

**STATEMENT OF DANIEL K. ELWELL
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BEFORE THE
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON TRANSPORTATION, AND HOUSING AND URBAN
DEVELOPMENT, AND RELATED AGENCIES
UNITED STATES HOUSE OF REPRESENTATIVES
OVERSIGHT HEARING: FAA AVIATION CERTIFICATION
SEPTEMBER 25, 2019**

Chairman Price, Ranking Member Diaz-Balart, and Members of the Subcommittee:

Thank you for inviting me here today to speak with you about the Federal Aviation Administration's (FAA) certification process. The FAA's aircraft certification processes are well-established, thorough, and have consistently produced safe aircraft designs. Our aviation safety record in the United States bears this out; since 1997, the risk of a fatal commercial aviation accident in the United States has been cut by 94 percent. And in the past ten years, there has been one commercial airline passenger fatality in the United States in over 90 million flights. But one fatality is one too many, and a healthy safety culture requires commitment to continuous improvement.

The regulations and policies that guide our approach to aircraft certification have evolved over time in order to adapt to an ever-changing industry, and to ensure safety is always our first priority. Continuous improvement is an integral component of the FAA's safety culture and we are committed to learning from our experiences and using what we've learned to improve our process. With that as the basis for our approach to certification, I would like to outline for you the significant aspects of FAA's certification process and the recent initiatives that have been put in place to review our processes and procedures.

Aircraft Certification

Information sharing is a cornerstone of aviation safety and has significantly contributed to the United States outstanding safety record. One of the FAA's core functions, aircraft certification, has always relied on the exchange of information and technical data. The FAA certifies the design of aircraft and components that are used in civil aviation operations. Some version of our certification process has been in place and served us well for over 60 years. This does not mean the process has remained static. To the contrary, since 1964, the regulations covering certification processes have been under constant review. As a result, the general regulations have been modified over 90 times, and the rules applicable to large transport aircraft, like the Boeing 737 MAX, have been amended over 130 times. The regulations and our policies have evolved in order to adapt to an industry that uses global partnerships to develop new, more efficient, and safer aviation products and technologies. What has not changed is that, for any new project, the FAA identifies all safety standards and makes all key decisions regarding certification of the aircraft.

The use of delegation has been a vital part of our safety system, in one form or another, since the 1920s. Congress has continually expanded the designee program since creation of the FAA in 1958, and it is critical to the success and effectiveness of the certification process. Under this program, the FAA may delegate a matter related to aircraft certification to a qualified private person. During the past few years, Congress has endorsed FAA's delegation authority, including in the FAA Reauthorization Act of 2018, which directed the FAA to delegate more certification tasks to the designees we oversee.

Delegation is not self-certification; the FAA retains strict oversight authority. The program allows the FAA to leverage its resources and technical expertise while holding the

applicant accountable for compliance. The FAA reviews the applicant's design descriptions and project plans, determines where FAA involvement will derive the most safety benefit, and coordinates its intentions with the applicant. When a particular decision or event is critical to the safety of the product or to the determination of compliance, the FAA is involved either directly or through the use of our designee system.

In aircraft certification, both individual and organizational designees support the FAA. The aircraft certification process has four stages: (1) certification basis; (2) planning and standards; (3) analysis and testing; and (4) final decision and certification of design. The FAA determines the level of involvement of the designees and the level of FAA participation needed based on many variables. These variables include the designee's understanding of the compliance policy; consideration of any new and novel certification areas; or instances where adequate standards may not be in place. The work FAA delegates primarily relates to analysis and testing. About 94% of work in this area is delegated, and that work involves lower risk and routine items. The FAA does not delegate the other functions. The FAA determines the certification basis, identifies the standards, and makes all key and final decisions.

The Organization Designation Authorization (ODA) program is the means by which the FAA may authorize an organization to act as a representative of the FAA under strict FAA oversight. Currently, there are 79 ODA holders. ODA certification processes allow FAA to leverage industry expertise in the conduct of the certification activities and focus on important safety matters. The FAA has a rigorous process for issuing an ODA and only grants this authorization to mature companies with a proven history of designing products that meet FAA safety standards. ODA holders must have demonstrated experience and expertise in FAA certification processes, a qualified staff, and an FAA-approved procedures manual before they

are appointed. The FAA delegates authority on a project-by-project basis, and the manual defines the process and procedures to which the ODA must adhere when executing the delegated authority. The ODA holder is responsible to ensure that ODA staff are free to perform their authorized functions without conflicts of interest or undue pressure.

There are many issues that will always require direct FAA involvement, including equivalent level of safety determinations, and rulemakings required to approve special conditions. The FAA may choose to be involved in other project areas after considering factors such as our confidence in the applicant, the applicant's experience, the applicant's internal processes, and confidence in the designees.

Something that is not well understood about the certification process is that it is the applicant's responsibility to ensure that an aircraft complies with FAA safety regulations. It is the applicant who is required to develop aircraft design plans and specifications, and perform the appropriate inspections and tests necessary to establish that an aircraft design complies with the regulations. The FAA is responsible for determining that the applicant has shown that the overall design meets the safety standards. We do that by reviewing data and by conducting risk-based evaluations of the applicant's work.

The FAA is directly involved in the testing and certification of new and novel features and technologies. When a new design or a change to an existing design of an aircraft is being proposed, the designer must apply to the FAA for a design approval. While an applicant usually works on its design before discussing it with the FAA, we encourage collaborative discussions well in advance of presenting a formal application. Once an applicant informs the FAA of the intent to develop and certify a product, a series of meetings are held both to familiarize the FAA with the proposed design, and to familiarize the applicant with the certification requirements. A

number of formal and informal meetings are held on issues ranging from technical to procedural. Once the application is made, there is a structured way of documenting the resolution of technical, regulatory, and administrative issues that are identified during the process.

Once the certification basis is established for a proposed design, the FAA and the applicant develop and agree to a certification plan and initial schedule. In order to receive a type certificate, the applicant must conduct an extensive series of tests and reviews to show that the product is compliant with existing standards and any special conditions, including lab tests, flight tests, and conformity inspections. These analyses, tests, and inspections happen at a component-level and an airplane-level, all of which are subject to FAA oversight. If the FAA finds that a proposed new type of aircraft complies with safety standards, it issues a type certificate. Or, in the case of a change to an existing aircraft design, the FAA issues an amended type certificate.

737 MAX Post-Grounding Actions

The crashes of two Boeing 737 MAX airplanes in five months placed a spotlight on safety and FAA's approach to oversight of those we regulate. With respect to the certification of the 737 MAX, the facts are these: it took five years to certify the 737 MAX. Boeing applied for certification in January 2012. The certification was completed in March 2017. During those five years, FAA safety engineers and test pilots put in 110,000 hours of work, and they flew or supported 297 test flights.

As part of the FAA's commitment to continuous improvement, we both welcome and invite review of our processes and procedures. A number of reviews and audits have been initiated to look at different aspects of the 737 MAX certification. After the FAA grounded the 737 MAX, Secretary Chao asked the Department of Transportation's Inspector General to conduct an audit of the certification for the 737 MAX, with the goal of compiling an objective

and detailed factual history of the activities that resulted in the certification of the 737 MAX aircraft. Secretary Chao also announced the establishment of an expert Special Committee to advise the department on aviation safety oversight and certification programs, including a review of the FAA's procedures for the certification of new aircraft. The Special Committee has been formed within the structure of the Safety Oversight and Certification Advisory Committee (SOCAC). Established by Congress in the 2018 FAA Reauthorization Act, the SOCAC is an independent panel that will advise the FAA more broadly on aircraft and flight standards certification processes, oversight of safety management systems, risk-based oversight efforts, and utilization of delegation and designation authorities. Secretary Chao recently announced that the SOCAC's 22-member panel will include officials from Delta Air Lines, GE Aviation, United Airlines, Bell Helicopter Textron, Garmin, Wing Aviation LLC, Pratt & Whitney (a unit of United Technologies Corp), and Gulfstream (a unit of General Dynamics Corp), as well as union, airport, and trade association officials.

The FAA established a Joint Authorities Technical Review (JATR) to conduct a comprehensive review of the certification of the automated flight control system on the Boeing 737 MAX. The JATR is chaired by former National Transportation Safety Board (NTSB) Chairman Christopher Hart and comprises a team of experts from the FAA, National Aeronautics and Space Administration (NASA), and the aviation authorities of Australia, Brazil, Canada, China, the European Union, Indonesia, Japan, Singapore, and the United Arab Emirates.

Additionally, the FAA met with safety representatives of the three U.S.-based commercial airlines that have the Boeing 737 MAX in their fleets, as well as the pilot unions for those airlines. This meeting was an opportunity for the FAA to hear individual views from operators and pilots of the 737 MAX as the agency evaluates what needs to be done before the

FAA makes a decision to return the aircraft to service in the United States. In keeping with the FAA's longstanding cooperation with its international partners, the FAA also hosted a meeting of Directors General of civil aviation authorities from around the world to discuss the FAA's activities toward ensuring the safe return of the 737 MAX to service. We continue to be in frequent communication with the international aviation safety community and are working closely with our counterparts to address their concerns and keep them informed of progress.

The FAA also initiated a multi-agency Technical Advisory Board (TAB) review of Boeing's software update and system safety assessment in order to determine compliance. The TAB consists of a team of experts from the U.S. Air Force, NASA, Volpe National Transportation Systems Center, and the FAA. None of the TAB experts have been involved in any aspect of the Boeing 737 MAX certification. The TAB is charged with evaluating Boeing and FAA efforts related to the software update and its integration into the flight control system. The TAB will identify issues where further investigation is required prior to approval of the design change. The JATR is looking broadly at the original certification of the 737 MAX flight control system, while the TAB is evaluating Boeing's proposed technical solutions related to the two accidents. The TAB's recommendations will directly inform the FAA's decision concerning the 737 MAX fleet's return to service.

The FAA is following a thorough process, not a prescribed timeline, for returning the 737 MAX to passenger service. We continue to evaluate Boeing's software modification and we are still developing necessary training requirements. The 737 MAX will not return to service for U.S. carriers and in U.S. airspace until the FAA's analysis of the facts and technical data indicate that it is safe to do so.

This concludes my statement. I would be happy to respond to your questions.