January 2024

AVIATION CERTIFICATION

FAA Should Evaluate Effectiveness of the International Validation Process

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Why GAO Did This Study

For many years, the U.S. has entered into bilateral agreements with certain other countries to facilitate acceptance of each other's certifications of aviation products. However, U.S. companies continue to report experiencing difficulties in obtaining approvals of their products in other countries.

GAO was asked to review the approvals process for U.S. aviation products. This report (1) describes the processes that FAA and CAAs in the most significant export markets for U.S. aviation products use to approve each other's product certifications, (2) examines validation challenges stakeholders identified, and (3) evaluates how FAA ensures that the international validations process is effective. GAO selected five international markets based on the number of validations and reviewed selected bilateral agreements and implementation procedures, FAA data, and FAA's validation policies and guidance. GAO also interviewed 14 aviation industry stakeholders and CAA officials from three countries.

What GAO Recommends

GAO is making four recommendations, including that FAA (1) establish quantifiable goals for the international validations process; (2) identify quality information and performance metrics to track progress towards those goals; (3) use that information to assess results and inform decisions about any needed improvements to the process; and (4) establish a time frame and action plan for these efforts. FAA agreed with the recommendations.

View GAO-24-106040. For more information, contact Heather Krause at (202) 512-2834 or krauseh@gao.gov.

What GAO Found

U.S. companies export billions of dollars' worth of aviation products, such as airplanes and engines, each year. These products require safety approval from both the Federal Aviation Administration (FAA) and the importing countries' civil aviation authorities (CAA). Bilateral agreements between the U.S. and countries representing the five largest aviation export markets aim to facilitate these approvals through acceptance or validation of each other's product certifications. The approval processes laid out in the implementing procedures for these agreements vary depending on the product's type and complexity. For example, CAA's conduct detailed technical validations for higher risk products with new designs or technologies. These validations can involve extensive review of product designs and other information for the CAA to assess compliance with its own country's regulations and safety and environmental standards.

Five Largest Export Markets for U.S. Aviation Products, 2019-2021
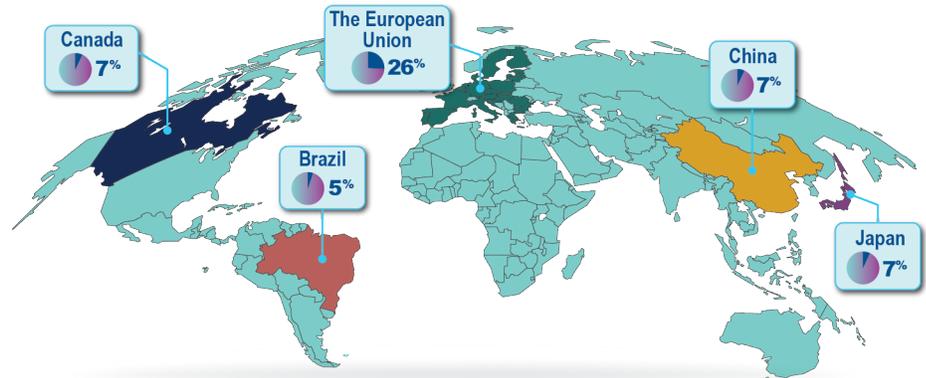
Source: GAO analysis of U.S. Census Bureau data. Map image; tovovan/stock.adobe.com. | GAO-24-106040

Note: Percentages reflect portion of U.S. total aviation exports. The European Union figure excludes the United Kingdom due to its exit from the European Union in 2020.

The fourteen stakeholders GAO interviewed reported that in recent years, validation time frames have become unpredictable as CAAs have requested more data from aviation manufacturers. Stakeholders cited contributing factors, including CAAs' decreased trust in FAA's certifications after the Boeing 737 MAX 8 accidents in 2018 and 2019. They said that receiving FAA's support—including resolving disputes with other countries' CAAs—can also be challenging due to limited FAA staffing and resources.

FAA recently began collecting and using more detailed information to improve its management of international validations, such as tracking the number of active validations by country. However, FAA has not evaluated the effectiveness of the validations process as a whole. FAA officials said they are beginning to develop an approach for assessing the process, including identifying performance goals and needed data. However, FAA has not yet identified specific steps or a time frame for developing the approach. Assessing the validations process could help FAA identify improvements that might lead to increased predictability in the process and improved accountability to bilateral agreements.

_____ **United States Government Accountability Office**

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January 10, 2024

The Honorable Ted Cruz
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Roger F. Wicker
United States Senate

Each year, U.S. companies export billions of dollars' worth of aviation products, such as airplanes, engines, and parts, to other countries. The Federal Aviation Administration (FAA) is responsible for the safety of the civil aviation system in the United States, and as such for safety certification of aviation products registered and used in the United States. As counterparts to FAA, other countries' civil aviation authorities (CAA) approve the safety of aviation products exported to their respective countries. In practice, CAAs may accept FAA approvals, conduct their own certifications for products, or conduct validations of FAA's approvals that cover areas where the CAA's regulations may differ from FAA's.

The United States has entered into bilateral aviation safety agreements (bilateral agreements) with certain other countries to facilitate approvals through either acceptance or validation of each other's certifications. However, in 2015 and 2017, we testified that U.S. companies had reported experiencing difficulties in obtaining approvals of some of the thousands of FAA-certificated products they exported to other countries.[1] Since that time, U.S. companies have continued to raise similar concerns.

You asked us to review the validation process for U.S. aviation products. This report:

- describes the processes that FAA and CAAs in the most significant export markets for U.S. aviation products use to approve each other's product certifications,

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[1]See GAO, *Aviation Certification: FAA Has Made Continued Progress in Improving Its Processes for U.S. Aviation Products*, GAO-17-508T (Washington, D.C.: Mar. 23, 2017); and GAO, *Aviation Safety: Issues Related to Domestic Certification and Foreign Approval of U.S. Aviation Products*, GAO-15-327T (Washington, D.C.: Jan. 21, 2015).

- examines product validation challenges that U.S. companies and industry representatives identified, and

- evaluates how FAA ensures that the international validations process is effective.

To address all three objectives, we first selected five international markets that are major destinations for U.S. aviation products. These markets are Brazil, Canada, China, the European Union, and Japan.[2] We selected these markets based on several factors, including those with the highest total export values for U.S. aviation products and the most validation applications submitted by U.S. companies from 2019 through 2021. To identify the countries with the highest total export values, we reviewed U.S. export data from the U.S. Census Bureau. In addition, we reviewed data from three separate FAA data systems. We did so to determine both the number of U.S products validated in other countries and the number of products validated by FAA from 2019 through 2021, the most recent full years of data available at the time of our review.[3] We assessed the reliability of the data provided by these systems by reviewing FAA policies and guidance, interviewing FAA officials, and testing the data we obtained for outliers and missing values. We found that while these data systems each track different information about the certification and validation processes, the data relevant for selecting a nongeneralizable sample of key export markets—including the number, year, and country of validations—were sufficiently reliable for our purposes. For reasons discussed later in the report, we found that these and other data were not reliable for other purposes, such as comparing validations performed in different countries.

We also based our market selections on those identified by 14 industry stakeholders as the most significant export markets for U.S. companies.[4] We identified these stakeholders by first asking FAA officials which organizations are most involved with the validations process and then

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[2]We consider the 27 countries of the European Union to be a single market for the purposes of this report because the European Union uses a single agency—the European Union Aviation Safety Agency—to certify the safety of aircraft manufactured in or imported to those countries. The United Kingdom was a member of the European Union until 2020.

[3]Specifically, we compiled these data from FAA's Work Tracking System (WTS), Certification Project Notification (CPN) system, and Integrated Certificate Management Division data system.

[4]The 14 stakeholders come from across the aviation industry, including aircraft manufacturers, engine manufacturers, aircraft component manufacturers, and the trade groups that represent them.

asking stakeholders to suggest additional knowledgeable organizations. We continued this process until stakeholders suggested only organizations we had already contacted. While the views presented in our report provide perspectives from a range of knowledgeable stakeholders, they are not generalizable. For a complete list of stakeholders we interviewed, see appendix I.

To describe the processes that FAA and select countries' CAAs use to approve each other's product certifications, we reviewed bilateral agreements and associated implementation procedures between the United States and the governments for the selected markets. In addition, we reviewed FAA documentation and interviewed agency officials to obtain information about FAA's role in the international validations process. This information included (1) the assistance the agency provides to U.S. companies seeking to validate FAA-certificated products in other countries, (2) FAA's validation of products certificated by other CAAs for import into the United States, and (3) FAA's approach to negotiating bilateral agreements and implementation procedures with other countries. In addition, we contacted officials from the CAAs for the selected countries and interviewed officials from Brazil's Agência Nacional de Aviação Civil (ANAC), Transport Canada, and the Japan Civil Aviation Bureau, about the process they each use to validate U.S. products and how they work with FAA. Officials from the European Union Aviation Safety Agency (EASA), the Civil Aviation Administration of China, and the United Kingdom Civil Aviation Authority declined to participate in our review.

To identify challenges that U.S. companies face when seeking product validation, we developed and used a semi-structured interview tool to guide our discussions with the 14 industry stakeholders. These stakeholders included some manufacturers that have had their FAA-certificated products validated in other countries, and other manufacturers that have had their foreign-certificated products validated by FAA. We asked stakeholders about the steps companies have taken to obtain product validations, challenges companies faced, and FAA assistance received during the validation process. We also asked if they had any suggestions for additional steps that FAA could take to assist companies. We conducted a content analysis of the information obtained in these

discussions to identify key themes from these interviews.[5] In this report, we refer to a "few" stakeholders if three or fewer stakeholders expressed a particular view, "some" stakeholders if between four and seven expressed a view, "many" stakeholders if between eight and 10 expressed a view, "most" stakeholders if between 11 and 13 expressed a view, and "all" stakeholders if the 14 stakeholders expressed a particular view. We also asked FAA officials about the challenges and opportunities raised by stakeholders and how FAA's validation-related initiatives may be addressing those challenges.

To evaluate how FAA ensures that the international validations process is effective, we reviewed FAA's data on international validations. We also reviewed documentation and interviewed FAA officials on the agency's assessment of the international validations process, its information management practices related to validations, and initiatives underway to improve the process. We compared FAA's efforts to assess the international validations process to key practices identified in our prior work on organizational performance management.[6] Our prior work identified these practices by reviewing approximately 200 of our past reports on evidence-building and performance-management activities, distilling these actions into 13 practices and refining them based on input from officials at 24 federal agencies, the Office of Management and Budget, and a 2020 survey of federal managers. We also compared FAA's efforts to strategic objectives outlined in the Department of Transportation's (DOT) 2022-2026 Strategic Plan.[7]

We conducted this performance audit from May 2022 to January 2024 in accordance with generally accepted government auditing standards. These 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

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[5]We identified key themes by reviewing the responses from each of the stakeholders and noting themes, ideas, and comments that more than one stakeholder expressed. Two GAO analysts independently reviewed each interview. They compared the results of these reviews to determine if the key themes were consistent. To reconcile any differences in the reviews between the two team members, they discussed their reasoning, reached an agreement, and documented those agreements as part of the analysis. Once this reconciliation was completed, the number of stakeholders raising key themes, ideas, or comments was tallied for reporting purposes.

[6]See GAO, *Evidence-Based Policymaking: Practices to Help Manage and Assess the Results of Federal Efforts*, GAO-23-105460, (Washington, D.C.: July 12, 2023).

[7]See DOT, *Strategic Plan FY2022-2026*, (Washington, D.C.: Mar. 28, 2022).

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the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Certification and Validation of Aviation Products

Aviation products, such as airplanes, engines, and parts, are designed, manufactured, and used around the world. Under the Convention on International Civil Aviation (known as the Chicago Convention) and its annexes, each signatory country is responsible for establishing standards for airworthiness and overseeing the aviation products registered in that country.[8] When a company designs a new aviation product, it ordinarily applies for type certification with the CAA in its home country (the certificating CAA, which is FAA in the case of U.S. companies). This certification establishes that the product's design complies with that country's standards for safe operations and allows operators to apply for an airworthiness certificate to use the product in that country.

If a company wishes to export a product to another country, it must also obtain design approval by the CAA in that country (the validating CAA). CAAs can choose to conduct original certifications for imported products. However, because of the complex nature of that process, CAAs generally choose to (1) accept the approval issued by the CAA in the country that originally certificated the product, or (2) validate the original certification via an evaluation that the product meets the importing country's standards.[9] Some CAAs, though not FAA, charge fees to the company seeking a validation. Fees may be based, for example, on the staff hours associated with a validation project or a yearly fee while the validation project is pending.

To help provide greater clarity into how particular CAAs will conduct validations as well as make the process more efficient, some countries have entered into bilateral agreements. The United States has over many years negotiated bilateral agreements with the European Union and 22

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[8]The 1944 Chicago Convention also established the International Civil Aviation Organization, which became a specialized agency of the United Nations in 1947 with the objective of providing for the safe, orderly, and efficient development of international civil aviation. As of September 2023, there are 193 contracting states to the Chicago convention, including the United States.

[9]FAA refers to the process of issuing type certificates as 'certificating' aviation products.

countries or organizations.[10] Under these agreements, the two parties generally agree to establish processes for approving each other's aviation product certifications. Depending on the agreement, the validation method of approval can take multiple forms. These include less detailed, "streamlined" validations and complex "technical" validations that can involve significant reviews of the product design. While bilateral agreements exist to assist in simplifying the parties' approval processes for imported aviation products, each country retains sovereign control of its regulatory framework for ensuring the safety of those products.

In the U.S. bilateral agreements, the process for conducting validations is generally set forth in two documents:

- An executive agreement is negotiated by the U.S. Department of State, assisted by the U.S. Department of Transportation, with its counterpart in the other country. The parties generally agree to facilitate acceptance of each other's certifications and to continue cooperation regarding aviation safety.

- Implementation Procedures for Airworthiness (Implementation Procedures), authorized by the bilateral agreement, are negotiated between FAA and the respective CAA. These procedures outline the technical cooperation between FAA and its bilateral partner and may include establishing procedures for validations of aviation product approvals and design changes.

Markets for U.S. Aviation Products

The European Union, Canada, China, Japan, and Brazil—all of which have bilateral agreements with the United States—together comprised 75 percent of the almost 4,000 total validation applications submitted by U.S. companies from 2019 through 2021. In addition, exports of U.S. aviation products to these markets generated an average of $50 billion annually from 2019 through 2021 (52% of the total value of U.S. aviation exports), according to trade data compiled by the U.S. Census Bureau.

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[10]The bilateral agreement with the European Union covers all 27 Member States of the European Union: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

The United States also has bilateral agreements with Argentina, Australia, Brazil, Canada, China, Iceland, India, Indonesia, Israel, Japan, Korea, Malaysia, Mexico, New Zealand, Norway, Russia, Saudi Arabia, Singapore, South Africa, Switzerland, and the United Kingdom. The Taipei Economic and Cultural Representative Office in the United States also has an agreement with the American Institute in Taiwan to promote aviation safety.

Some of these same countries are also the source of most aviation products imported to the United States. According to FAA data for the same 3-year period, FAA conducted about 1,000 validations of new or modified aviation products imported into the United States. Over 90 percent of these products were from the European Union, Canada, and Brazil, which are home to the large aviation manufacturing companies Airbus, Bombardier, and Embraer, respectively. Figure 1 shows the number of validation applications submitted by U.S. companies by top export markets and the number of validations performed by FAA from top import markets from 2019 through 2021.

Figure 1: International Validation Applications Submitted by the Federal Aviation Administration (FAA) for U.S. Companies and International Validations Performed by FAA from 2019 through 2021, by Country

International validation applications submitted by FAA for U.S. companies' exported products

3,975 Total

- 13% Canada
- 10% Brazil
- 7% China
- 5% Mexico
- 5% Japan
- 4% Russia
- 3% India
- 13% Other
- 40% European Union

International validations performed by FAA for imported products

982 Total

- 38% Canada
- 8% Brazil
- 3% Other
- 51% European Union
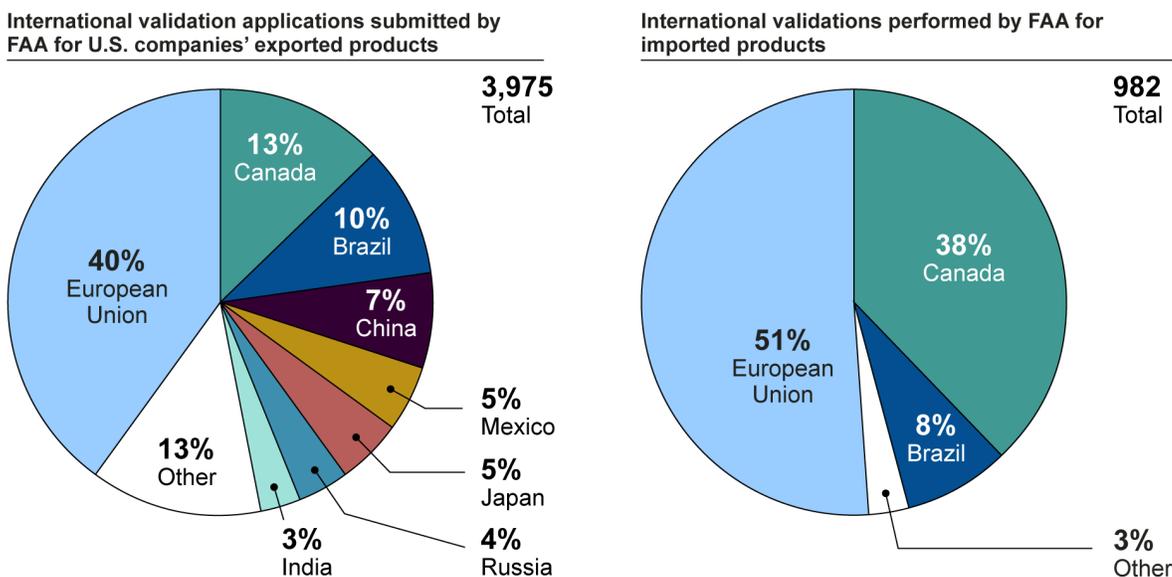
Source: GAO analysis of FAA data. | GAO-24-106040

Notes: For the chart of validation applications submitted by FAA, the numbers presented are based on the total number of applications submitted by FAA on behalf of U.S. aviation companies. According to FAA, that number of applications may be undercounted because there is no formal requirement for U.S. aviation companies to submit applications to FAA for validation in a foreign country unless the country has a bilateral aviation safety agreement with the United States. Thus, some applications may not have been entered into one of FAA's tracking systems.

The United Kingdom was part of the European Union until 2020.

FAA's Role in Certificating and Validating Aviation Products

FAA's Aircraft Certification Service is responsible both for the certification of U.S. products and validating the certifications of products imported to the United States. The service comprises several offices that each have a role in certificating and validating different types of products (see fig. 2).

Figure 2: FAA Aircraft Certification Service Offices Involved with International Validations
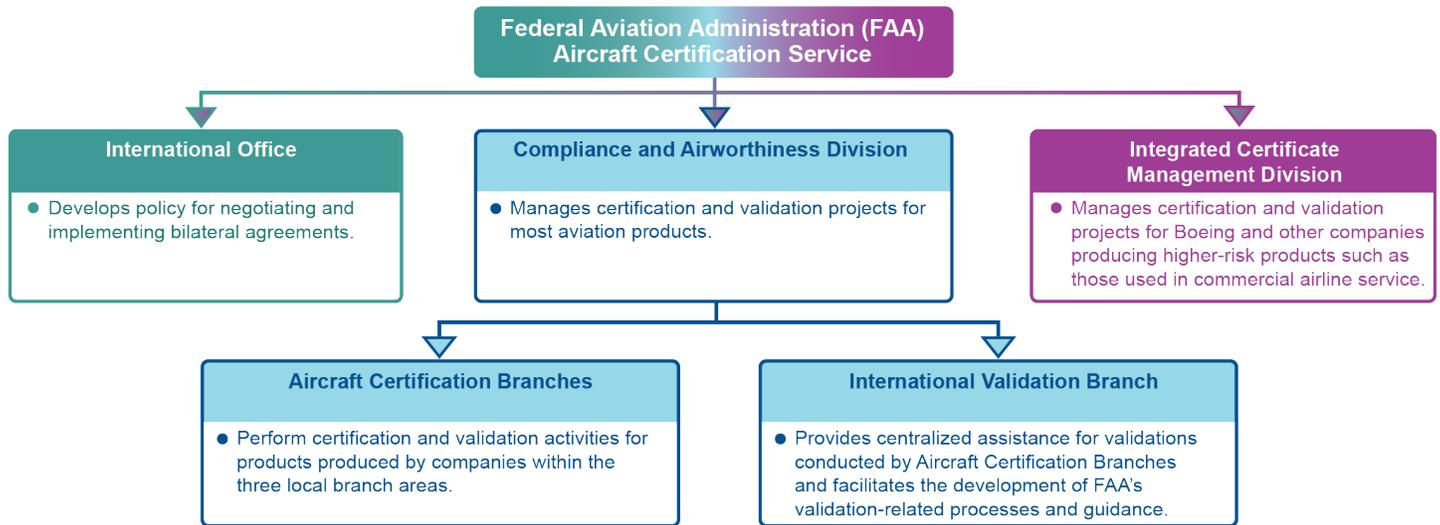
Source: GAO Analysis of FAA Documentation. | GAO-24-106040

Applications for aircraft certification are referred to as certification projects and are typically managed by one of the Aircraft Certification Service's three regional offices, the Aircraft Certification Branches. Certification activities conducted by staff in these offices include reviewing initial design concepts for aviation products, identifying applicable regulatory and safety requirements for the certification basis, developing a project-specific certification plan, and working with the company to ensure all certification requirements are met.[11]

Applications to validate an FAA-issued certificate in another country are referred to as validation projects and are typically managed by the International Validation Branch. This branch manages validation activities and coordinates communications with other CAAs, along with facilitating the development of FAA's validation-related processes and guidance. The branch is supported by staff from the Certification Branches in these roles. To track information on validations managed by this branch, FAA uses two data systems. The Work Tracking System (WTS) tracks

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[11]Certification basis means the applicable airworthiness and environmental standards, as established by a certificating CAA, that a product must meet in order to be approved for certification. The Aircraft Certification Service issues a type certificate when it determines that a new U.S. manufactured product's design complies with applicable airworthiness regulatory standards. FAA also issues amended and supplemental type certificates for modifications to an original design that has received a type certificate.

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information on validations conducted by other CAAs on products exported by U.S. companies. The Certification Project Notification (CPN) system tracks information on validations FAA conducts of imported products.

The Integrated Certificate Management Division within the agency's Aircraft Certification Service manages certification and supports international validations of products FAA considers to be the highest risk. This division is responsible for managing the certification and international validation of products produced by Boeing and some other large U.S. companies, including General Electric and Pratt & Whitney. These products include airplanes and engines used in commercial airline service. In addition, this division conducts FAA validations of imported products that the agency considers similarly high-risk, such as aircraft produced by the large European aerospace manufacturer Airbus.

FAA's Aircraft Certification Service International Office is responsible for assessing and developing policy for implementing the provisions of bilateral agreements. This includes working with the International Validations Branch and Integrated Certificate Management Division to collaborate directly with other CAAs to facilitate individual validations, improve the validation process, and improve bilateral relationships. For example, officials from these offices participate in formal bilateral discussion groups with CAAs, including Transport Canada and EASA, that work on validations issues.

FAA's Support of U.S. Companies Seeking to Validate Exported Products

FAA supports U.S. companies seeking validation of their products in other countries by both providing direct assistance to individual validation projects and by working with other CAAs to improve the international validations process. For U.S. companies seeking approvals of their products for use in countries with a bilateral agreement, FAA is generally responsible under the implementation procedures for submitting the companies' validation application to the validating CAA. FAA also assists U.S. companies by working with other CAAs during the validation process.

For countries without a bilateral agreement, there is no formal requirement for FAA to submit a validation application to the relevant CAA on a company's behalf. However, FAA's orders and guidance covering validations state that companies should generally submit validation applications through FAA. For Boeing and some other large manufacturers, the Integrated Certificate Management Division performs these functions and enters data into either WTS or the division's separate data system used for Boeing projects. For other U.S. companies, Aircraft

Certification Branches submit the validation application and enter relevant project information into WTS.

During the validation process, FAA generally acts as the conduit for information exchanged between the company and the validating CAA, monitors the progress of the validation, and works directly with CAAs to resolve disputes if they arise. For applicable products, the International Validations Branch serves as a centralized communication point for companies and other countries' CAAs and helps Aircraft Certification Branches resolve disputes with CAAs. Similarly, other countries' CAAs work with FAA on behalf of their domestic companies when they are seeking FAA validation of their products for import into the United States.

In addition to supporting individual validations, FAA also engages with other CAAs to improve the validations process. For example, FAA participates in the Certification Management Team (CMT), comprised of representatives of the aircraft certification groups of FAA, EASA, Transport Canada, and ANAC. The CMT provides a forum for these four CAAs to discuss certification and validation issues, such as harmonizing certification regulations and interpretations of those regulations as well as approved means of showing regulatory compliance. In 2018 and 2019 these three CAAs entered into Validation Improvement Roadmap agreements with FAA that outlined various ways to improve the validation process. These improvements included providing for the use of work plans that establish the certification basis and areas for technical review early in the validation process. Many of the procedures originally included in these roadmap agreements, including the use of work plans, have subsequently been included in the implementation procedures for the agreements between FAA and these CAAs.

Bilateral Agreements and Implementation Procedures Establish Similar Validation Processes for Importing Aviation Products

Our review of the implementation procedures that cover the five most significant export markets for U.S. aviation products—the European Union, Canada, China, Japan, and Brazil—found that FAA negotiated similar procedures across these markets for approving certificated aviation products. FAA officials also characterized the provisions of the implementation procedures as similar across the agreements. The processes described by these documents apply both to FAA validating products imported to the United States and to other CAAs validating products exported by U.S. companies. All five of these implementation procedures condition which pathway for approval is appropriate for a particular product—acceptance or validation—on the type and complexity of the product. According to these procedures, acceptance is generally appropriate for the lowest risk products, including small changes to

previously certificated designs. For these products, the validating CAA can accept the certificating CAA's certification without requiring a validation application or conducting its own review of the product. For products undergoing validation, all five implementation procedures specified two categories of validation, streamlined and technical (see fig. 3).[12]

- **Streamlined Validations.** For higher risk products that do not require additional testing by the validating CAA or involve specific safety elements, the certificating CAA submits an application for a streamlined validation on behalf of the product manufacturer. The validation application generally must include a description of the product, any design change relative to a previously approved version of that product, the domestic CAA's certification basis, and a statement that the domestic CAA certifies that the product meets its airworthiness and environmental standards. Under this process, the validating CAA reviews the application package but only performs a minimal technical review of the product. The implementation procedures we reviewed with EASA, and the CAAs from Brazil, China, and Japan specified time frames for approvals to be issued by the validating CAA, ranging from 15 to 45 working days from receipt of application.

- **Technical Validations.** For the highest risk products, such as new product designs or designs involving new technology, all of the implementation procedures we reviewed direct CAAs to conduct technical validations. These validations can involve an extensive and detailed process and involvement from the validating CAA to ensure compliance with that country's regulations and safety and environmental standards. The application requirements are more extensive than streamlined validations and include technical data and product design information.

To help identify the highest risk products that require technical validations, FAA's implementation procedures with EASA and CAAs from Brazil, China, and Japan call for the use of specified lists (referred to as safety emphasis item or special emphasis item lists) to categorize products that require technical validations. These lists identify areas of the product design that are potentially high risk or where the requirements or safety standards of the certificating and validating CAAs are

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[12]This report provides generalized descriptions of the bilateral agreements and implementation procedures reviewed. The individual agreements and procedures may use different terms and include further details and exceptions.

significantly different. If any elements on a list are present in a product design, the product application undergoes a technical validation. None of the implementation procedures we reviewed specified timelines for the completion of technical validations.

Figure 3: International Approvals Processes for Type Certificates for U.S. Aviation Products under Implementation Procedures with Selected Countries
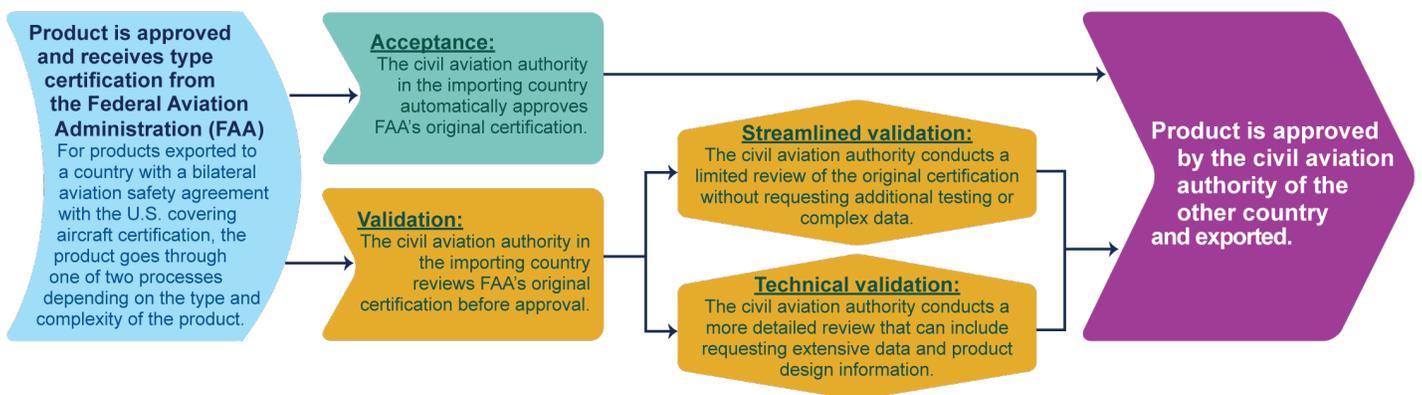
Source: GAO analysis of bilateral aviation safety agreements and implementation procedures. | GAO-24-106040
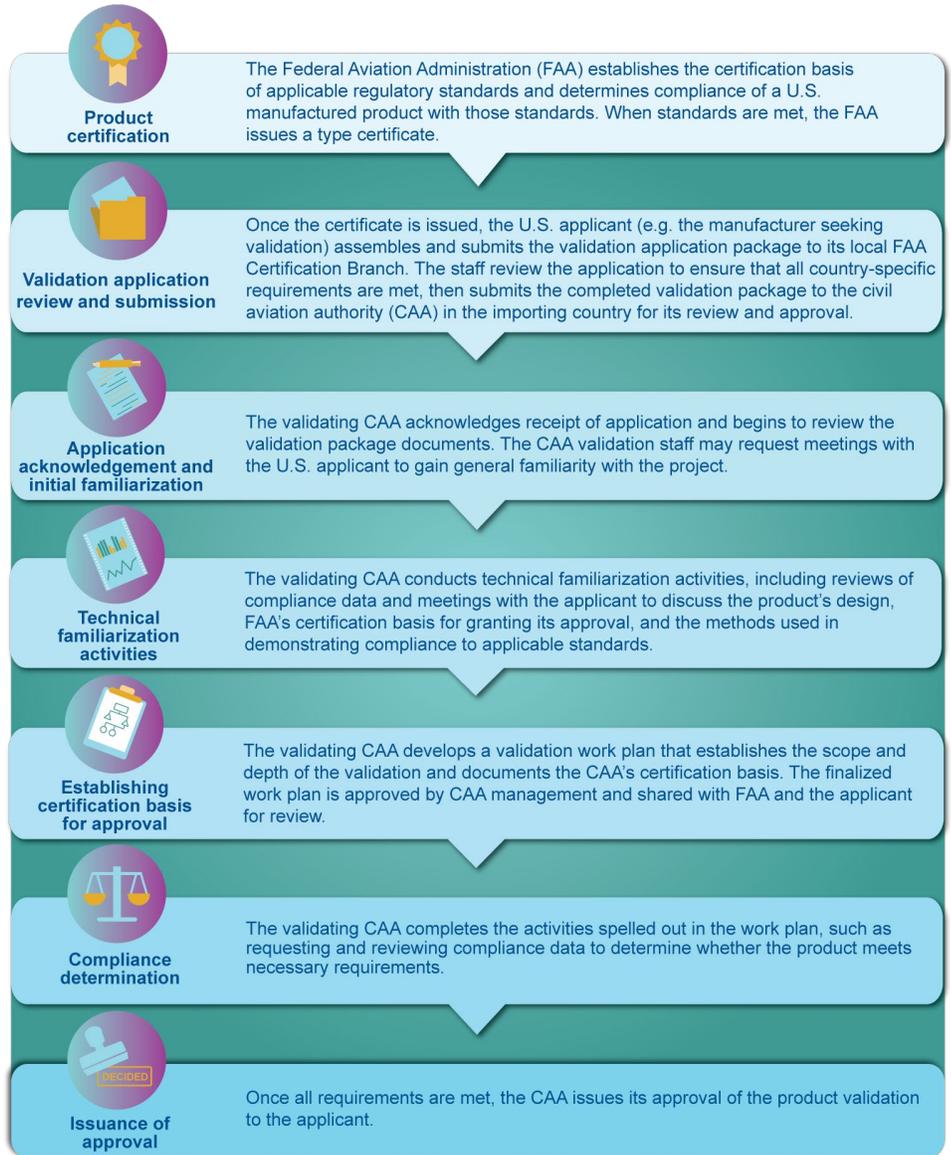
Note: This figure includes information from our review of the implementation procedures between the United States and Brazil, Canada, China, the European Union, and Japan.

The certificating CAA and the company applying for a validation initially propose which category of approval (e.g., acceptance, streamlined validation, or technical validation) should be used based on the guidelines in the implementation procedures. In three of the implementation procedures we reviewed, the validating CAA is to initially accept the classification provided by the certificating CAA, and the implementation procedures provide for a process if the validating authority disagrees with the applicant's proposed classification. However, in two other implementation procedures, the validating CAA must explicitly confirm its agreement with the validation classification. For each of the three approval categories, the implementation procedures generally describe the roles and responsibilities for the certificating CAA and the validating CAA.

For technical validations, the five implementing procedures we reviewed outline a sequence of steps for CAAs to follow. Figure 4 outlines those general steps for U.S. aviation products, which include initial familiarization meetings with the applicant, conducting technical familiarization activities, and reviewing the certificating CAA's certification basis for approval. Although the implementation procedures outline the

general steps of a technical validation, the validating CAA retains discretion to establish the scope and depth of its review. The implementation procedures also allow validating CAAs discretion to determine the time required to conduct each step in the process as well as the overall technical validation.

Figure 4: General Sequential Steps for Civil Aviation Authorities' Technical Validation Processes for Exported U.S. Aviation Products

Product certification
The Federal Aviation Administration (FAA) establishes the certification basis of applicable regulatory standards and determines compliance of a U.S. manufactured product with those standards. When standards are met, the FAA issues a type certificate.

Validation application review and submission
Once the certificate is issued, the U.S. applicant (e.g. the manufacturer seeking validation) assembles and submits the validation application package to its local FAA Certification Branch. The staff review the application to ensure that all country-specific requirements are met, then submits the completed validation package to the civil aviation authority (CAA) in the importing country for its review and approval.

Application acknowledgement and initial familiarization
The validating CAA acknowledges receipt of application and begins to review the validation package documents. The CAA validation staff may request meetings with the U.S. applicant to gain general familiarity with the project.

Technical familiarization activities
The validating CAA conducts technical familiarization activities, including reviews of compliance data and meetings with the applicant to discuss the product's design, FAA's certification basis for granting its approval, and the methods used in demonstrating compliance to applicable standards.

Establishing certification basis for approval
The validating CAA develops a validation work plan that establishes the scope and depth of the validation and documents the CAA's certification basis. The finalized work plan is approved by CAA management and shared with FAA and the applicant for review.

Compliance determination
The validating CAA completes the activities spelled out in the work plan, such as requesting and reviewing compliance data to determine whether the product meets necessary requirements.

Issuance of approval
Once all requirements are met, the CAA issues its approval of the product validation to the applicant.

Source: GAO icons and analysis of bilateral aviation safety agreements and implementation procedures. | GAO-24-106040

Notes: While this figure is oriented to the process U.S. companies and FAA use to export aviation products to other countries, companies and CAAs in other countries use the same process to import products into the United States.

This figure outlines the general steps for a sequential approval process in which the U.S. company seeks an international validation after first seeking a type certificate from FAA. However, applicants may opt for a concurrent approval process in which its aviation product undergoes another CAA's approval at the same time it undergoes the FAA certification process.

One of the required steps in the technical validations process calls for validating CAAs to develop a work plan.[13] The work plans are intended to more narrowly establish the areas of the validating CAA's technical involvement based on risk-based principles (as opposed to conducting a comprehensive review of compliance). The initial work plan and any changes made to the plan during the validation process are approved by the validating CAA's management and communicated to the certificating CAA. The validating CAA is responsible for finalizing the work plans after completing its technical familiarization activities.

The five implementation procedures we reviewed specify how CAAs are to communicate and submit data requests, resolve disputes, and maintain confidence in each other's certification programs. Specifically, these implementation procedures include provisions related to:

- **Communication and data requests.** Communication during the entire validation process should primarily be between the two CAAs, beginning with the certificating CAA reviewing and submitting the validation application on behalf of the company. Generally, requests for data or additional information made by the validating CAA should be submitted through the certificating CAA to the applicant.

- **Dispute resolution.** Efforts to address issues should begin at the working staff level (e.g., project managers) before elevating issues through the management hierarchy. In addition, FAA's implementation procedures with EASA, Transport Canada, and ANAC, establish oversight boards comprised of leadership from both authorities that are responsible for overseeing the implementation procedures. Unresolved issues may be brought to these oversight boards for input. For the countries participating in the Certification Management Team (CMT), unresolved issues may also be raised to the representatives of FAA, EASA, Transport Canada, and ANAC through the Certification Authorities Group of the CMT. In contrast, FAA's implementation procedures with Japan and China do not have an implementation procedure oversight board.

- **Confidence in Certification Programs.** Both CAAs should maintain confidence in each other's certification and validation programs through various activities. Specified activities in the implementation procedures include conducting sample audits of each other's

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[13]Work plan requirements were originally included in Validation Improvement Roadmap agreements between FAA and the CAAs from the European Union, Canada, and Brazil. The use of work plans was subsequently included in all five implementation procedures we reviewed.

certification projects, conducting periodic evaluations of the compatibility of each CAA's standards, and establishing information sharing processes. However, FAA officials said that FAA and its bilateral partners are in the early stages of implementing these activities. In addition, the implementation procedures between FAA and EASA also include provisions directing both CAAs to collect performance metrics for the validations they conduct of each other's exported products, including the number of validation projects received and the working hours spent. FAA officials said that they track this information for certain validations of products imported from the European Union and Canada.

Selected Stakeholders Reported Challenges Validating U.S. Products, including Unpredictable Timelines and Limited Communications

The 14 stakeholders we interviewed consistently reported that in recent years, CAAs' increased involvement in the validations process through additional information requests has led to unpredictable time frames. Specifically, the 14 U.S. aviation companies and industry representatives we interviewed attributed the increased involvement to a variety of factors, including CAAs' decreased trust in FAA's certifications after the 737 MAX 8 accidents and less harmonization of aircraft certification regulations between countries.[14] In addition, stakeholders said necessary communications during the process are challenging due to difficulties in finding points of contact and staffing and resource challenges at other countries' CAAs. Stakeholders said that receiving FAA's support can also be challenging due to limited FAA staffing and resources and delayed implementation of roadmap agreements.

Lack of Predictability and Increased Civil Aviation Authority Involvement during Validations

Stakeholders reported that the validation process for U.S. aviation products under bilateral agreements and associated implementation procedures has become less predictable for individual validation projects in recent years. Many said that CAAs have increased their overall levels of involvement in and scrutiny of validation projects by making more and broader information requests, reflecting a continuing trend we reported in 2015.[15] In addition, they said that the number and nature of information

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[14]In 2018 and 2019, two Boeing 737 MAX 8 accidents in Indonesia and Ethiopia, respectively, killed 346 people. These accidents raised questions about aircraft design certification processes and related oversight efforts by FAA, the primary certificating authority, as well as by EASA and other CAAs responsible for validating FAA's certification of the airplane. For more information about FAA's process for approving new commercial transport airplanes, such as the 737 MAX, and how it compares to the process used by EASA, see GAO, *Aircraft Certification: Comparison of U.S. and European Processes for Approving New Designs of Commercial Transport Airplanes*, GAO-22-104480 (Washington, D.C.: June 30, 2022).

[15]GAO-15-327T.

requests have contributed to longer validation time frames. Stakeholders cited several reasons for increased CAA involvement and unpredictability, including the following.

- **Lack of specific timelines for technical validations.** Some stakeholders reported that because the bilateral agreements and related implementation procedures do not include specific time frames for completing technical validations, they have faced unpredictable time frames in getting U.S. aviation products validated.[16] For example, stakeholders said that the validation process can be open-ended and that based on their experience, validation time frames have been increasing in recent years. One said that this unpredictability is a particular challenge because it affects whether they achieve estimated delivery dates to customers. Some stakeholders also said that there is no accountability mechanism for a timeline if validating CAAs make numerous information requests or take a long time to review and respond to submitted information and inquiries. Officials from two CAAs we interviewed told us that they often have more validation applications than they have the capacity to concurrently review. One added that they must also balance validation applications with applications for certifications from domestic manufacturers.

- **Decreased trust in FAA's certification process.** Most stakeholders said that the two accidents involving the Boeing 737 MAX 8 airplane in 2018 and 2019 decreased validating CAAs' trust in certifications performed by FAA and, in turn, increased scrutiny and information requests from CAAs when validating FAA-certificated products.[17] These stakeholders said that the decrease in trust has been especially evident in areas of aircraft design, such as how pilots interface with the aircraft's controls and assumptions about how pilots will perform in abnormal situations. For example, a few stakeholders we spoke with said that they have received increased requests by CAAs for information in those areas, whereas previously validating CAAs had generally accepted FAA's certification findings.

  FAA officials said that they have also seen increased requests for data and testing from some validating CAAs in the wake of the 737 MAX 8 accidents. These officials said they work with their counterparts to resolve these information requests. Some

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[16]Six stakeholders we spoke with identified unpredictable time frames as a challenge in the international validations process.

[17]Twelve stakeholders reported decreased trust in FAA's certifications as a result of the 737 MAX accidents as a challenge in the international validations process.

stakeholders we spoke with suggested that further development of FAA's relationships with other countries' CAAs could improve the validations process. FAA officials told us that they have increased their engagement with other CAAs in an attempt to improve confidence in FAA's certifications, including by conducting bilateral meetings with the CAAs that participate in the CMT—ANAC, EASA, and Transport Canada—and major manufacturers, as well as hosting forums on continuing safety.

- **Decreased harmonization of safety regulations.** Most stakeholders said that FAA's aircraft certification regulations have become less harmonized with the regulations in other countries, which has led to increased scrutiny from validating CAAs across a number of design areas.[18] Officials from CAAs we interviewed said that some of these differences are due to countries developing regulations specific to the operating environment in their country, such as cold weather operations in Canada or aircraft operations on short runways in Brazil. However, stakeholders said that in other areas, such as how crewmembers interact with aircraft controls, the differences are due to some CAAs, particularly EASA, updating their regulations at a much faster pace than FAA. In addition, a few stakeholders said that FAA and other CAAs often disagree on how regulations should be interpreted, leading to additional information requests during the validation process even when the regulations themselves are in alignment.

  Many stakeholders suggested that FAA work to update its aircraft certification regulations to better align with other countries to help reduce the number of areas CAAs examine during validation projects. FAA officials said that FAA prioritizes rulemaking activities that have maximum safety effects and that FAA has been making use of other regulatory options, such as using special conditions in safety projects.[19]

- **Information requests on new or complex technology**. FAA officials and most stakeholders we spoke with said that they believe some

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[18]Thirteen stakeholders reported decreased harmonization between FAA's and other countries' aircraft certification regulations as a challenge in the international validations process.

[19]A special condition is a requirement that applies to a particular aircraft design and that FAA determines is necessary to establish a level of safety equivalent to that established in the airworthiness regulations. FAA uses special conditions if FAA finds that the airworthiness regulations do not contain adequate or appropriate safety standards for an aircraft, aircraft engine, or propeller because of a novel or unusual design feature. 14 C.F.R. § 21.16.

CAAs have increasingly requested information in order to learn about complex aircraft technology and develop the validating CAAs own ability to regulate the safety of modern aircraft.[20] Responding to these types of requests can involve disclosure of sensitive product information, which could slow down a validation by requiring negotiations between FAA and the validating CAA to resolve. In addition, stakeholders expressed concerns about how in some countries, especially China, proprietary information from U.S. companies could flow from CAAs to the domestic companies they regulate.

In 2015, we reported similar stakeholder concerns, particularly relating to requests from China's CAA for data or detailed product information that, in stakeholders' views, often were not necessary for a validation approval (see text box).[21] FAA officials told us that they directly work with CAAs to reduce information requests that are outside of the scope of a validation project. FAA officials also said they are working on allowing more products to be accepted by CAAs to help reduce the number of technical validations that can lead to large numbers of information requests.

Example of Challenges Faced by One U.S. Aviation Product during the International Validations Process

A U.S.-based engine manufacturer applied to validate an engine that had received certification from the Federal Aviation Administration (FAA) in a country with which the United States has a bilateral aviation safety agreement. Company representatives told us that they received significant technical information requests from the validating civil aviation authority in areas of the product design where regulations between the United States and that country were harmonized. In addition, they said they encountered differences in their understanding on what had been agreed upon in the validation work plan with the civil aviation authority's staff. The representatives said that this experience, which required them to supply technical information to the aviation authority despite their understanding that the requests were outside of the scope of the validation project, differed from their previous experiences obtaining product validations in that country. The engine manufacturer finally agreed to share the technical data to protect the airplane schedule.

Source: GAO analysis of information provided by a U.S.-based aerospace manufacturer. | GAO-24-106040

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[20]Eleven stakeholders reported increased information requests from CAAs as a challenge in the international validations process.

[21]GAO-15-327T.

- **Inconsistency in use of work plans.** Many stakeholders said that sometimes validating CAAs do not use work plans, or are not following them, when conducting their review and developing requests for information.[22] According to the implementation procedures we reviewed, CAAs should use work plans to manage their level of involvement and communicate their planned involvement to the certificating CAA and applicant. However, some stakeholders said that validating CAAs make requests for information that are not specified in the work plans during the later stages of the validation process. Officials from FAA and two of the other CAAs we spoke with told us that work plans—which became part of the validation process in 2018—remain a new concept and that they are still developing consensus on how to most effectively use the documents.

- **Differences in validation fee structures.** Many stakeholders said that the validation fee structures used by some CAAs lead to uncertain and unpredictable costs.[23] For example, they said many CAAs charge flat fees for validating products. In contrast, EASA charges fees for each year of a validation project, which stakeholders said can lead to recurring charges when a validation project takes longer than expected. In addition, many stakeholders reported issues with making payments to certain CAAs, including determining which country's currency to use and the appropriate account in which to deposit funds. According to stakeholders, these payment issues have led to delays in beginning validation projects. FAA officials said that some countries fund their CAA's validation activities with service fees and that the fees are often necessary to continue the CAA's operations.

Communication and Resource Limitations at CAAs

Stakeholders and FAA officials said that while communications between the certificating CAA, validating CAA, and the applicant are essential to the international validations process, they have frequently faced communication challenges. This includes communication between FAA and CAAs when processing a validation application and between the validating CAA and the applicant seeking the validation when making and responding to information requests. Stakeholders and FAA officials pointed to several contributing factors, including the following.

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[22]Nine stakeholders reported issues with the use of work plans as a challenge in the international validations process.

[23]Nine stakeholders reported issues with validation fee structures as a challenge in the international validations process.

- **Difficulties in finding points of contact and language barriers.** Some stakeholders noted that finding consistent and knowledgeable points of contact at certain CAAs could be challenging. A few noted that language barriers in certain regions of the world can require translation services that add time and expense to a project.[24] To address these issues, a few stakeholders also reported that they employ staff in countries where they apply for significant numbers of validations, which they said is helpful in developing relationships with CAA staff and making sure that the correct officials hear issues. A few stakeholders also said that the COVID-19 pandemic, which FAA officials said led to travel restrictions and workforce disruptions at CAAs around the world, had exacerbated communications challenges and resulted in longer project time frames.[25]

- **Staffing and resource challenges at CAAs.** Some stakeholders said that CAAs face staffing and resource limitations that can result in long response times.[26] Some said that they have also noticed increased staff turnover during projects, which can add additional time to a project as new staff become familiar with the product (see text box). In 2015, we also reported that stakeholders encountered challenges with CAAs not responding to requests or not having backups for staff who were unavailable.[27] FAA and other CAA officials agreed that staffing limitations can cause lengthy response times and project delays. They said that FAA also faces similar challenges in some areas, discussed below.

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[24]Five stakeholders reported issues with communications as a challenge in the international validations process.

[25]Three stakeholders noted COVID-19 related communications challenges as a challenge in the international validations process.

[26]Seven stakeholders noted staffing and resource imitations at CAAs as a challenge in the international validations process.

[27]GAO-15-327T.

> **Example of Challenges Faced by One U.S. Aviation Product during the International Validations Process**
>
> In 2012, a U.S.-based company applied for type certification of a transport category airplane with the Federal Aviation Administration (FAA) and for concurrent validation of that certification with a Civil Aviation Authority (CAA) in another country. FAA issued the final type certificate for the airplane in 2018. Company representatives told us that the validating CAA approved the product 15 months later. They attributed the delays to a lack of dedicated resources and staff turnover at the CAA as well as disagreements over interpretations of regulations despite those regulations being harmonized between FAA and that CAA. According to the representatives, the protracted validation caused delayed customer deliveries, which resulted in financial penalties for the company.

Source: GAO analysis of information provided by a U.S.-based aerospace manufacturer. | GAO-24-106040

FAA Resource Constraints and Delayed Roadmap Agreement Implementation

Some stakeholders we interviewed reported challenges in various aspects of FAA's support for U.S. companies during the validations process. That support includes transmitting information to validating CAAs, working with those CAAs to resolve disputes, monitoring the international validations process, and negotiating process improvements. Contributing factors cited by stakeholders included the following.

- **Staffing and resource challenges at FAA offices.** Some stakeholders reported that FAA offices that work on validations are not adequately staffed or have high turnover. In addition, some stakeholders said FAA staff are not always knowledgeable in validation procedures.[28] Stakeholders said that FAA is consequently limited in its ability to recognize when a CAA information request deviates from the bilateral agreements and implementation procedures. However, some other stakeholders we spoke with reported that they had received good support from FAA when going through the validations process. For example, they noted that FAA staff in Aircraft Certification Branches were knowledgeable of the validations process and knew when to elevate issues within FAA.[29] FAA officials agreed that the agency has faced challenges in staffing positions related to the international validations process in both the branches and the Integrated Certificate Management Division. They stated that the agency is working to increase its staffing levels in

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[28]Six stakeholders noted staffing limitations at FAA, and seven stakeholders noted training limitations for FAA staff as challenges in the international validations process.

[29]Six stakeholders reported positive experiences with FAA assistance during the international validations process.

those offices as well as the International Validations Branch to better support international validations of U.S. products.

- **Incomplete implementation of roadmap agreements.** Some stakeholders reported that while FAA entered into roadmap agreements in 2018 and 2019 with EASA, ANAC, and Transport Canada to improve the international validations process, these agreements have not been fully implemented.[30] For example, some stakeholders said that key provisions of the roadmap agreements, such as Safety Emphasis Items lists and work plans, as previously discussed, are not used or are not followed when CAAs develop requests for information. In fiscal year 2023, FAA entered into new roadmap agreements with these three CAAs. FAA officials said that they were able to implement many of the provisions of the prior agreements before they expired. The new agreements incorporate new provisions along with areas of the prior agreements that had not yet been implemented. These provisions include defining additional criteria for using streamlined validations and harmonizing regulations.

FAA Has Taken Steps to Improve but Has Not Yet Evaluated the Effectiveness of the International Validations Process

During our audit, FAA made several changes to improve its management of the international validations process for both imported and exported products. These changes include making improvements to one of its data systems, developing guidance for processing validations, and establishing internal dashboards to more easily review the data FAA collects. Officials told us that they made these changes to increase FAA's ability to track individual validations of imported and exported products. They acknowledged, however, that FAA is not yet able to systematically assess the effectiveness of the process as a whole.

FAA Has Taken Steps to Improve Its Management of International Validations

FAA recently completed several initiatives to improve how it collects and tracks information to help manage validation projects. In December 2022, FAA improved the Work Tracking System (WTS) to facilitate compilation of reliable information on most validation projects. This system does not include projects from Boeing for which FAA uses a separate data system. FAA expanded the number of inputs available in WTS to capture more detailed project information (e.g., identifying the category of validation being performed), and made some information fields that were previously optional (e.g., identifying the country performing a validation) required fields. FAA also conducted training for the staff at the Certification Branches who are responsible for inputting project information to help

[30]Five stakeholders reported challenges related to the implementation of roadmap agreements.

ensure data are consistently entered moving forward. In addition, in the first half of 2023, FAA released two job aids to standardize how staff at the Aircraft Certification and International Validation Branches process applications for validations of exported and imported products and enter the related information into WTS.

FAA officials said that these changes have resulted in significantly improved data quality from WTS, and they are now able to reliably track some information on the validations process. This information includes the:

- date FAA received an application for validation,
- date FAA forwarded an application to a CAA (for exported products),
- date of approval, and
- involved country.

However, FAA's data systems still do not collect certain validation information. For example, neither the WTS nor the Certification Project Notification (CPN) data systems track certain areas that FAA officials described as being potentially useful. These areas include the number of requests for additional information or testing made by CAAs during a validation project. As discussed above, stakeholders identified numerous information requests as an important challenge in the international validations process. In addition, FAA still maintains two separate data sets with information about validations of exported products—WTS and the system the Integrated Certificate Management Division uses to track Boeing projects. FAA officials said that each of these data systems collects different information on validations and lacks standardized data entry procedures that would readily allow for robust data analysis across the two systems.

In 2023, FAA also established internal dashboards that use information from WTS and CPN to provide insight into validations of both exported and imported products. According to our review of these dashboards, they track various metrics, including the number of active validation projects, the countries involved in these projects, the companies submitting applications, the types of products, and the validation time frames. Officials said that they have also used the dashboards to identify problems and sticking points with other CAAs, which has improved their ability to provide assistance on individual validation projects. For example, FAA officials said that they shared their list of open validation projects with EASA in an attempt to expedite them. FAA officials also said

that the dashboard metrics can be helpful when working with CAAs to resolve disputes and improve processes both internally and when negotiating bilateral agreements.

While FAA's recent development and use of the dashboards have improved the agency's ability to review some aspects of the validations process, our review of the dashboards indicates that they do not track some information that officials described as potentially being useful for measuring the performance of the validations process. For example, the dashboards do not track the use of work plans, the number or type of CAA information requests, or CAA requests for additional testing.

FAA Has Not Evaluated the Effectiveness of the International Validations Process

FAA officials acknowledged that they have not conducted a systematic assessment of the international validations process. They said that they have instead relied on anecdotal information from stakeholders to identify what parts of the process are working well and what parts should be improved. While FAA's recent efforts to improve data collection and develop dashboards have helped them understand individual project issues, officials said that they have recently recognized the need for a more holistic approach to assessing the process.

Organizational performance management can be key to an agency's program planning, management, and oversight. Our prior work has identified key practices to help federal programs at any organizational level—such as an individual project or program, component agency or office, department, or cross-agency effort—develop and use evidence to effectively manage and assess the results of their efforts.[31] These practices define organizational performance management as a three-step process by which organizations:

- Establish quantifiable performance goals that guide the organization's activities and allow comparisons between planned and actual results.

- Assess and develop information, including assessing the sufficiency of existing data sources, identifying new information needs and performance measures, and generating new evidence based on those needs.

- Use information to assess results and inform decisions, including assessing progress towards goals, allocating resources, and coordinating efforts with other organizations to help ensure that the

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[31]GAO-23-105460.

organization's activities are targeted at addressing identified problems and achieving desired results.

In addition, the 2022-2026 DOT Strategic Plan includes the strategic objective of developing data-driven programs and policies, which includes improving program evaluation processes to better quantify program outcomes and establishing outcome-based performance measures for initiatives within DOT.[32] Although FAA is not the designated lead agency for this objective, better understanding the performance of the international validations process to inform decisions and negotiations with bilateral partners would help align FAA practices with this department-wide strategic objective.

In July 2023, FAA officials said that they have begun an effort to develop an approach for conducting systematic assessments of the international validations process but described this effort as in its infancy. Officials said that this effort involves staff from the Aircraft Certification Service's International Office, Integrated Certificate Management Division, and the Compliance and Airworthiness Division, which contains the Certification Branches and the International Validations Branch. Given the early stages of FAA's effort, agency officials told us that they have not yet defined their approach, established a time frame for completion, or determined what the final product output will be. They did, however, state that they expect the assessment initiative to include establishing goals for the validations process, assessing the data needed to measure progress toward those goals, and using that data to inform FAA's decision-making. They also provided some insight into their initial thinking in some of these areas, which emphasizes a number of issues that FAA will need to address in order to systematically assess the international validations process.

- FAA officials said that they intend to identify a set of performance goals for the international validations process which could include increasing (1) the predictability of the validations process for industry, (2) consistency in the areas of CAA involvement in validation projects, (3) communications with CAAs (including earlier engagement), and (4) confidence in bilateral certification activities by holding both other CAAs and FAA accountable to bilateral agreements.

- FAA officials stated that they are still trying to determine what data collection will be useful in assessing the international validations process. They said that because WTS was designed as a project

[32]DOT, *Strategic Plan FY2022-2026*, (Washington, D.C.: Mar. 28, 2022).

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information and work-task management tool, and not to directly collect data on international validations, it may not be suitable for collecting the types of data that would be needed to reliably track certain metrics on the validations process. Therefore, it is not clear whether additional modifications to existing databases or new data programs may be needed to collect additional information. Depending on what kinds of data FAA decides it needs, FAA may need to make improvements to its existing data sets to eliminate inconsistencies or develop new data systems.

- FAA officials said that validations projects, particularly more complex technical validations, are often unique and may not be suitable to being tracked by some commonly used measures such as time frames. However, they said that using other metrics such as the number and types of validations, use of work plans, and information requests could provide the agency with useful information. As previously noted, FAA data systems and dashboards do not currently track this type of information. Therefore, assessing FAA's existing data, determining what additional data FAA needs, and potential revisions to the data systems and dashboards are dependent on the metrics FAA decides to track.

Systematically assessing the international validations process would help FAA make better management decisions related to the validations process for imported and exported products and ensure the process is achieving its intended results. For example, such an assessment may allow FAA to determine whether CAA requests for additional product information are in fact increasing, and if they are, whether those increases are being driven by certain CAAs or certain types of products. This, in turn, could inform improved strategies for outreach to CAAs. In addition, it could help inform negotiations on updated bilateral agreements and implementation procedures and improve accountability for long-standing issues, such as timeliness and information requests for both FAA and its bilateral partner CAAs.

Conclusions

The validation process is an essential step in ensuring both the safety and economic contributions of the aviation industry. In just the 3-year period we reviewed, FAA submitted on behalf of U.S. companies almost 4,000 validation applications to CAAs in other countries, while receiving almost 1,000 validation applications for products to import into the United States. However, to date, FAA has not assessed how well the validations process is working, including the extent to which FAA has effectively performed validations of imported products and supported U.S. companies during the process. FAA's recent data-related improvements

are important initial steps, as is its recently initiated effort to develop an approach for systematically assessing the validations process. As FAA continues to develop its approach, establishing quantifiable goals, collecting the information it needs to track progress towards those goals, and using that information in its decision-making will be critical to help ensure the usefulness of future assessments. Establishing a timeline and action plan to develop this approach could help ensure that FAA implements these three key steps for performance management in a timely manner. Without a complete understanding of how the validations process is working, FAA is hindered in its ability to hold other CAAs accountable to negotiated bilateral agreements and to help provide U.S. companies with a more predictable, less challenging experience during the validations process.

Recommendations for Executive Action

We are making the following four recommendations to FAA:

The Administrator of FAA should establish quantifiable goals for the international validations process. (Recommendation 1)

The Administrator of FAA should identify the quality information and performance metrics the agency needs to track progress toward the goals it identifies for the international validations process and how it will collect that information, which may include changes to agency data systems or dashboards. (Recommendation 2)

The Administrator of FAA should use the information FAA collects to assess the results of and inform decisions about any needed improvements to the international validations process. (Recommendation 3)

The Administrator of FAA should establish a time frame and develop an action plan for FAA's efforts to develop its approach for assessing the international validations process. (Recommendation 4)

Agency Comments

We provided a draft of this product to the Department of Transportation for review and comment. In its comments, reproduced in Appendix II, the Department of Transportation concurred with our recommendations and stated it will provide a detailed response to each recommendation within 180 days of the report's issuance. The department also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Transportation, and other interested parties. In addition, the report is available at no charge on the GAO website at https://www.gao.gov.

If you or your staff have any questions concerning this report, please contact me at (202) 512-2834 or krauseh@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.
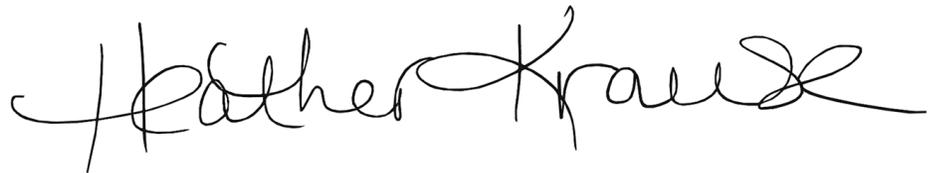
Heather Krause
Director, Physical Infrastructure

Appendix I: Organizations that Responded to GAO's Request for Information

Table 1: Organizations that Responded to GAO's Request for Information

Category	Organization
Private sector stakeholders to the international validations process	Aeronautical Repair Station Association
	Aerospace Industries Association
	Aircraft Electronics Association
	Boeing
	Collins Aerospace
	Embraer
	Garmin International
	GE Aviation
	General Aviation Manufacturers Association
	Gulfstream Aerospace
	Pratt & Whitney
	Rolls Royce North America
	Sikorsky, a Lockheed Martin Company
	Textron Inc.
Civil Aviation Authorities	Agência Nacional de Aviação Civil (Brazil)
	Transport Canada
	Japan Civil Aviation Bureau

Source: GAO. | GAO-24-106040

Appendix II: Comments from the Department of Transportation

December 8, 2023

Heather Krause
Director, Physical Infrastructure
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Ms. Krause:

The Federal Aviation Administration (FAA) is committed to ensuring the safety of the civil aviation system in the United States as well as making improvements to the safety certification of aviation products registered and used in the United States. FAA's Aircraft Certification Service has actions underway to improve the International Validation Process Program, which include evaluating the procedures in bilateral aviation safety agreements that determine airworthiness, maturing its international validation dashboards, developing internal guidance materials, and providing outreach to staff who are responsible for validations projects. The FAA is also addressing data gaps and considering options to improve data systems by adding the ability to track validations by project type. This will allow FAA to systematically assess and refine performance management for the international validations process. Additionally, FAA will work with aerospace industry associations from the United States, Europe, Canada, and Brazil as they collect and report international validation metrics from their members.

Upon review of GAO's draft report, FAA concurs with GAO's four recommendations to (1) establish quantifiable goals for the international validations process, (2) identify the quality information and performance metrics the agency needs to track progress toward the goals it identifies for the international validations process and how it will collect that information, which may include changes to agency data systems or dashboards, (3) use the information FAA collects to assess the results of and inform decisions about any needed improvements to the international validations process, and (4) establish a time frame and develop an action plan for FAA's efforts to develop its approach for assessing the international validations process. We will provide a detailed response to each recommendation within 180 days of the final report's issuance.

We appreciate the opportunity to offer additional perspective on the draft report. Please contact Gary Middleton, Director of Audit Relations and Program Improvement, at (202) 366-6512 with any questions or if GAO would like to obtain additional details about these comments.

Sincerely,

Philip A. McNamara
Assistant Secretary for Administration

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Heather Krause, (202) 512-2834, or krauseh@gao.gov

Staff Acknowledgments

In addition to the contact named above, Vashun Cole (Assistant Director), Alex Fedell (Analyst-in-Charge), Amy Abramowitz, Laura Bonomini, Bethany Cole, Melanie Diemel, Geoffrey Hamilton, Delwen Jones, Dan Luo, Kelly Rubin, Michael Soressi, and Emma Waters made key contributions to this report.