally, as we described in our 2010 report, FAA prioritizes ensuring the continued operational safety of the people and products already operating in the national airspace system over processing new certifications and approvals. We reported in the 2010 report that Flight Standards staff had little or no incentive to perform certification work under the system in which their pay grades are established and maintained.[33] Other than inspectors involved with overseeing air carriers, Flight Standards inspectors are typically responsible for a variety of types of certificate holders. Each certificate is allocated a point value based on the complexity of the certificate or operation, and the combined point value for each inspector's oversight responsibilities must meet or exceed the points allocated for the inspector's grade. However, not all of the inspectors' duties—including certification work—receive points in this system, and inspectors are subject to a downgrade if entities in their portfolio relocate or go out of business.

Commitment to Cultural Change

FAA and industry representatives also cited FAA's organizational culture as a primary challenge for FAA in successfully implementing these initiatives. They noted that many of the certification process and regulatory consistency initiatives FAA is attempting to implement represent cultural shifts for FAA staff in how regulations, policy, and guidance are applied, and ultimately how certification and approval decisions are made. As we have previously found, the implementation of recommendations that require a cultural shift for employees can be delayed if the workforce is reluctant in accepting such change.[34]

Communication with Stakeholders

Further, industry representatives have identified the lack of communication with and involvement of stakeholders as a primary challenge for FAA in implementing the committees' recommendations,

[33]GAO-11-14.

[34]GAO-14-142T.

particularly the regulatory consistency recommendations. Successful agencies we have studied based their strategic planning, to a large extent, on the interests and expectations of their stakeholders, and stakeholder involvement is important to ensure agencies' efforts and resources are targeted at the highest priorities.[35] However, representatives of two industry organizations we interviewed told us that FAA did not provide the opportunity for early input and that outreach is low regarding the certification process recommendations, and representatives of four industry organizations indicated that FAA has not sought their input in responding to the regulatory consistency recommendations. They reported that FAA had neither kept in contact with or advised them of its plans nor engaged the Regulatory Consistency Committee participants in the drafting of the detailed implementation plan that is expected to be published in August. As an example, as previously discussed, when Flight Standards published a memo in December 2013 calling for the cancellation of non-official guidance, several members of the Regulatory Consistency Committee were unaware of the change and expressed surprise and dissatisfaction with the action and offered their assistance. Representatives of one industry group noted that FAA sought their input on addressing the Certification Process Committee's recommendations for subsequent revisions of its implementation plan.

Setting Performance Measures

FAA has not fully developed performance metrics to ensure that any initiatives it implements are achieving their intended outcomes. We have previously found that agencies that have been successful in assessing performance use measures that demonstrate results and provide useful information for decision making.[36] Earlier in this testimony, we reported that FAA had not completed developing performance measures for either the certification improvement or the regulatory consistency initiatives:

- FAA had developed performance measures for 5 of the 14 certification process initiatives as of May 2014 and plans to further develop measures in three phases. In addition, most of the initiatives are scheduled to be implemented by 2017. Although we have

[35]GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, GAO/GGD-96-118 (Washington, D.C.: June 1, 1996).

[36]GAO, *NextGen Air Transportation System: FAA's Metrics Can be Used to Report on Status of Individual Programs, but Not of Overall NextGen Implementation or Outcomes*, GAO-10-629 (Washington, D.C.: July 27, 2010).

assessed FAA's plan for developing these metrics as reasonable, the agency may miss an opportunity to gather early data for evaluating the effectiveness of its actions and making any needed corrections.

- There is no detailed plan for implementing initiatives addressing the consistency of regulatory interpretation recommendations and measuring their outcomes. In recent meetings, FAA officials told us they have had difficulty in determining how to measure the outcomes of its regulatory consistency initiatives and have not been able to determine what specific performance metrics could be used.

Going forward, it is critically important that FAA develop outcome-based performance measures to determine what is actually being achieved through the current and future initiatives, thereby making it easier to determine the overall outcomes of each of the initiatives and to hold FAA's field and headquarters offices and employees accountable for the results. We are not making any new recommendations because the recommendation we made in 2010 for FAA to develop outcome-based performance measures and a continuous evaluative process continue to have merit related to this issue. To its credit, FAA has initiated some efforts and sound planning for addressing the committees' recommendations. However, it will be critical for FAA to follow through with its initiatives and plans for developing performance metrics to achieve the intended efficiencies and consistencies. As we noted in our October 2013 statement, however, some improvements to the certification and approval processes, will likely take years to implement and, therefore, will require a sustained commitment as well as congressional oversight.[37]

Chairman LoBiondo, Ranking Member Larsen, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions at this time.

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[37]GAO-14-142T.

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"Domestic Aviation Manufacturing: Challenges and Opportunities"

Subcommittee on Aviation
House Committee on Transportation and Infrastructure
United States House of Representatives

July 23, 2014

INTRODUCTION

The Aerospace Industries Association (AIA) appreciates the opportunity to present our views on the state of domestic aircraft manufacturing in the United States and the challenges we face in maintaining that leadership position. AIA and our members are very proud of the fact that, today, there is no sector of our economy contributing more to U.S. net exports than commercial aviation manufacturing. And in our own country, sales in all sectors continue to climb even as we experience the highest safety record in the history of commercial aviation.

I am Marion Blakey, President and Chief Executive Officer of AIA, the nation's largest trade association representing United States aerospace and defense manufacturers. Our 350 member companies represent an industry directly employing one million workers, and supporting another 2.5 million jobs either indirectly or as suppliers. Today I will discuss some of the challenges our industry faces in maintaining our manufacturing advantage in the face of stiff competition. But first, I'd like to highlight the prominent and increasing role of technological investment and innovation in aircraft manufacturing.

THE ROLE OF TECHNOLOGICAL INNOVATION

U. S. aircraft manufacturers continue to hold strong positions in the world market, in part because of the technological advances that are driving those markets. The Boeing Company estimates that, over the next twenty years, the world's fleet of aircraft will double, and 80 percent of those aircraft will involve non-U.S. purchasers. Right now, our industry exports $72 billion more than we import, a figure that leads all U. S. industries and one that continues to grow with worldwide demand.

U. S. exports of civil aircraft, engines, avionics, and related components are a sign of our strong industrial reputation throughout the world. It is a solid, well-earned reputation for safety, quality, and attention to detail. But it is also a testament to an industry that invests

billions of dollars in research and development to remain competitive through the use of increasingly sophisticated technologies. Let me give you a few examples:

Innovative Materials.--To address customer concerns over historically high fuel prices, manufacturers continue to reduce aircraft weight through the use of advanced, lighter weight materials in wing structures, fan blades, fuselage sections, and other parts of the aircraft. For example, by weight about 50 percent of the Boeing 787 Dreamliner's airframe structure is comprised of composites. This compares to about 5 percent from designs of the 1960's. Manufacturers are using carbon and glass fiber composites, ceramic and metal matrix composites, titanium, and new alloys such as aluminum-lithium in a continuing search for higher-strength, lighter weight materials.

Nanotechnology.—Increasingly, our industry is using a variety of nanotechnologies to improve aircraft durability and performance. These run the gamut from "nano coatings" on windows to reduce aerodynamic drag, advanced turbine blade coatings to provide greater durability, and new, "nano-filler" materials to reduce weight.

Engine Manufacturing.--Our engine manufacturers are breaking new ground to reduce engine weight and emissions while improving fuel efficiency. (And this comes from an industry that has already increased fuel efficiency by 20 percent over the past decade). For example, a number of our manufacturers are using "additive manufacturing", commonly referred to as "3D printing", to make engine parts. They are evaluating and developing different biofuels collaboratively through the Commercial Aviation Alternative Fuels Initiative (CAAFI). And they contribute, dollar-for-dollar, to the FAA's Continuous Low Energy, Emissions and Noise (CLEEN) program. The first phase of CLEEN developed certifiable aircraft technologies that will significantly reduce noise, emissions and fuel burn. To its credit, the FAA program requires industry to demonstrate a path to the commercial market, ensuring the technology benefits will be realized. These are developed to high technology readiness levels (TRL 6-7) to transition them quickly to aviation users.

Our industry today is an engine of national economic growth and innovation. However, aviation is a vibrant, global market that not only emboldens our existing competitors, but is certain to produce new competitors in the coming decades. To retain and strengthen our current leadership, the federal government must do its part. It must provide a streamlined regulatory environment, equitable financial support, international leadership, and government infrastructure for our industry to do what it does best -- innovate and compete. Let me discuss some of these challenges.

FAA's AIRCRAFT CERTIFICATION PROCESS

Product certification delays continue to be a main impediment to our manufacturers' global competitiveness. Recognizing this problem, the FAA launched nine years ago with industry support the Organization Designation Authorization (ODA). ODA creates an extension of the FAA itself within a company by defining an organization, its responsibilities and the associated processes it will follow to ensure compliance with regulations. In short, rather than focus on giving authority to individual experts, the ODA process approves designated organizations and their processes. The FAA then audits the organization's execution and compliance. Importantly, ODA does not reduce or diminish the FAA's safety oversight responsibilities in any way. Rather, it makes more efficient the mechanisms by which the same level of assurance and protection of the flying public is achieved. This systems approach to oversight leverages FAA resources and critical technical knowledge within the manufacturers' organizations, ensuring a continual two-way exchange of information between the regulator and manufacturer.

Unfortunately we have yet to achieve full benefits of the ODA, as the FAA's culture at the working level has been slow to embrace this systems approach to certification. We urge the FAA to allow maximum use of delegation, not only to take full advantage of industry expertise, but to increase the collaboration and partnership that leads to improved aviation safety. We hope the Committee will recognize that this approach, when fully implemented, will enhance aviation safety, ensure full technical input into the certification process and allow FAA to focus its limited resources on critical areas of aviation safety.

The industry appreciates the strong support provided by this Committee for the reform of FAA's Aircraft Certification Service. Sections 312 and 313 of the FAA Modernization and Reform Act of 2012 helped jump-start a cultural change in FAA's regulatory system. We believe that FAA leadership is taking this initiative seriously and in line with Congressional intent. But cultural change is difficult. It has to permeate down to the lowest levels of the organization, take root there, and grow back up. The Section 312 Aviation Rulemaking Committee commissioned by Congress has recommended, and the FAA has accepted, a comprehensive change management plan that, *if properly implemented*, would transition its workforce to focus on a risk-based, systems safety approach for certification and oversight. Of critical importance over the coming year is the development of specific measures of effectiveness, the use of these measures to track progress toward a systems safety approach, and the extent to which FAA modifies its personnel expectations and training to communicate these changes to the field.

Too many times, as technology changes, we are seeing the FAA's rules and rulemaking procedures unable to keep pace. Let me offer you one example. Several decades ago the FAA specified a requirement for engine manufacturers to put new engine designs through a 150-hour endurance test. These requirements were based on the piston engine technology that was predominant at that time -- in the 1960s. Unfortunately, the test requirements have not been updated to reflect modern technology, where engines are controlled by full authority digital engine control (FADEC) systems, and where huge strides have been made over the decades in engine reliability, safety and emissions. Our manufacturers make artificial, unnecessary changes to the engine's production configuration simply to run this test. And when the test is over, they spend time and resources to put the engine back into its normal state. The FAA has been working to update the fifty year old regulations for some time now, and they hope to have some improvements in place within the next year or two. But it is a good example of how technology is outpacing FAA's ability to keep up in this field.

If up to 80% of future aircraft purchases are for markets outside the United States, that means our manufacturers will see an increasingly diverse mix of customers, each coming with unique requirements and design preferences. This will lead to workload growth at the FAA. And this growth will be in technological complexity as well as size, for the role of new materials, nanotechnologies, and automation continues to grow. The average age of FAA's safety inspector workforce (flight standards and certification) is 52 and almost 30 percent are currently eligible to retire. Although the agency plans a more aggressive recruitment of younger personnel into safety critical positions, for the past few years they have fallen short of their goal. The agency needs to ensure not only that its retiring workforce is replaced in an effective manner, but that all of its inspectors receive adequate in-service training to remain current on the products and technologies they are regulating. Although we believe the agency has a dedicated workforce today, we do not believe FAA can accommodate the growth and complexity in certification workload without effectively implementing the cultural change called for in the Section 312 ARC. We need this Committee's watchful eye to help to make that happen.

AIA also believes the agency needs to make stronger progress on implementing the findings of the Section 313 ARC, to ensure the consistency of regulatory interpretations and findings among FAA's field offices.

FAA AND INTERNATIONAL CERTIFICATION AUTHORITIES

Another issue that concerns us is the amount of duplicative work that our manufacturers endure when seeking approval of their products by foreign authorities. Today the United States is party to over 30 bilateral agreements that govern the procedures for approval of aviation products between FAA and other authorities including the European Aviation Safety Agency (EASA). These agreements take years to develop and are intended to leverage the capabilities of the exporting authority (the certifying authority), to eliminate unnecessary and duplicative work by the importing authority (the validating authority). The objective, of course, is to reduce duplication of effort - a critical element for reducing cost. As the ARC stated in its final report, "The efficiency of validation procedures and acceptance of FAA

type certificated aerospace products is essential to the competitiveness of U. S. manufacturers".

Unfortunately, our manufacturers are increasingly going through what amounts to multiple certification processes, because overseas validating authorities are reducing their acceptance of FAA's work. As the ARC concluded, "there is an apparent trend of reduced global acceptance of U. S. FAA type certificated products . . . more and more countries are no longer accepting or recognizing U. S. FAA type certificated products as acceptable for import and are requiring a separate certification or validation by their own authorities". The cost of such efforts, including fees and charges for the extra work, can exceed several million dollars, and is a significant and unnecessary burden on U. S. manufacturers. FAA's global leadership and its collaboration with international partners are key elements of changing this unacceptable trend. Industry is eager to work with the FAA to improve the acceptance of FAA approved products globally and provide a seamless transfer across geographical boundaries.

EXPORT CREDIT FAIRNESS

For U. S. manufacturing to thrive, we must have a healthy export policy, because most of the world's consumers are beyond our borders. This is a simple fact that other nations recognize as well. That is why there are more than 60 export credit agencies established by governments around the globe. Our Export-Import ("Ex-Im") Bank is one of them. It is vital for the aerospace industry's global competitiveness, and its authorization to conduct business expires in less than ten weeks. The bank supports a wide variety of U. S. exports, including power turbines, locomotives, agricultural equipment, and satellites. But it should come as no surprise that our nation's largest export sector -- commercial aircraft -- also receives significant support from Ex-Im. Some of the Bank's opponents believe that wide body aircraft should not benefit from Ex-Im support -- even though thousands of U. S. workers owe their jobs to that very support, both directly and indirectly as suppliers. Such exclusions are not made by the three export import banks of Europe that enable the sale of European wide-body aircraft to the world's airlines. Nor should our own government unilaterally

impose such restrictions on the financing of U.S. manufactured airplanes. Equally important, the employees of our general aviation manufacturers have jobs because of Ex-Im. Statistics from the General Aviation Manufacturers Association indicate that more than 50 percent of the revenue of U. S. general aviation manufacturers in 2013 was derived from exports. A decade earlier, that figure was only 20 percent. Why should we unilaterally disarm and watch those jobs go overseas to workers in other nations?

Earlier this year, I participated at an Ex-Im event at the Gulfstream Aerospace plant in Savannah, Georgia. Ex-Im has now provided over $1 billion in support to our general aviation manufacturers, including Gulfstream. And when you look those workers squarely in the eye, you know this is important, not only for their families, but for our nation. If Congress fails to reauthorize the continued operations of the Export-Import Bank before September 30, 2014, there will be fewer workers like those at the Gulfstream plant, and more at the plants of our foreign competitors. It is as simple as that.

THE ROLE OF NEXTGEN AND DOMESTIC AIRSPACE

Our industry also benefits from increased domestic air travel in the United States, the world's largest market. And that market continues to grow. Last year, there were 826 million passengers in U. S. airspace. This is the second highest level in history, and the highest since the economic recession of 2007. The average load factor on our nation's airlines last year was more than 83 percent, the highest on record.

However, air travel within the United States is concentrated among a relatively small number of airports and within a small number of peak periods, presenting serious capacity challenges for our nation's air traffic control system. According to the FAA, about 70 percent of all commercial passengers are concentrated at the nation's top 30 airports. Furthermore, FAA projects that the number of U. S. airline passengers will increase over the next few years from 826 million today to over 1.3 billion. This will require, among other things, more civil aircraft.

U. S. manufacturers look forward to providing these additional aircraft and the engines, avionics and components that go into them. But if FAA's air traffic control infrastructure is not improved, those passengers will not materialize, and our economy will be held back. That is the purpose of NextGen, to provide the capacity needed to handle this future growth while maintaining or improving upon today's level of safety.

AIA appreciates the near-term financial relief for fiscal years 2014 and 2015 that Congress provided in the Bipartisan Budget Act of 2013. However, when sequestration returns in fiscal year 2016, we urge Congress to make sure the NextGen program is adequately funded. Deputy FAA Administrator Michael Whitaker testified recently before the Senate that NextGen needs approximately $1 billion a year. Current funding is closer to $850 million, and there are concerns it could be cut even further. In fact, the FAA's NextGen budget request for the coming year is $200 million below the request of only two years ago. If the FAA is constantly hamstrung by budget cuts, the system capacity improvements from NextGen will suffer the most. Future travelers paying user fees into the Airport and Airway Trust Fund have a right to expect a modern, satellite-based system that gets them to their destination safely and usually on time. If the projected level of air travel is to materialize, we will need continued investment in a twenty-first century air traffic control infrastructure.

UNMANNED AIRCRAFT SYSTEMS

Unmanned aircraft systems (UAS) represent the newest frontier in the world of aviation, and they promise to both disrupt and transform many of our current ways of doing business. They will create new avenues for our economy by performing jobs that are too "dull, dirty or dangerous" to be performed today. They will change for the better the way we respond to natural disasters, search for missing persons, and fight wildfires. And we appreciate the leadership of Congress in getting us to where we are today in the process of integrating unmanned aircraft into our airspace.

FAA has taken the initial steps on UAS integration, but much more needs to be done. For example, the agency needs to ensure that the development of equipment and operator

standards remains on schedule and that the proposed rule for small UAS does not fall farther behind. They need to ensure that ATC automation platforms are modified with appropriate software so the system is ready when the regulations are finalized. And they need to ensure the program has adequate budgetary resources to meet Congressional intent. We see a lot of dots, but more needs to be done to connect them into a coherent picture.

GLOBALLY COMPETITIVE TAX POLICY

The Research and Experimentation Tax Credit (commonly called "R&D Tax Credit") is an important incentive for national business investment in R&D. This is important for many sectors of our economy, but it is especially important for high-tech companies in the aerospace sector. The innovations I previously described, including activities that improve aviation safety, are strongly fostered and supported by our R&D Tax Credit. Unfortunately, the credit was allowed to expire at the end of last year, a political football caught up in the broader discussion of comprehensive tax reform.

U. S. commercial aerospace manufacturers are at a substantial disadvantage vis-à-vis foreign competitors whose home countries almost universally have more favorable and more predictable R&D tax credits. A permanent R&D credit was proposed by the Administration and has already passed the House. We hope you will urge your Senate colleagues to act favorably on these proposals either separately or as part of comprehensive tax reform legislation. At a minimum, legislation is urgently needed to restart the R&D tax credit and apply its provisions retroactively to the beginning of calendar year 2014.

MAINTAINING A SKILLED AEROSPACE WORKFORCE

With a global market that is growing rapidly, and with the pace of technological innovation increasing, we must maintain an adequate supply of aerospace workers with degrees in science, technology, engineering and math (STEM) disciplines and job-specific manufacturing skills.

Unfortunately, today the United States is simply not producing enough workers with the right technical skills. The U. S. graduates around 300,000 students a year with bachelors or associate degrees in STEM fields. The February 2012 report of the President's Council of Advisors on Science and Technology (PCAST) said this figure falls short of our economic need by one-third. Today, less than 40% of students who start college intending to earn a STEM degree actually complete the degree requirements. And we should not keep our sole focus on four year degrees, for community colleges and career technical education play equally important roles. In fact, one-third of our current STEM employees began their education in community colleges.

Our STEM workforce challenge is exacerbated by the fact that the aerospace industry is, in a word, graying. In 2007, we found that almost 60 percent of the U.S. aerospace workforce was age 45 or older. Today, 9.6 percent of our industry is eligible to retire, and projections are that by 2017 -- just three years from now -- 18.5% of the entire industry will be eligible to retire. At our largest corporations (those employing 100,000 or more), the percentage of the retirement eligible workforce is already 18.6 percent. We are experiencing a shortage of STEM workers today, but the problem will be even greater when the bow wave of actual retirement hits us in the next couple of years. How will we keep these jobs in the U. S. if we cannot find and train enough workers? That is a real concern of many in our industry looking to the future.

OPEN SKIES

I would also like to take a moment to comment on the continuing importance of international Open Skies agreements. For more than 20 years, Open Skies agreements have transformed today's commercial aviation sector. The broad base of support in the U.S.—in Government and among its many stakeholders—has made it possible for the United States to negotiate agreements with over 110 countries. Today, more than 240 different airlines operate around the globe, carrying more than 3.1 billion passengers last year. Open Skies have created healthy competition in the marketplace, bringing new entrants to the fold, lower fares for consumers, and economic prosperity to airports and their communities around the country. Moreover, these new markets

have created a need for new aircraft technologies like Boeing's 787 and 777X which enable passengers to travel longer distances in greater comfort. Open Skies agreements have created opportunities for the development and deployment of new technologies and new markets for U.S.-manufactured airplanes and services.

CONCLUSION

In conclusion, we believe that U. S. aviation manufacturers are in a strong competitive position today, but there are risks to our maintaining this position over the next decade. It is important for the Federal Government to provide the underlying policies that allow us to compete internationally and to grow our domestic air travel here at home. This includes export financing, workforce, and tax policies that are competitive with the policies of other nations, and that allow us to maintain jobs here in the United States. It includes a new infrastructure in air traffic control technology that grows and ensures the safety of our domestic airspace. It includes partnerships in technology programs like CLEEN, and in promoting the next frontier of aviation -- unmanned aircraft.

Thank you for the opportunity to appear today, and I look forward to your questions.

Testimony of Peter J. Bunce

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Committee on Transportation and Infrastructure: Subcommittee on Aviation

Domestic Aviation Manufacturing: Challenges and Opportunities

2167 Rayburn House Office Building

July 23, 2014

Introduction

Chairman LoBiondo, Ranking Member Larsen, distinguished members of the Subcommittee; my name is Pete Bunce and I am the President and CEO of the General Aviation Manufacturers Association (GAMA). GAMA represents over 85 companies that are the world's leading manufacturers of general aviation airplanes, rotorcraft, engines, avionics, and components. Our member companies also manage airport fixed-based operations, as well as pilot training and maintenance facilities worldwide. I appreciate the opportunity to testify today regarding the competitiveness of the U.S. aviation sector and look forward to providing perspective as a representative of manufacturers and the general aviation community. We applaud the leadership of the Committee and Subcommittee for focusing on this critical issue.

General Aviation, Manufacturers, and Competitiveness

General aviation (GA) is an essential part of national transportation systems in the U.S. and around the world. It is especially critical for individuals and businesses that need to travel and move goods quickly and efficiently in today's just-in-time market. Equally important, GA is a contributor to economies around the world. For example, in the U.S., GA supports over 1.2 million jobs, provides $150 billion[1] in economic activity and, in 2013, generated $5.6 billion[2] in exports of domestically manufactured airplanes. The market for GA aircraft has shifted tremendously in recent years, with over 50 percent of billings linked to the export market.[3] This poses new challenges but, perhaps more importantly, huge opportunities for industry and the U.S. government.

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[1] General Aviation Contribution to the U.S. Economy, Merge Global, 2006
[2] 2013 General Aviation Statistical Databook and Industry Outlook, GAMA, 2014
[3] Ibid

A report released in May 2012 by the United States International Trade Commission (ITC)[4] looked at the factors shaping the competitiveness of the U.S. business jet industry from 2006 to 2011. The study found that three of the six global business jet manufacturers are headquartered in the U.S., while the other three producers have U.S. production activity. Additionally, the U.S. is the principal source of key parts and systems for all of the world's business jet manufacturers. The report found that competition in the industry is strong, frequent technological upgrades are necessary, and demand is cyclical.

The ITC also determined that aircraft sales and development are affected by the availability of financing, investment in research and development, aircraft certification, and issues such as airspace management and taxes/fees. Finally, the study concluded that workforce development is essential to the industry's continued success.

Maintaining global competitiveness and leadership of both the Federal Aviation Administration (FAA) and industry is critical for our nation's aviation system and continued contribution to economic strength. Aviation safety, National Airspace System (NAS) efficiency, and environmental progress depend on the success of aviation manufacturers and aircraft operators. Our manufacturers stand ready to help drive innovation and investment but, too often in the past, and despite their best intentions, FAA policy and procedure hinders the industry's ability to efficiently develop and deploy new aviation products and technologies. We must remove unnecessary obstacles if we are to improve aviation safety and keep manufacturers competitive in the global marketplace.

FAA Certification of New Products and its Importance to Safety and the Economy

I would like to thank this Committee, and its leadership, for the interest and oversight that it has shown in understanding the importance of certification to safety and the economy. Simply put, an inefficient and ineffective certification process adds costs and delays to delivering aviation products and technologies that enhance safety and the competitiveness of manufacturers. The willingness of this Committee to support this issue is appreciated and is helping to drive reform.

There is, however, much more progress that can and should be achieved to meet the laudable goal of enhancing the competitiveness of aviation manufacturing and exports. To address these process bottlenecks, and minimize ramifications to industry in terms of time and cost, GAMA continues to work with the FAA to fully implement improvements based on Section 312 of the FAA Modernization and Reform Act of 2012 (P.L. 112-95). This section is helping drive several recommendations to improve the effectiveness and efficiency of the certification process which allows the FAA to better focus limited resources on priority safety activities.

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[4] Business Jet Aircraft Industry: Structure and Factors Affecting Competitiveness, United States International Trade Commission Publication 4314, April 2012

Much time and effort have been applied, but much more work remains. As this Committee knows, the type certification process is basically a verification review of thousands of individual discreet compliance activities the manufacturer undertakes to show the design meets the safety standards. To leverage its limited resources, and supplement them with the best expertise available, the FAA can appoint and oversee designees who are qualified industry individuals or organizations authorized by the FAA to make the verification inspections necessary to support the FAA's issuance of product design certificates and approvals. The FAA has identified many changes that are important to effectiveness and efficiency, but the full implementation of these improvements has been slow.

One of the leading initiatives, the Organization Delegation Authorization (ODA) program, builds on experience with past delegation activities. FAA established the ODA in 2005 to improve the safety, quality, and effectiveness of delegation programs and expand the use of organizational delegation to all type-certificated products. This has the potential to significantly reduce the FAA's administrative workload by appointing organizations with the required qualification, experience, and management systems to supervise the day-do-day activities of individuals authorized to perform certification activities. By shifting to a systems safety oversight approach of these organizations, the certification process can be more effective because the same FAA resources can now focus less on administrative supervision of individuals and more on safety-critical activities and support for new and evolving technologies. This will also enable the FAA to better support a continuously growing level of aviation industry activity in an efficient and timely manner, reducing delay and cost.

Despite a strong commitment to the development and implementation of ODA, the key benefits have been slow to be fully realized by industry and the FAA. Manufacturers and the FAA have invested significant resources in establishing and qualifying ODA organizations. However, the practical implementation and use of ODA authorizations have been inconsistent from one region to another and even from project to project for the same manufacturer. Our members regularly experience situations where their company has obtained full FAA ODA authorization to conduct specific technical certification activities, but on a project-by project basis, the FAA engineers and specialists choose to be directly involved in these activities themselves and not utilize the available FAA authorized ODA resources. This inefficiency adds significant delay and cost to certification programs—not only for those manufacturers that have an ODA, but also for other standard certification projects that are waiting on these FAA resources. In these situations, the FAA workforce has not shifted to a systems safety approach for product certification that makes better use of FAA-authorized activities and FAA oversight resources. We need your continued help to impress upon the FAA –from top to bottom—to fully implement and utilize important tools. Where ODA delegation and systems oversight is fully utilized, it is delivering efficiencies and benefits to all stakeholders.

Change Management and Implementation

Of relevance to both ODA and certification process reform more generally is culture and change management at the agency. The Section 312 report[5] calls on the FAA to develop a comprehensive change management plan for its certification workforce. GAMA feels the implementation of this plan is critical for the successful execution of needed certification improvements. We believe it lays the foundation for the FAA workforce to adapt to the changes required in their work and to be successful in any transition. Too often, FAA has developed solid plans only to fail at implementation. The execution of an effective change management plan should help address these shortfalls and we hope the Committee will work with us and the FAA to drive the appropriate initiatives in training, recruitment, and performance assessment.

One example of FAA's struggles with implementation is its inability to implement an end to its policy of sequencing certification programs. The FAA initiated the "sequencing" program in 2005 to manage workflow by delaying the start of new certification projects. This is extremely frustrating to manufacturers, as it makes the FAA certification process unpredictable and uncompetitive, forcing companies to wait on the FAA for an unknown period of time. In particular, we have heard from numerous small businesses within our membership that have faced missed business opportunities, or even had to contemplate going out of business, because they have not received timely response from the FAA on a project that had been sequenced. This negatively impacts the global competitiveness of our industry.

More than two years ago, the FAA began a process to replace the current sequencing program with a completely new project prioritization and resource management procedure that would no longer delay the start of new certification projects. The agency should be commended for this effort and proposal, but it has yet to be implemented. GAMA finds this unacceptable—there is a distinct difference between a proposal to address a problem versus actual implementation of the new policy and procedure. Unfortunately, this failure to replace the sequencing policy continues to negatively impact manufacturers of all sizes.

Another area where we see significant challenges is in the certification and installation of equipment and safety enhancing technologies in rotorcraft. As this Subcommittee knows, the FAA has separate directorate offices that are responsible for airworthiness standards and certification policy for large transport airplanes, small airplanes, and rotorcraft. While we have seen the beginning of successful policies which facilitate the streamlined certification and approval for installation of safety enhancing equipment in small airplanes, this continues to be a challenge for the rotorcraft community. It is critical that Congress, FAA and the industry put a focus on rotorcraft to see how new safety technology can be installed in an efficient and effective manner.

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5 A Report from the Aircraft Certification Review and Reform Aviation Rulemaking Committee to the FAA, Recommendations on the Assessment of the Certification and Approval Process, May 22, 2012

FAA Flight Standards and Regulatory Inconsistency

FAA's Flight Standards Office certifies new pilots, approves and oversees operators and airlines, and issues the certifications of maintenance providers. This office would benefit from a top-to-bottom review of how to achieve efficiencies. Earlier this year, the FAA's Director for Flight Standards stated that the agency has a backlog of over 1,000 certifications and authorizations pending in the national queue. The failure to address this backlog is impeding companies to conduct their business, operators to use their aircraft, and new entities to enter the industry. The backlog and need for streamlining has been identified in several studies, including the direction from Section 313—Consistency of Regulatory Interpretation—of the FAA Modernization and Reform Act, and the 2009 RTCA Task Force 5 recommendations.

The thrust of Section 313 was to ensure that regulations are applied equitably and consistently by different regional offices of the FAA. In working with industry, the FAA has put together solid concepts and ideas to address inconsistencies, but has failed to move forward with implementing these recommendations in almost any way. This is yet another illustration, similar to ODA, where a decision can vary from office to office and implementation issues have implications for manufacturers, and businesses, of all sizes and scope.

In addressing these issues, FAA has models to work from and where it has cooperated with industry to improve the Flight Standards processes to focus the agency's resources on areas of risk as opposed to turning paperwork. A recent example is the FAA's publication of a new policy for how to process authorizations to operate in Reduced Vertical Separation Minima (RVSM) airspace. RVSM is one of the key capacity enhancements that have taken place since the NextGen program was created. Other areas could benefit from this kind of FAA-industry partnership particularly in repair station inspections and audits where limited resources can be better targeted through a risk-based approach that eliminates unnecessary redundancies.

Today, however, we face similar authorization needs to use other NextGen capabilities, including for communications, navigation, and surveillance. The FAA is working with industry through the Performance-based Aviation Rulemaking Committee (or "PARC") to identify these types of opportunities to save the government money, facilitate industry activities, and limit repetitive paperwork that doesn't add to safety. GAMA and a number of our member companies are participating in these activities and ensuring that the FAA continues down the path of streamlining authorizations. This will support the success of NextGen and appropriately use government and industry time and resources for safety. It is GAMA's hope that we can better address the issue of how, after our manufacturers have developed, certified, and obtained installation approvals for NextGen equipment, the Flight Standards organization more efficiently intervenes. This should be an area ripe for streamlining and improvement.

Constant Safety Focus

GAMA continues to believe that key to safety is our manufacturers' success. Our member companies are constantly developing new products that above all enhance safety beyond what is found in the average airplane today. Safety is improving but we can, and should, do more.

I would like to once again thank the members of this Subcommittee for their leadership on the Small Airplane Revitalization Act, particularly Chairman Shuster, Ranking Member Rahall, Chairman LoBiondo, Ranking Member Larsen, Representative Graves, Representative Lipinski, Representative Nolan, and the entire Subcommittee for their support in ensuring its passage. This law is a critical first step to regulatory reform of airplane design requirements focused on streamlining the FAA certification process and making real-world safety improvements. We can have the best research programs and the most innovative technology, but if products cannot get to market, it is of no benefit to manufacturers, users, or the cause of safety. The Small Airplane Revitalization Act charts a new path, promising safety benefits and hope to a part of the industry that has struggled with the economic downturn that occurred over the last several years.

I'm pleased that statistics show that GA accidents are decreasing.[6] For example, accidents that are classified as controlled flight into terrain (CFIT) have virtually been eliminated.[7] Why? Technology is helping pilots to fly more smartly, and safely. It provides better terrain and weather information, improved situational awareness for pilots so that they can understand where their aircraft is as compared with other aircraft in the NAS, and more accurate and precise navigation in the air and on the ground. We will continue to see further gains as users equip with new safety technology. At the same time, our membership and staff continue to focus on ways to improve safety for manufacturers and those that use our products.

This concept is underscored by the new technology that is coming to market which is intended to help operators become NextGen-compliant. As the Subcommittee knows, the FAA, industry, and Congress have committed to equipage of automatic dependent surveillance-broadcast, ADS-B, technology by January 1, 2020. The ground infrastructure is in place and the investments of the FAA, and taxpayers, are deployed. We have manufacturers that have products available that are affordable, reliable, and ready to install. And more are coming to the marketplace. It is incumbent upon the agency to ensure that the necessary resources are provided for the approval of this safety-enhancing technology, but also to ensure that users adopt it in a timely manner so that the entire NAS can derive the benefits of NextGen.

The Domestic and International Marketplace

As manufacturers try to take advantage of more markets, issues like aviation infrastructure, tax policy, airspace management, and relations with aviation regulators become even more

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[6] FAA Analysis of 2001-2010 General Aviation Accident Data
[7] Ibid

important. It is critical for the U.S. government and industry to advocate for policies that will help underpin aviation growth in the global environment.

As an example, the Asia-Pacific Economic Corporation (APEC) Ministers have endorsed a set of "Business Aviation Core Principles" to provide a more flexible operating environment for non-commercial business aviation. If implemented, this will help open markets, create employment, and strengthen trade links between the U.S. and its 20 partner economies in APEC.

We appreciate the support from U.S. government agencies in these efforts, including the DOT as well as the Departments of State and Commerce. We firmly believe, however, that these agencies, particularly the FAA and DOT, must stay engaged and demonstrate continued leadership, because while the potential to grow general and business aviation is tremendous, so are the challenges.

This leadership is linked to the certification reforms that we discussed earlier and underscores the importance of proactive leadership by the FAA in supporting its certification and safety activities globally. The FAA has historically been viewed as the gold standard for certification around the world. It is my belief that we are still leaders in this area—in aviation, and in aerospace—but other authorities continue to gain expertise. To illustrate this point, other countries are questioning the FAA's certification basis as aviation products are exported to more countries and markets. It is imperative that the FAA actively promote and defend the robustness of its safety certification globally to facilitate acceptance and/or streamlined recognition of U.S. products—direct engagement with their regulatory counterparts is a necessary part of that effort. This issue is less of a problem with bilateral partners such as Europe and Canada, where a formal agreement promotes streamlined acceptance of products certified and manufactured in our countries. However, even in these cases, the validation of aviation products under bilateral agreements continues to be difficult for manufacturers. At a time of growing exports, any delay in delivering aircraft, after the lengthy U.S. certification process, is very harmful. Efficiencies gained in the certification process may provide room for more aggressive safety advocacy and leadership by the agency.

The FAA must also work with the International Civil Aviation Organization (ICAO), other aviation authorities, and industry to facilitate acceptance or streamlined approval of certifications through outreach, bilateral agreements and ICAO. We believe the Committee should closely examine this issue, and the impact on our competitiveness, as we approach the next reauthorization, and we look forward to working with you to develop ways to best address this concern.

Exports, the Export-Import Bank, and Innovation

Growing international exports have helped sustain the GA industry through the past five or six years. A decade ago, the U.S. typically accounted for four out of five airplane sales, but in 2012

the market was split: half of the U.S.-manufactured airplanes produced by GAMA's members went to North American customers, and the other half went to customers in other parts of the world.[8] While Europe was our lead market outside North America in 2013 at 14.8 percent of total unit deliveries, the Asia-Pacific region is a close second at 13.8 percent.[9] We have also seen the Latin American market grow strongly; it now accounts for over 11 percent of the world's airplane sales.[10] The helicopter market is leveraged even more outside the U.S., with customer demand over the next five years accounting in Europe for 28 percent of projected deliveries and the Asia-Pacific region 19 percent, according to Honeywell.[11]

The Export-Import Bank of the United States (EXIM) has played a key role in facilitating GA aircraft sales into emerging markets. As mentioned earlier, the GA aircraft market is highly competitive. There are producers of aircraft and products throughout the world, and many of these countries have Export Credit Agencies. U.S. manufacturers cannot afford to have the EXIM leave the playing field. There is too much at stake for U.S. jobs and the economy. For example, 10 years ago, we typically financed only a handful of airplanes a year through EXIM at a value of less than $100 million per year. However, in the midst of the recent economic turmoil, the bank increased its support for GA and we identified over $800 million in transactions in 2009[12]. The bank set a goal to provide $2 billion in funds to GA exports by the end of 2014- the bank has already exceeded $1 billion in funding towards this goal and did so ten months ahead of schedule. [13].

The bank's work also reaches down to support small businesses that are aircraft manufacturers and suppliers. Air Tractor, which is a small, employee-owned company in Olney, Texas, manufactures agricultural and firefighting aircraft and leverages the bank as part of the company's export transactions. Air Tractor has been able to increase its exports over the past decade with the help of the EXIM bank, and the company reached record production in 2012.[14] Its aircraft are delivered to customers in Argentina, Brazil, China, Australia, and Spain through joint export guarantees between EXIM and the Canadian equivalent Export Development Canada.

EXIM also partners with Gulfstream Aerospace, a Savannah, Georgia-based manufacturer of large and mid-size business jet aircraft. Gulfstream currently has a $12.9 billion backlog, which is 60% international[15]. Over the past several years, there has been a significant increase in the company's sales to international customers. In 2003, 18% of the company's 1,200 jet aircraft

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[8] 2013 General Aviation Statistical Databook and Industry Outlook, GAMA, 2014
[9] Ibid
[10] Ibid
[11] 15th Annual Turbine-Powered Civilian Helicopter Purchase Forecast, Honeywell, 2013
[12] Export Import Bank of the United States, 2009 Annual Report
[13] Ex-Im Bank Sets Goal of $2 Billion in Financing of U.S.-Manufactured Business Aircraft and Helicopters in 2014., Export-Import Bank of the United States Press Release, May 21, 2014
[14] Ickert: Growing small business through exports, David Ickert, *Star-Telegram*, March 20, 2012
[15] Cantwell Tours Gulfstream Aerospace, Mary Carle Mayle, Savannah Morning News, July 18, 2014

were based internationally. In 2013, this figure increased to approximately 2,200 aircraft, with 35% internationally based. The support received from the Export-Import Bank allows Gulfstream to be more competitive around the world and enabled it to grow the number of employees in the United States. Gulfstream has added more than 7,000 jobs to its workforce since 2006. The Export-Import Bank earlier this year announced the guarantee of a $300 million loan[16] to finance the purchase of eight Gulfstream aircraft, which supported approximately 2,100 jobs in the company—clearly illustrating the importance of the Export-Import Bank to the company, the U.S. aerospace industry and the overall economy.

Another component supporting global competitiveness is leveraging the strong research and development programs that are conducted by GAMA companies to ensure they can bring new technology and products to market. We support extending and making permanent the Research and Development Tax Credit to further these programs. This is the minimum that should be done given the U.S. was once a leader in encouraging research and development and we are now behind 23 other Organization for Economic Cooperation and Development (OECD) nations in providing research and development incentives to the private sector.

Growing our Employment Base

The key to any successful company is its workforce. The aviation sector is no different. Increasingly, however, our member companies find it harder to attract and retain the talent pool necessary to maintain and grow aerospace leadership. To maintain competitiveness, we need a workforce that is ready and available in areas where our manufacturers are located.

Earlier this year, GAMA, Build A Plane, and Glasair Aviation collaborated to provide high school students from Sunrise Mountain High School in Las Vegas, Nevada with the ability to experience aviation manufacturing firsthand in Washington state. We appreciate that Ranking Member Larsen, who represents the district where Glasair Aviation is located, took the time to visit the company and these students as they completed the build. By way of background, these sponsors hosted a nationwide Science, Technology, Engineering, and Math (STEM) competition that attracted applications from 79 schools in 33 states and Washington, DC. Applicants used complimentary "Fly to Learn" curricula and X-Plane software which allowed them to design and fly their own virtual airplanes with scores determined by aerodynamic and performance parameters. The winning students, a teacher, and two chaperones spent part of their summer in Washington State at Glasair's Arlington facilities and helped to construct a Glasair Sportsman aircraft. Sold as kits, the plane was assembled with Glasair employees' assistance in just two weeks through the well-known "Two Weeks to Taxi" program. GAMA member companies contributed financial resources for the students and staff during the build.

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[16] Ex-Im Bank Tops $1 Billion in Financing for American Business Aircraft and Helicopters, Export-Import Bank of the United States Press Release, February 21, 2014

At the same time, GAMA is participating in a public-private partnership that aims to address workforce challenges in the aviation sector. The National Aviation Consortium (NAC), in conjunction with the Department of Labor, aims to partner with community colleges in Indiana, Kansas, North Carolina, Oklahoma, and Washington to provide certified industry-driven training to entry-level workers in the aviation sector. This endeavor will target veterans as a key demographic, and provide all enrollees with knowledge in specialized areas such as assembly mechanics, electrical assembly, composite repairs, quality assurance, and tooling. Students will obtain certification from the NAC by successfully completing a core program as well as an area of focus, and will then be positioned for an entry-level job or have the ability to further their education. We believe it is important to partner and work with programs where the objective is clear – to sustain and grow our industry.

From a broader perspective, the Department of Transportation created an advisory committee to develop recommendations to help ensure that aviation remains "vital, competitive, sustainable, and above all, safe"[17] via the Future of Aviation Advisory Committee (FAAC). The FAAC looked at a myriad of areas, but one worth highlighting is STEM education programs. The recommendations include developing key strategies and program areas of outreach for students of all ages, a focus on subject areas for current and future workforce needs (such as NextGen), additional management development through internships or fellowships, and strengthened partnerships with industry.[18] At the same time, the FAAC encouraged greater collaboration and coordination with industry and within agencies and government to centralize and focus efforts. One specific recommendation included assigning the DOT Assistant Secretary for Administration the task of developing, overseeing, coordinating, implementing, and integrating a strategic workforce development plan.[19] GAMA believes these recommendations provide a good starting point for discussion on workforce development.

Conclusion

Chairman LoBiondo and Ranking Member Larsen, thank you for providing me the opportunity to discuss with the Subcommittee an overview of the importance of maintaining and growing our industry and competitiveness. As a pilot, I am constantly refining and learning new skills to enhance my awareness and ability in the cockpit of aircraft that I fly. As an industry, with the support of government safety regulators, we need to do the same to ensure we maintain our leadership in the aviation sector. GAMA and its member companies look forward to working with you on the next reauthorization bill. It provides a tremendous opportunity, under your leadership, and Chairman Shuster's and Ranking Member Rahall's, and all the members of this Committee, to maintain and strengthen the global competitiveness of the aviation industry.

Thank you. I would be glad to answer any questions that you may have.

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[17] The Future of Aviation Advisory Committee, Final Report, U.S. Department of Transportation, April, 2011
[18] Ibid
[19] Ibid

T & I Aviation Subcommittee Hearing
Domestic Aviation Manufacturing: Challenges and Opportunities
Congresswoman Elizabeth H. Esty Statement and Question for the Record to Peter J. Bunce, President and CEO, General Aviation Manufacturers Association

July 23, 2014

Thank you, Chairman LoBiondo and Ranking Member Larsen, for holding this hearing on aviation manufacturing.

Connecticut is – and has always been – a leader in aviation and aerospace manufacturing. Pratt & Whitney was founded in 1925, and began manufacturing air-cooled, low-weight airplane engines the following year. Almost a century later, nearly 40,000 folks in Connecticut are employed in the aerospace industry, and our manufacturers export more than $6 billion in civilian aircraft, engines, and parts.

As part of this Committee's work to reauthorize the FAA Modernization and Reform Act, we are closely tracking the implementation of NextGen, which will make our skies safer and our airplanes more efficient and environmentally friendly. Mr. Bunce, you testified about NextGen technologies, including ADS-B In and ADS-B Out. Can you explain the importance of ADS-B Out to the success of NextGen? As manufacturers, do you believe the 2020 mandate for ADS-B Out is feasible in terms of production, installation, and affordability? And finally, how can Congress and the FAA promote and support NextGen's implementation?

Thank you, Congresswoman Esty, for raising the critical importance of Automatic Dependent Surveillance (ADS-B) technology in the Next Generation Air Transportation System (NextGen) and for your overall leadership on aviation manufacturing issues.

As you note, Connecticut has a long and proud tradition of aviation and aerospace manufacturing and today remains a global leader. General aviation manufacturing represents an important part of Connecticut's economy, and General Aviation Manufacturers Association (GAMA) member companies have a significant presence in the state, employing 7,580 people, accounting for $530.6 million annually in payroll, and spending $309 million annually on local suppliers. GAMA's members are proud to build the future of aviation by developing the technology and manufacturing products that make the transition to NextGen possible.

The Importance of ADS-B Out to the Success of NextGen

As you know, NextGen represents the transformation from the existing radar-based air traffic control system to a more aircraft-centric, satellite-based system. This transition will deliver more precise navigation capabilities, which will in turn increase efficiency, boost safety and capacity, reduce emissions, and lower the overall costs and complexity of air traffic control. While NextGen has a number of core components, one of the foundational cornerstones of the program is ADS-B. Without the deployment and installation of ADS-B, specifically ADS-B

Out, the transition to NextGen – and its significant benefits – would simply not be possible. In short, NextGen's success depends on the success of the ADS-B program.

In the most basic terms, ADS-B technology consists of ground stations, satellites, and specific equipment (ADS-B Out) that must be installed on aircraft operating in controlled airspace. These components link to each other effectively in real-time and will augment radar for air traffic surveillance.

On an aircraft, ADS-B Out equipment broadcasts position, speed, and altitude information to other aircraft and to air traffic control (ATC) via ground stations positioned across the country. The ground stations, which are in place as of March 2014, then provide that extremely precise and accurate data to controllers. Under the current radar-based system, controllers receive new data approximately every 12 seconds and can determine the position of an aircraft within tens of miles. With ADS-B, controllers can receive data once a second and can determine the position of an aircraft within tens of feet. When controllers have access to this specific level of information, they can manage the system much more efficiently, which leads to the benefits of the broader NextGen program that we all discuss.

The bottom line, however, is that the level of precision and accuracy surveillance necessary in the NextGen program cannot occur without aircraft broadcasting positional information to ADS-B receivers. This is the function of ADS-B Out equipment and why it is so critical that all aircraft operating in controlled airspace equip and do so quickly. The more planes that equip and the faster they do so, the greater and timelier the system will see the benefits.

At the same time, it is important to recognize that operators can also equip with ADS-B In capabilities, which allow pilots to view the same exact traffic picture that controllers receive, along with other useful information such as weather. This significantly enhances situational awareness and safety in the cockpit. But in order for pilots to receive that accurate and precise traffic picture, other aircraft in the area need to be broadcasting their positional information, which ADS-B Out enables.

Feasibility of the 2020 Mandate

Recognizing that ADS-B technology is a foundational component of NextGen and necessary for the surveillance portion of the program to function, the FAA, industry, and Congress committed to equipage of ADS-B Out by January 1, 2020. The 2020 mandate is critical to ensuring that NextGen stays on track and is completely attainable. It was established at the beginning of 2010 with the intention of providing operators with a decade to equip and, today, our manufacturers have close to two dozen different certified ADS-B systems on the market, many of which offer both ADS-B Out and ADS-B In capabilities. These products are readily available and straight-forward to install, and more products are coming to market every day. These devices are retailing for $1,500-$3,500 for the simplest installations on small aircraft and the cost of the installation varies, but is on the order of a couple of thousand dollars per aircraft.

As I mentioned previously, the ADS-B ground infrastructure is in place thanks to the efforts of the FAA and the investments of the taxpayer. The task now is to ensure that the fleet that utilizes

controlled airspace equips with ADS-B technology at a steady pace and operators do not wait until the last minute to do so. Waiting until the end will only create a capacity bottleneck at repair and installation facilities and could very well result in the costs to rise. And the more operators that equip now, the smoother the process of meeting the mandate will be as we approach 2020.

Supporting and Promoting the Implementation of NextGen

In the broadest sense, Congress needs to maintain its vigorous oversight of the FAA and provide the agency with the resources it needs to deliver NextGen, while keeping it focused on producing measurable outcomes and creating an environment that fosters stakeholder participation, predictability, stability, and accountability.

One specific area in which Congress and the FAA have been extremely successful in this regard thus far is the ADS-B rule and mandate. With industry, government, operators, and the collaboration of pilots, the rules and requirements were developed during the decade leading up to the FAA publishing the rule in 2010. Government has already delivered the ground infrastructure and industry has delivered many ADS-B equipage options, which are readily available, affordable, and easy to install. Additionally, as of June 2014, close to 5,400 aircraft, most of them general aviation, had already been equipped to meet the 2020 mandate, and these pilots and operators benefit today from improved surveillance and the ability to access government-provided weather, traffic, and other information such as airspace restrictions. The 2020 timeframe for aircraft to equip is reasonable and achievable. And in order to support and promote NextGen moving forward, Congress and the FAA must remain steadfast in their support of the ADS-B rule and the 2020 mandate. Ultimately, NextGen's success depends on it.

While the FAA has created an environment for aircraft to equip with ADS-B technology, Congress recognized the importance of incentivizing ADS-B equipage by including Section 221 in the FAA Modernization and Reform Act of 2012 (P.L. 112-95). Section 221 allows the Secretary of Transportation to provide loan guarantees or other forms of federal credit assistance to operators of commercial and general aviation aircraft to equip. Unfortunately, the FAA has stated it needs additional legislation from Congress in order to proceed with the implementing program. Congress should continue to work with the FAA to find a pathway forward to advancing the program in the short term so that operators are further encouraged to equip in the near term as opposed to waiting.

Testimony of Joseph W. Brown

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Committee on Transportation and Infrastructure: Subcommittee on Aviation

Domestic Aviation Manufacturing – Challenges and Opportunities

2167 Rayburn House Office Building

July 23, 2014

Introduction

Chairman LoBiondo, Ranking Member Larsen, distinguished members of the Subcommittee: my name is Joe Brown and today I appear before the committee representing three distinct perspectives.

First, I am the President of Hartzell Propeller, an Ohio-based company with a proud general aviation heritage. The company's origins link directly to the Wright brothers and their pioneering work in Dayton, Ohio. Robert Hartzell, following the advice of his friend and neighbor, Orville Wright, founded Hartzell Propeller in 1917 to manufacture walnut propellers for the Army Air Service—what we now call the United States Air Force.

Today, Hartzell Propeller is approaching its 100th year of designing, certifying and manufacturing propellers in Piqua, Ohio, and we've earned a leading position in propeller-driven aviation. We employ 300 people in high-tech manufacturing and engineering jobs and ship our products around the globe. My brother and I own the company and have been partners for close to 25 years.

Second, I also serve as COO of Tailwind Technologies, a holding company that my brother and I formed in 2004 to expand our aviation business. In addition to Hartzell Propeller, we own three other aviation manufacturing businesses and employ about 1,000 people in total. Joining Hartzell Propeller in our family of companies, Hartzell Aerospace is based in Valencia, California, and manufactures cabin environmental control products and sub-systems for business, military and commercial aircraft. Mayday Manufacturing is located in Denton, Texas, and produces specialty bushings for the entire aviation industry. Hartzell Engine Technologies is located in Montgomery, Alabama, and manufactures aircraft starters, alternators, turbochargers and fuel pumps for general aviation aircraft. In all of our companies, we sell globally but manufacture all of our products in the U.S. and buy all of our materials from U.S. producers.

Third, aviation is much more than a business interest. I am a pilot and a member of EAA, AOPA and IMC Club. Hartzell Propeller is also a member company of the General Aviation Manufacturers Association (GAMA) and I currently serve as Vice-Chairman of their Board of Directors.

I appreciate the opportunity to testify today regarding the competitiveness of the U.S. aviation sector and look forward to talking about some of the issues that affect small aviation manufacturers.

The Investments Necessary to Compete in the Global Marketplace and What It Means to Piqua

Growing exports have helped sustain the general aviation industry since 2008. A decade ago, Hartzell Propeller's total export sales were about 30%. Now our sales into foreign markets accounts for about 50% of revenue.

Let me give a few examples of our own activities to compete successfully in the global market:

- We manage a complex process to obtain validations from civilian aviation authorities around the world. These validations are required to install propellers in countries whose aviation rules require a review of our FAA Type Certificate. Since 2007, we've applied for and received 300 validations—150 of those in the last two years. If we don't get these validations, our customers cannot sell the airplane into that market. We've been particularly busy supporting growth in Brazil, China, Europe, Russia, Ecuador and Mexico.
- We employ two full-time native Chinese employees, one in Shanghai, China, and one in Piqua, Ohio. They are developing sales and product support depth in China and working directly with Chinese manufacturers and the Chinese Civil Aviation Authority to obtain product approvals. Since 2007, we have received 41 product approvals in China.
- Annually, we provide a free week-long propeller training course to more than 150 propeller technicians from 19 countries. Imagine our small town of Piqua, Ohio playing host to a group of techs who are as diverse and interesting as the fans at the World Cup.
- Our sales and engineering team traveled to more than 30 countries last year and we exported to all of them.

There is no question from my perspective as a President of a small company that this activity is critical to our growth and critical to our community. Piqua, Ohio used to have many manufacturers. We were among six major employers back in 1990. Half are gone - literally killed by low-cost overseas competition. But in that same period, we grew domestically and internationally, continuing to provide the high-paying manufacturing jobs we'd like more of in this country, not less.

Here are some key examples that illustrate this point:

- Hartzell's average factory take-home pay was $75K in 2013 and we've given raises every year for at least the last 30 years
- We employ 43 engineers and hire directly out of engineering universities
- Our average seniority is 20 years and retirees typically have more than 40 years of service
- 10% of our employees are veterans
- We are 1% of our city's population but give 20% of the local United Fund total
- Our company donated $3M to our local library restoration; the next largest gift was $250K
- Our employees engage in weekly tutoring and mentoring sessions at our local middle school.

The United States Aviation Industry Leads the World

Because our industry is innovative and committed to developing the best products for the global aviation market, Hartzell and other U.S. companies are longstanding market leaders. Our aircraft manufacturers in every segment, including Commercial, General Aviation, Rotorcraft, Agriculture, Military, and UAV, have leading sales volume and backlogs. U.S. engine manufacturers have leading positions as do our avionics companies. I am happy to say that the U.S. also is the market-leading manufacturer of general aviation propellers, specialty bushings, cabin environmental control products and piston-engine accessories.

If you look at these companies, you'll find that they are growing and they are growing globally.

The success of our U.S. aviation industry has led to a multi-billion dollar supply chain of small- to medium-sized manufacturers. I cannot overstate the breadth and depth of U.S. manufacturers whose jobs and continuing investment depend on U.S. leadership in a robust global aviation market.

This is probably my chief message today: Anything we do in policy making that hurts our industry's time to market or entry into new markets will have exponential impact on the incredibly diverse employers making up the U.S. aviation supply chain.

We are making the investments to keep jobs in this country. And the fact is, it is working. U.S. aviation jobs are among the best in our economy and industry sales are growing internationally.

We can sustain the leading positions we've earned over decades of investment with enlightened policy making in Washington.

The Importance of Export-Import (EXIM) Bank and Why It Matters

While we do not access Export-Import Bank (EXIM) financing directly, many of our customers do. An important share of their growth into foreign markets, and by extension, Hartzell's growth, has been facilitated by EXIM financing. But we aren't getting a free ride. As I've described, our global growth requires action and investment.

While we are making deep investment in foreign markets, the EXIM Bank has assured a level playing field for our customers as they compete for foreign aircraft orders.

What isn't working is uncertainty. My customers who use EXIM tell me they don't know how to forecast beyond September 30th. And thus we both are struggling with hiring decisions. We both are struggling with pricing decisions because neither of us knows if we are going to have more or less purchasing leverage in our respective supply chains. We are struggling with capital investment decisions-should we buy equipment against our current plan or wait? Just today, I cut our capital investment project list by 50% for 2015 because I cannot risk anything but the most conservative investment decisions in this climate. This cautious posture is entirely due to the politics surrounding EXIM.

Recently, some pundits and policy makers have described EXIM financing as corporate welfare and a hand out. When I hear comments like that, I find myself thinking about the hundreds of thousands of dollars we spend annually to make sales into foreign markets and all of the hiring we've done in the last five years. With respect, I don't think anyone could fairly say that we are we are walking around with our hand out. My customers who use EXIM financing operate as we do. They run a tight ship, take capital risks, reinvest and pay their people well. I know there are many perspectives on this issue and so I appreciate the chance to share mine.

EXIM is equally important in our other aviation businesses. Two of our Tailwind Technologies companies do significant business with U.S. business jet, commercial aircraft and rotorcraft manufacturers, each of which has steadily grown its export sales. EXIM credit facilities help them compete against other respected foreign manufacturers that have their own financing programs.

Though these two businesses in our family of companies are deep down in the supply chain, they are an important part of the aviation sector with top-rate technology and about 500 employees between them. They invested in products and programs during the worst of the recession and today are healthy and growing. We typically spend millions of dollars developing technology for a new aircraft, often years before entry into service. We are willing to take all of that market risk even in the face of a deep recession.

We'd prefer not to face the risk of uncertainty from Washington. If it continues, our largest customers will be suddenly hobbled as they compete in the global market.

The Process of Getting Our Product to the Marketplace

Another key priority from Hartzell Propeller's perspective is our ability to deliver products to our customers in a timely and efficient manner. I look forward to working with Congress, the FAA and DOT, and other stakeholders as we approach the upcoming reauthorization of aviation policy. We have very deep contact with the FAA, especially at Hartzell Propeller. Our ticket to do business depends on the FAA's approval of our design and production systems which manifests in the awarding of Type Certificates and Production Certificates for our new products. We respect the role the FAA plays and we respect the people we work with.

Several years ago, the FAA urged Hartzell to increase our delegation authority by going through the rigorous application process and becoming an ODA (Organization Designation Authorization). In that effort, we were trading one type of delegated authority for another, but the overhead and administrative burden of the new system for Hartzell was much higher. At that time, ODAs were thought to be essential to FAA streamlining and improving a manufacturer's time to market. The idea was that the FAA would spend more of its constrained resources on oversight and audit of approved systems and less time trying to duplicate the enormous engineering depth of ODA companies. The benefit to companies was improved time to market and more opportunity to drive innovation.

The net effect to our company after having an ODA for about seven years is neutral. We were generally happy with the certification support we got from the FAA before the ODA and we still are. The problem is that it costs more to run the system for the same results.

As a GAMA member, I am aware that many manufacturers who went through the same or more expense and effort to become an ODA do not see adequate benefits. In the course of your review of industry issues, I know you will hear this as a recurring theme.

The really unfortunate thing about the state of ODA systems is that the more complex the design challenge a company faces, like building an airplane or a jet engine, the more risk and expense that company incurs to get a product to market. These companies also pay a higher cost for managing an ODA that spans the broadest certification requirements. The cost of inefficiency is enormous, not only to those companies certifying our industry's most complex products, but to their suppliers as well. I would also argue that for this level of engineering specialty, the FAA shouldn't even aim to bring engineering expertise to these certification tasks. After all, our company has built skills and depth over nearly 100 years of experience. But we do benefit from rigorous oversight and compliance auditing. That FAA role reinforces good habits. The ODA theory has always made sense; getting better products to market more effectively and with greater innovation is the piece that's missing.

ODAs are about a decade old and the companies that put them into place generally had various forms of delegation before the ODA system. Industry and the FAA know what we need to know to take fuller advantage of the system. Hartzell supports intense focus on ODA efficiency. To

the extent that this Committee can help make ODA efficiencies a priority of FAA reauthorization, the industry will respond with growth and improved safety technology.

More generally, I hope that this Committee brings special attention to the meaningful requirements contained in Section 312 of the FAA Modernization and Reform Act of 2012 (P.L. 112-95). The FAA has so much to do in the future—not just in certification but also in modernization and in pilot training that can improve safety. It is in the public interest to streamline FAA so more resources can go toward the activities that enhance safety and where, by the very nature of the work, the FAA is the principal actor and must depend on its own staff and expertise to do it.

A related, and ever more critical, certification challenge that the Subcommittee might direct its attention to is the process by which foreign aviation authorities issue validations of FAA Type Certificates. Our export growth, and that of customers, has increased the demand for validations from other countries and turn times can be incredibly long. We find that getting a validation in time to meet an aircraft sale or fleet order is a white-knuckle experience.

And it can be expensive. We often pay a fee and in some cases will spend tens of thousands of dollars satisfying that foreign authority's review. To what end? In 300 cases of review, all FAA Type Certificates were validated.

Over several years of monitoring, foreign authorities have taken on average 21 weeks to validate an FAA Type Certificate. In cases where we have a bi-lateral agreement, one country processes our validation requests in an average of 6 weeks while the other averages 40 weeks. They have the same basic agreement with the FAA but one takes almost seven times longer to do the same job. At 40 weeks, that is often longer than it took to develop and certify the product from scratch.

I provide both these examples to illustrate that the regulatory process affects companies of all sizes and scope, and I look forward to working with you to create a more effective environment to get our work done.

How Our Products Drive Safety and Innovation

My business is aviation but I am also a committed and passionate pilot. Flying is a joy and a great source of inspiration. Every time I put the power in to start the take-off roll, I have the same brief flash of joy—do I really get to do this again today? I continue to marvel at the rewards in flying but it is also a challenge and mistakes can have serious consequences.

Right now, there are amazing but realistic opportunities to improve pilot training and create the safest, most proficient pilots in our history and at lower costs than we've had in decades of training.

The propellers my company makes today include decades of technology evolution. Aircraft designs, engine performance and avionics have similarly evolved in each generation of design. General aviation manufacturers have taken advantage of analytical design tools that use flight and performance data to achieve superior safety and performance.

Similarly, we can have a breakthrough in general aviation safety if we use safety trend data and the flight data recorded by onboard equipment in new and innovative ways. Today, we have mechanisms in place that allow us to learn from trend and flight data in ways that weren't possible just a decade ago.

In partnership with the FAA and the operator community, general aviation manufacturers support the work of the General Aviation Joint Steering Committee (GAJSC). This partnership is focused on identifying and constructively mitigating safety concerns based on data-driven analysis. The GAJSC is also working diligently to establish ways to collect and analyze accident data that can be used to identify trends and improve safety. The GAJSC has also begun work to better use data that has been voluntarily provided by pilots about incidents and events to help prevent accidents before they occur.

Over the past few years the GAJSC has provided input about how to better train pilots about stall awareness to mitigate loss-of-control, recommended the establishment of smarter policies for the installation of safety-enhancing equipment, and asked the FAA to provide more education about medications and how pilots can better address medical issues.

As an example, through the data-driven approach of the GAJSC, it was determined that the installation of Angle of Attack (AoA) indicators could improve safety by increasing situational awareness and enabling the pilot to better control the aircraft during approach and landing. Since the recommendations from the GAJSC, several manufacturers have indicated interest in installing AoAs in their aircraft and multiple avionics manufacturers are producing equipment and the incorporation of AoA into their displays. In February, the FAA overcame existing regulatory hurdles and moved forward with a progressive AoA policy to facilitate more broadly the use of safety-enhancing equipment in the existing general aviation fleet. Congressional passage of the Small Airplane Revitalization Act helped create the environment for this progress.

Another example is the recent aviation rulemaking advisory committee that helped to revise the airman testing standards to ensure that the standards used to test and train pilots more effectively gauge their ability to operate safely. This is the first comprehensive modernization of the policy and standards framework for general aviation and commercial pilot training in several decades and will assist in advancing training for all pilots. The FAA has responded positively to this update to the airman testing standards and accompanying knowledge test. The agency has also established a pilot program and implementation plan that will drive these changes into the aviation training community over the next 12-18 months. The first students begun training at a university in Florida earlier this month and the feedback is positive. AoA technology, the

overhaul of FAA pilot training standards and the continuing work of the GAJSC are only the beginning of what I hope is a long and collaborative effort to address general aviation safety. As FAA Administrator Huerta has emphasized, we must leverage both public and private expertise appropriately if we are to best use scarce resources while continuing to advance aviation safety.

Success for the Light End of General Aviation

As a final point, as a pilot who operates piston aircraft and as a supplier to a number of companies that manufacture products in the piston portion of general aviation, I am interested in the health and vitality of this segment. As such, I want to thank the leadership of this Committee and Subcommittee for their work on the Small Airplane Revitalization Act. I firmly believe when fully implemented, this legislation will benefit the piston marketplace tremendously.

Another area where this Committee has, and I hope will continue, shown leadership is in the transition the piston fleet to unleaded fuels. As you know, the FAA, aided by industry and bipartisan support from Congress, has made enormous strides to meet this objective. By way of background, today the piston fleet operates on leaded fuel commonly referred to as AvGas. Importantly, however, manufacturers, operators and government have been working diligently to transition to a fuel that is not lead-based. In fact, earlier this month a number of stakeholders submitted applications to the Piston Aviation Fuels Initiative, which is the entity that is facilitating the research, testing and ultimately suggesting approval for a replacement fuel in coordination with the FAA. This leading-edge work is being done at the William J. Hughes Technical Center.

I cannot thank this Committee and its members enough for their support of this program. It means a great deal to the hundreds of thousands of pilots and the manufacturers, maintenance and training facilities that support them. At the same time, I want to impress upon you that it is vital to ensure that this important initiative reaches the desired conclusion – a fuel that will work for the vast majority of the current piston fleet that is certified by the FAA before it is brought to the marketplace. Much work remains between where we are today and what lies ahead, but I appreciate the strong support from Congress thus far. We will need your continued support during the next FAA reauthorization bill.

Conclusion

Chairman LoBiondo and Ranking Member Larsen: thank you for the opportunity to talk about the aviation industry from a small company perspective. I value the opportunity as a pilot, user of the system, and as a manufacturer that does all of its work in a federally regulated system.

I would be glad to answer any questions that you may have.

Testimony to the U.S. House of Representatives Committee on Transportation and Infrastructure's Aviation Subcommittee on 23 July 2014

My name is Dave Cox and I am the Dean of Instruction for the Technical Education Division at Spokane Community College and I serve in the additional capacity as the Lead Administrator for the U.S. DOL TAACCCT round 1 grant titled "Air Washington".

I'd like to start off by thanking the subcommittee for inviting me today to speak to you about the Air Washington project we've been so fortunate to have been a part of.

As part of my testimony I've included a short series of three slides that will highlight my speaking points to the subcommittee.

In mid-2010 a small delegation made up of community college and local business executives from Washington State traveled to Washington D.C. to speak with our elected officials about workforce education and training needs and to explore potential resources for such at the federal level. This delegation became aware of the upcoming grant opportunity through the U. S. Dept. of Labor and returned to Washington State to craft a cohesive plan to compete for funding under what became known as the Trade Adjustment Assistance Community College and Career Training Grants Program or "TACT" for short.

Upon the delegations return a state-wide community college discussion began about what type of project would bring the most potential return to the Washington State workforce needs and very quickly the Aerospace Industry sector was chosen as the specific focus of our proposal. The proposal was constructed and submitted to the U.S. DOL for consideration in early 2011 and in mid-September of the same year we were notified that our project had been chosen for full funding beginning 1 October 2011 with a scheduled completion date of 30 September 2014. This project is an in-state consortia project consisting of 11 separately accredited community colleges within the state of Washington (Washington State has 34 separately accredited state supported public community colleges total). Slide number 2 of the power point presentation shows the geographic locations of these eleven community colleges throughout the state.

I've provided a one page highly detailed informational document simply titled "Air Washington" for the subcommittee to review at its convenience. In it you will find much of the critical data we use to evaluate ourselves on our efforts in meeting our stated outcomes and deliverables as well as much information about the details of what we are doing and where.

Part of my testimony for the subcommittee is focused on the "why" this project has met with such success during it's' performance period. Slide number three lists the five success factors I believe can be most precisely attributed to why we got this one right.

Number one: "Fingerprint" of Washington State. Simply said we matched this project to fit the uniqueness of Washington State industry / businesses. Washington State is proud to be the national

leader in the Aerospace Sector and values its status highly. We knew that our highly technical and specialized workforce needs would only increase in the coming years and in order to adequately prepare for this demand we must undertake large scale effort state-wide. The U.S. DOL TAACCCT grants program, with its high award ceiling and "get folks to work ASAP" philosophy was the perfect solve for our state-wide dilemma.

Number two: Industry Connection. Involvement in this project by business / industry was not only desired it was actually required by the detailed statement of work provided to the DOL in our application materials. Letters of support / commitment from employers were an integral part of our proposal. Additionally, our work plan included the function of an executive advisory board which included significant membership from Washington business and industry. I'll speak in greater detail about this later but we found that the function of the transition coordinator / navigator at each college became critically important in establishing good communication and trust between the businesses / industries and the project management teams. I also believe that its' safe to say that Washington State Aerospace industries understand the critical importance to their future that a project of this scope and magnitude plays and stays actively engaged because of that.

Number three: State Government connection. At all levels of state government there is an active and positive interest in and engagement with the Air Washington project. Due to the project's obvious significant impact on the Aerospace workforce in the state our elected officials have enacted permanent legislation that will ensure that the workforce training supported by the project will continue past the project end date indefinitely into Washington State's future. This $8M annual addition to the community college system budget line is real proof that our lawmakers know the value of what Air Washington has done for all Washingtonians and desire to maintain it.

Number four: Project Management. The lead management team (Spokane Community College) has maintained three basic tenets in carrying out their function as peer leader for the other 10 colleges that make-up the consortium. 1) An open and transparent management style that encourages discussion, questions, feedback, and critique. 2) A highly reliable and verifiable data management system and process. 3) Deliberate and uncompromising demand for intra-consortium communication venues that at a minimum require the consortium to physically gather together quarterly to discuss the project as a whole and brief their responsibilities back to each other.

Number five: Transition Coordinator / Navigator. This "lynch-pin" function serves the multiple roles of industry liaison, employment preparation counselor, system navigator, instructional technician, and last but not least "tough love mom" to the students that need it. It should be noted that this function is resourced through the regional Workforce Development Councils (WIBs) throughout the state.

This concludes my formal testimony to the subcommittee and I would be pleased to attempt to answer any questions the subcommittee might have for me. Again, thank you all for your interest and commitment to keeping America competitive through your investments in community college workforce training.

Air Washington

www.airwashington.org

Air Washington is a consortium of 11 Washington State community and technical colleges which have received a $20 million Department of Labor Trade Adjustment Assistance Community College Career Training (TAACCCT) grant to strengthen the state's aerospace industry workforce. The grant began Oct. 1, 2011. A no-cost extension was approved with a limited scope of work, focusing on veterans and long-term program completion, extending the grant through Sept. 30, 2015. The original goal was to train 2,615 workers by fall of 2014 in advanced manufacturing, composites, electronics/avionics, aircraft assembly, and aircraft maintenance. **That goal has already been exceeded with colleges training 3,487 new workers as of March 2014.**

Consortium colleges (participants)

- Big Bend Community College (107)
- Clover Park Technical College (199)
- Everett Community College (630)
- North Seattle Community College (466)
- Olympic College (410)
- Peninsula College (153)
- Renton Technical College (609)
- Skagit Valley College (153)
- South Seattle Community College (240)
- Spokane Community College (387)
- Wenatchee Valley College (133)

Critical target populations

Veterans Trade Adjustment Assistance-eligible non-traditional ESL needing basic skills

Key subcontractors

- Aerospace Joint Apprenticeship Committee (AJAC): Common A&P curriculum and EASA
- Center of Excellence for Aerospace and Advanced Manufacturing (CoE) : Pre-employment curriculum
- Workforce Development Councils (WDC): Aerospace industry job placement services
- Washington State Board for Community and Technical Colleges (SBCTC): Third-party review of project outcomes and deliverables.

Overarching area

Pre-emloyment (204 participants)

WorkKeys • OSHA • First Aid • WA State Flagging • Forklift Operation • Computer Basics • LEAN Manufacturing • Blueprint Reading • Inventory Management • Applied Mathematics • ESL for Aerospace (I-BEST) • Workplace Communication • Tool use and identification

Five project focus areas

Advanced manufacturing (703 participants)

CNC Machining Welding/Fabrication • Non-Destructive Testing

Aircraft assembly (504 participants)

Assembly • Tooling • Quality Assurance

Airframe & Powerplant (776 participants)

In accordance with FAA regulations

Composites (440 participants)

Fabrication • Non-destructive Testing • Quality Assurance/ Quality Control

Electronics/Avionics (860 participants)

Aviation • Fiber Optics • Wire Assembly

Student success

Enrolled (as of March 2014): 3487

Number of students completing a program:

- 1,483 complete
- 121 additional students completed one program and working on another Air Washington program.

Number working in the aerospace industry:

- 1015 employed in a job after completion
- 663 related to area of study

Number of aerospace companies involved in hiring and employee retentions:

- 425 companies hiring new employees
- 232 companies retaining workers with better education related to area of study
- Number working for Boeing: 167

Number of certificates and degrees:

- 2,470 short certificates earned by 1,444 students
- 492 long certificates earned by 367 students
- 159 degrees

NBAA

Statement of Ed Bolen

President and CEO

National Business Aviation Association

Submitted to

The Subcommittee on Aviation

Committee on Transportation and Infrastructure

U.S. House of Representatives

Regarding

"Domestic Aviation Manufacturing:

Challenges and Opportunities"

July 23, 2014

Statement of Ed Bolen
President and CEO
National Business Aviation Association

Chairman LoBiondo, Ranking Member Larsen, members of the subcommittee, on behalf of the more than 10,000 Member Companies of the National Business Aviation Association (NBAA), I am pleased to provide our views for this important hearing on "Domestic Aviation Manufacturing: Challenges and Opportunities."

What Is Business Aviation?

In the United States, tens of thousands of general aviation aircraft are owned and operated by businesses of all sizes in every industry imaginable. These aircraft are business tools used in ways too numerous to mention, but some examples include transporting teams of employees to communities with little or no scheduled service, transporting clients in to a company facility where they can see firsthand the production of a product and receive training on its use, or transporting on very short notice a replacement part for a broken machine that has shut down a factory's production line. All of this is done with the utmost of safety and with productivity levels and time savings simply unmatched by any other mode of transportation.

Why Is Certification Important and an Issue?

Certification is fundamental to aviation, and its impact is particularly significant for business aviation operators. The business aviation community shares three major concerns with respect to certification.

1. Operator Authorization
2. Operator Certification
3. Aircraft and Part Certification

Operator Authorization

First, Operator Authorizations remain one of the biggest issues for NBAA Members. While the equipment has already undergone certification by the FAA in the form of type certification or supplemental type certification in most cases, operators are often additionally required by FAA regulations or international Communications, Navigation and Surveillance (CNS) implementations to obtain a separate Letter of Authorization (LOA) in order to conduct a particular operation.

Reduced Vertical Separation Minimum Airspace Authorizations

Likely the most widely required authorization from FAA is that for a flight in the airspace at and between 29,000 and 41,000 feet above sea level, known as Reduced Vertical Separation Minimum (RVSM) airspace.

NBAA Members have for years expressed concerns with the timelines and requirements to obtain an LOA for RVSM operations. NBAA approached the FAA in 2012 with a request to establish a joint FAA and Industry working group to identify ways to streamline the RVSM authorization process. Over a roughly 2 year period the RVSM Process Enhancement Team met and identified the challenges both parties were facing when processing RVSM LOA applications and then proposed solutions to address those challenges in the form of revised guidance to inspectors contained in FAA Order 8900.1.

The original guidance required inspectors to treat each authorization request or simple change to an existing authorization as though it was a brand new operator requesting an RVSM LOA. For example, a common simple change is a revision to an aircraft registration number, akin to changing the license plate on your car. Under the old guidance, this change required significant amounts of inspectors' time to review all of the information as though it was a brand new operator, often taking in excess of 60 days to process.

The revision to FAA Order 8900.1 was published in January 2014 and the new guidance includes a fundamental shift in the way that FAA inspectors review the applications. Contained in the new guidance are definitions of key elements related to the RVSM Authorization: RVSM Compliant Aircraft, Approved RVSM Maintenance Program, and RVSM Knowledgeable Pilots. To the extent that an applicant can demonstrate that one or more of the previously FAA reviewed and approved RVSM Authorization Elements remains unchanged, the FAA inspector can move forward in the process without again reviewing the items applicable to the unchanged element.

Having been released 6 months ago, FAA inspectors are still becoming familiar with the new procedures. As they continue to use the new procedures, we expect the overall timelines from an initial request being made to the issuance of a new or amended RVSM LOA will continue to decrease.

Automatic Dependent Surveillance – Broadcast Authorizations

Just as the U.S. is upgrading its air traffic management infrastructure through the NextGen program, other countries around the world are doing the same. Part and parcel to this update is reliance on Automatic Dependent Surveillance – Broadcast (ADS-B) technology. While the FAA does not require a specific authorization for

ADS-B use in U.S. airspace, foreign civil aviation authorities are requiring operators to receive specific authorization for ADS-B operations from their respective civil aviation authorities. More than 60% of the U.S. business aviation operators responding to an NBAA survey indicated travel to a foreign region in 2012. What that means for the significant number of U.S. business aviation operators flying internationally is that they must also receive an LOA for ADS-B in order to fly above 28,000 feet in a number of Pacific Rim countries, or to receive optimal routing and traffic separation in airspace over the Hudson Bay in Canada.

In the last several years, FAA has issued LOAs for ADS-B to operators requesting them, but timelines to receive these authorizations are often measured in months. This was in part due to multiple levels of review and approval within the FAA. Recently the FAA announced that ADS-B approvals will be able to be granted by the Flight Standards District Offices (FSDO) directly, thereby decreasing approval times.

Impacts of Long Authorization Timelines

NBAA welcomes these improvements made to shorten the timelines and resources required to receive an LOA for RVSM and ADS-B. These long timelines have a direct affect on safety, the environment, and overall cost of operations.

First, these long timelines affect safety. Aircraft without authorization to fly in RVSM airspace are held below RVSM airspace, at altitudes that are often times in adverse weather including turbulence, icing and thunderstorms instead of above it. Similarly, U.S. aircraft operators flying in the Pacific Rim countries without ADS-B authorization from the FAA are being held at and below 28,000 feet, with the same adverse weather considerations and significant restrictions on routing. The ability to climb to higher altitudes is in a number of these cases the only way to get out of the adverse weather.

As well, aircraft flying at these lower altitudes have higher fuel burn rates because the engines are optimized for higher altitudes. Higher fuel burn rates often require an additional stop for fuel to accomplish a particular trip. An aircraft having to make a fuel stop for a given trip is exposed to more risk than an aircraft able to fly directly to the intended destination. This additional risk is comprised of the greater risk of an accident during approach and landing and during takeoff and initial climb out when compared to cruise flight. An additional landing and subsequent takeoff also increases the exposure to other risk such as aircraft not communicating with or visible to other aircraft or air traffic control when compared to cruise operations in positive control airspace.

A second impact of the long authorization timelines is environmental. As we explained, the higher fuel burn rates for aircraft flying at less than optimal altitudes

translate to additional carbon dioxide emissions in the atmosphere. NBAA Members are cognizant of the environmental impacts of their operations; striving to reduce their emissions footprint. However, inefficient routing and lower than necessary altitudes because of a lengthy approval process create an unnecessary environmental impact.

Third, additional fuel burn translates into additional cost for the operator, which is undoubtedly a consideration in an era where the world is trying to do more with less. Our operators aim to be more environmentally responsible while also reducing overall operating costs.

Suggestions for Further Improvements

Two key suggestions for further improving FAA authorization processes include:

NBAA believes that more emphasis or priority needs to be given to Part 91 operators, given the overall effect these organizations have on the U.S. economy. An acknowledgement of business aviation operators, and the impact these companies have on commerce domestically and internationally, would be ideal to ensure that authorization requests are high on the priority list for inspectors.

NBAA recommends and is fully willing to support the creation of one or more FAA and Industry process enhancement teams to review and streamline the authorization processes applicable to each of those authorizations. We had great success with the RVSM Process Enhancement Team and believe we can again be successful with each of these teams.

Operator Certification

Second, Operator Certification concerns remain an issue. There are many operators of business aviation aircraft that, in order to comply with FAA regulations, must have an operating certificate. Two common examples include a Part 135 Air Carrier Certificate[i] in order to conduct passenger or cargo charter operations and another example includes obtaining a Part 125 Air Operator Certificate[ii], commonly needed by companies operating a corporate shuttle to regularly transport many employees between cities in which the company has a corporate presence.

In both of these cases, operators are often told it will take a year or more before the FAA will begin the application and review process. Limited FAA inspector resources have been identified as the challenge here. NBAA fully supports Congress' continued commitment to increase the inspector workforce at FAA.

Aircraft and Part Certification

Third, NBAA Members see the disproportionately rising cost of Aircraft and Part Certification as a concern. While this rising cost directly affects the aircraft or part manufacturer, ultimately this cost is transferred to the end user of the aircraft or part.

Safety is paramount for NBAA Members and where a reasonable economic safety or operations case can be made, our Members have shown that they are more than willing to make the investment in newer, more technologically advanced and environmentally friendly aircraft and equipment. It is a harmonious situation, where improvements in safety and operational efficiency occur, and all parties – operators, manufacturers, FAA, and the public - benefit.

Limited FAA Certification resources and arcane certification standards translate into longer product certification times and costs for aviation manufacturers. This, in turn, necessitates higher costs to the customers as operators, which may take the form of costly upgrades to an aircraft, more costly purchases of a replacement aircraft with the same performance characteristics, or costs associated with continuing to operate the aircraft as-is.

Ultimately, these concerns could best be addressed by ensuring adequate FAA resources for aircraft and part certifications and by modifying certification standards to be a systemically reviewed consensus-based standard developed with input from all stakeholders of aircraft and part certification – the FAA, manufacturers, operators, and the public – ensuring that efficiency, timeliness, and quality are all optimized without an adverse impact on safety.

Key Takeaways

1. Business aviation supports the evolution of our Air Traffic Management System through programs such as NextGen. We need to proceed forward ensuring that the costs to operate in the NextGen system are in line with the benefits the system offers.
2. Operator Authorizations play a key role in the overall certification process. They need more adequate FAA inspector support, and further improvements to these processes would reduce required resources while improving operational safety.
3. In the area of Operator Certifications, all parties stand to benefit from increased inspector resources for both new and current operators, thus reducing cost, increasing business, and improving safety.

Conclusion

In conclusion, certification is critical to business aviation in terms of time, cost, efficiency, and safety. NBAA appreciates the improvements that the FAA has made to certification and authorization processes and standards to date. We look forward to continuing this constructive dialog with the FAA, industry members, and with Congress for further improvements to Operator Authorization, Operator Certification, and Aircraft and Parts Certification standards and processes.

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[i] 14 CFR Part 135 includes rules applicable to commercial operators holding out to the public the conduct of on-demand common carriage of passengers and/or cargo.

[ii] 14 CFR Part 125 includes rules applicable to the passenger- or cargo-carrying operation of aircraft with 20 or more passenger seats or with a maximum payload capacity of 6,000 pounds or more when common carriage is not involved.

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