U.S. DEPARTMENT OF TRANSPORTATION
OFFICE OF INSPECTOR GENERAL

FAA Plans To Modernize Its Outdated Civil Aviation Registry Systems, but Key Decisions and Challenges Remain

FAA

FAA Plans To Modernize Its Outdated Civil Aviation Registry Systems, but Key Decisions and Challenges Remain

Requested by the Chairman of the House Transportation and Infrastructure Committee and its Subcommittee on Aviation and the Chairman of the Senate Committee on Commerce, Science, and Transportation

Federal Aviation Administration | AV2019052 | May 8, 2019

What We Looked At

The Civil Aviation Registry (The Registry) processes and maintains ownership information on approximately 300,000 private and commercial aircraft and records on almost 1.5 million airmen. The Registry is critical for ensuring aircraft are legally owned, maintained, and operated, and many users in law enforcement, safety, the aviation industry, and the public rely on the accuracy and timeliness of its data. The Chairman of the House Transportation and Infrastructure Committee and its Subcommittee on Aviation requested that we assess FAA's overall management of the Registry and public access to certain Registry elements. We received a similar request from the Chairman of the Senate Committee on Commerce, Science, and Transportation. Our audit objective was to assess FAA's management of the Civil Aviation Registry. Specifically, we assessed FAA's (1) progress in modernizing the Registry and (2) policies for providing public access to Registry-related activities.

What We Found

The Registry's systems are outdated, and FAA has yet to develop a detailed plan for modernization. The Registry's current systems cannot support online access outside of the Registry's offices in Oklahoma City, OK. While FAA is in the early stages of developing plans to modernize the Registry's systems, the Agency has not yet made key decisions regarding the system. Consequently, the cost and timeframes for Registry modernization remain uncertain, even though FAA is mandated to complete Registry upgrades by October 2021. In addition, the regulations that govern aircraft registration do not reflect current technology or business practices, and FAA will likely need to conduct a rulemaking in conjunction with Registry modernization. If FAA does not complete the rulemaking in coordination with the development of the new system, the Agency risks spending resources on a system that lacks key capabilities.

Due to the current system's limitations, users who need to access aircraft registration information in real time must access the system through the use of Government-owned computer terminals located at the Registry's Public Documents Room (PDR) in Oklahoma City. For users who cannot or do not want to travel to Oklahoma City, they can obtain aircraft information online, but that information is updated once a day, rather than in real time. Moving towards a more efficient process hinges on modernizing the Registry, but FAA has not yet developed a plan for allowing real-time access to aircraft information.

Our Recommendations

FAA concurred with all four of our recommendations and proposed appropriate actions and completion dates.

All OIG audit reports are available on our website at www.oig.dot.gov.

For inquiries about this report, please contact our Office of Congressional and External Affairs at (202) 366-8751.

Contents

Memorandum

Date: May 8, 2019

Subject: INFORMATION: FAA Plans To Modernize Its Outdated Civil Aviation Registry
            Systems, but Key Decisions and Challenges Remain | Re

From: Matthew E. Hampton
            Assistant Inspector General for Aviation Audits

To: Federal Aviation Administrator

The Federal Aviation Administration's (FAA) Civil Aviation Registry (the Registry) processes and maintains ownership information on approximately 300,000 private and commercial aircraft and records on almost 1.5 million airmen. The Registry is critical for ensuring aircraft are legally owned, maintained, and operated, and many users in law enforcement, safety, the aviation industry, and the public rely on the accuracy and timeliness of its data. However, our prior work in 2013[1] and 2014[2] raised concerns regarding FAA' s management of the Registry, the accuracy of Registry information, and vulnerabilities in the Registry's information technology (IT) systems.

Citing concerns with FAA's management of aircraft registration and airmen certification, the Chairman of the House Transportation and Infrastructure Committee and its Subcommittee on Aviation requested that we assess FAA's overall management of the Registry and public access to certain Registry elements. They also asked that we highlight any changes FAA has made to the Registry since our last review. We received a similar request from the Chairman of the Senate Committee on Commerce, Science, and Transportation.

Accordingly, our audit objective was to assess FAA's management of the Civil Aviation Registry. Specifically, we assessed FAA's (1) progress in modernizing the Registry and (2) policies for providing public access to Registry-related activities. In addition, we will be conducting a second audit to address the requestors'

---

[1] *FAA's Civil Aviation Registry Lacks Information Needed for Aviation Safety and Security Measures* (OIG Report No. FI-2013-101), June 27, 2013. OIG reports are available on our website at http://www.oig.dot.gov/.
[2] OIG, *Management Advisory on Registration of Aircraft to U.S. Citizen Trustees in Situations Involving Non-U.S. Citizen Trustors and Beneficiaries,* January 31, 2014.

concerns over the accuracy and completeness of Registry information and its compliance with Federal law.

We conducted this audit in accordance with generally accepted Government auditing standards. Exhibit A details our scope and methodology, and exhibit B lists the organizations we visited or contacted.

We appreciate the courtesies and cooperation of Department of Transportation representatives during this audit. If you have any questions concerning this report, please call me at (202) 366-0500 or Marshall Jackson, Program Director, at (202) 366-4274.

cc: The Secretary
        DOT Audit Liaison, M-1
        FAA Audit Liaison, AAE-100

Results in Brief

The Registry's systems are outdated, and FAA has yet to develop a detailed plan for modernization.

The Registry's current systems cannot support online access outside of the Registry's offices in Oklahoma City, OK. FAA is in the early stages of developing plans to modernize the Registry's systems by replacing those systems with an entirely new system, named Civil Aviation Registry Electronic Services (CARES). According to FAA, CARES is expected to streamline and automate processes, allow for the submission of electronic forms, improve online data availability, and implement additional security controls, such as software that can cross-check aircraft registrations with other Government databases. However, because FAA has not fully defined the requirements for CARES, the Agency has not yet made key decisions regarding the system, such as whether to include risk-based oversight as part of the new system, and which processes to automate. Consequently, the cost and timeframes for Registry modernization remain uncertain, which is concerning since FAA is mandated by law to complete Registry upgrades by October 2021. In addition, the longer it takes for FAA to implement the new system, the larger the risk of obsolescence of the current system, which has already experienced intermittent outages. Finally, the regulations that govern aircraft registration do not reflect current technology or business practices, and FAA will likely need to conduct a rulemaking at the same time as it develops and implements CARES. However, the Agency has yet to develop a timeline for doing so in conjunction with Registry modernization. If FAA does not complete the rulemaking in coordination with the development and implementation of CARES, the Agency risks spending resources on a system that lacks key capabilities or security controls.

While FAA's polices regarding Registry access comply with Federal law, real-time data are only available in the Registry's Public Documents Room (PDR).

We did not find any cases where FAA's policies regarding Registry access violated Federal law or Agency regulations, including those related to privacy, public access, and charging for use of Government equipment. For example, FAA's practice of entering into agreements with private entities to furnish and charge for services and workspaces is allowed under authorities granted by law to FAA. However, the current process for accessing the Registry has evolved over time due to security requirements and does not reflect the technology available in the current business environment. Due to the current Registry system's limitations, Registry users who need to access aircraft registration information in real time must physically access the system through the use of Government-owned computer terminals located at the Registry's Public Documents Room (PDR) in

Oklahoma City. FAA has a system in place where frequent users can acquire permits that grant them exclusive access to PDR computer stations. While the Agency has procedures for the general public to access the PDR in Oklahoma City, those procedures are not frequently used. For users who cannot or do not want to travel to Oklahoma City, they can obtain aircraft information online, but that information is updated once a day, rather than in real time. As a result, entities involved in aircraft sales or leasing who require real-time information prior to closing a transaction typically rely on permit holders to obtain that information, which is less efficient than being able to obtain that information online. Moving towards a more efficient process hinges on modernizing the Registry, but FAA has not yet developed a plan for allowing real-time access to aircraft information.

We are making recommendations to improve FAA's planning process for Registry modernization.

Background

The Federal Aviation Act of 1958 directed the Federal Aviation Administrator to provide a system for the filing, indexing, and recording of conveyances[3] affecting aircraft. Additional regulations set out the requirements for those systems and for the registration of aircraft.[4] In addition, Federal regulations require all persons who operate, repair, or maintain aircraft in the United States to obtain and maintain a valid airmen's certification.[5]

FAA's Flight Standards Service manages the Civil Aviation Registry, which is located in Oklahoma City, OK. Registry staff register U.S. civil aircraft; issue aircraft registration numbers; and issue airmen certificates. These functions are often critical to the aviation industry. For example, aircraft that are manufactured in the United States cannot be exported or used for international operations until FAA approves a registration application. Aircraft manufacturing and export is a multibillion-dollar industry within the United States.

Our prior work on the Registry found that the Registry lacked accurate and complete information on pilots and U.S.-registered aircraft, including those owned and operated under trusts. In 2013, we made eight recommendations designed to improve the accuracy, security, and reliability of the Registry's data.

---

[3] Conveyance means an instrument affecting title to, or interest in property.
[4] 14 CFR Parts 47 and 49.
[5] 14 CFR Parts 61, 63 and 65.

At that time, FAA committed to take a number of corrective actions in response to our recommendations.[6]

Recent legislation has established new requirements for the Registry. The 2018 FAA Reauthorization Act[7] requires that FAA modernize and upgrade current Registry systems by October 2021. Furthermore, the act imposes a surcharge on paper-based transactions, requires that the Aircraft Registry remain open in the event of a Government shutdown or emergency furlough, and mandates FAA to initiate a rulemaking to increase the duration of aircraft registrations for noncommercial general aviation aircraft to 7 years.[8]

The Registry's Systems Are Outdated, and FAA Has Yet To Develop a Detailed Plan for Modernization

Currently, the Registry's systems are outdated and inefficient. While FAA plans to modernize the Registry to include online access and other upgrades, the Agency has not yet defined its technical and operational requirements necessary for modernization to proceed. In addition, although the FAA Reauthorization Act of 2018 requires the Agency to complete modernization by October 2021, FAA lacks firm timelines for modernization and will likely need to initiate rulemaking in coordination with the modernization effort. Delays in completing the rulemaking may affect the Agency's ability to fully implement new desired capabilities or controls for the Registry.

The Registry's Current Systems Are Outdated and Inefficient

The Agency's current system, the Registry Modernization System (RMS),[9] resides on a mainframe computer-based system, and its last significant upgrade was over 10 years ago in 2008. RMS is approaching the end of its service life, suffers intermittent outages, and uses an outdated programming language.[10] FAA has been able to make some improvements to Registry operations, such as increasing online services to airmen and the ability to renew aircraft registrations

---

[6] A complete list of recommendations from our 2013 report can be found in exhibit C.

[7] Pub. Law No. 115-254 (2018).

[8] Civilian aircraft registrations currently must be renewed every 3 years.

[9] RMS is the term for a group of IT systems that the Registry uses to support aircraft registration and airmen certification and the electronic storage of registration records.

[10] RMS uses the "NATURAL" programming language.

electronically. However, the current system's limitations have prevented FAA from making many desired improvements, including the ability to make real-time aircraft registration information available online.[11]

Due to the limitations of RMS, many of the Registry's current processes are inefficient or outdated. For example, FAA reviews of aircraft registration documents are largely paper-based and involve significant amounts of manual processing. Most aircraft registration functions still require the submission of paper documents. These documents must then be manually scanned into an electronic document and reviewed by Registry examiners. Even the processes that appear to be electronic to the user involve manual processing of information within the Registry. For example, users are able to reserve registration numbers[12] online through the Registry's website. However, once the request is received, FAA prints the request and manually enters it into RMS to complete the transaction.[13] As a result, the process is time-consuming and labor-intensive, which has contributed to a backlog of aircraft registration submissions that can take up to 6 weeks to process.

In contrast, while the Airmen Registry also resides on RMS, it is more automated because much of the processing of airmen applications takes place before the Registry receives the data. This includes security reviews by the Transportation Security Administration, as well as automated data validation.

FAA Faces Key Decisions Before Modernization Can Proceed

FAA officials recognize the significant limitations with RMS and are in the planning stages of an effort to modernize the systems by replacing the existing system with CARES. According to FAA, CARES is expected to streamline processes, allow for the submission of electronic applications and forms, improve controls, automate registration processes, and improve online data availability.

FAA is still in the early stages of determining what CARES will entail, including its capabilities and requirements. Key decisions include:

- **Risk-based oversight and increased automation.** FAA is considering using automated approvals for low-risk applications, such as single-owner low-risk general aviation aircraft. If automated approvals are included in

---

[11] The Office of Management and Budget (OMB) recommends that Federal agencies provide quality information that is readily accessible to all. OMB, *Digital Government Strategy*, May 23, 2012.

[12] A registration number or N-Number is a commonly used term for the unique series of letters and numbers that are assigned to U.S.-registered aircraft.

[13] In its technical comments to our draft report, FAA stated that this process is now automated.

CARES, FAA would need to develop detailed system rules to check submission accuracy. Examiners currently review 100 percent of documents submitted, which contributes to the aircraft registration backlog. In many other areas of oversight, FAA relies on a risk assessment to guide where it focuses its surveillance.[14]

- **Increased focus on the accuracy of aircraft information.** According to FAA, automation could also allow to better identify fraudulent or incorrect submissions. Currently, aircraft examiners accept documents submitted at face value, without verifying the authenticity of information submitted.[15]

- **Security controls.** FAA officials stated that they would like to introduce additional security controls into Registry processes during modernization, especially for aircraft registration. These could include requiring aircraft owners to submit additional information, cross-checking aircraft registration information with non-DOT databases prior to acceptance, or using business intelligence software to detect errors in applications. However, FAA has not made a decision on what additional security features or controls to introduce as part of CARES.

- **Registry structure.** FAA has not yet determined how to structure the Registry under CARES. The Agency is considering combining the Aircraft and Airmen Registries rather than keep them as separate branches. Although there are similarities between the Aircraft and Airmen systems, they are managed and processed separately.

- **Data storage.** FAA has yet to decide whether to develop CARES as a cloud- or a server-based system. The White House in 2011 issued a Cloud First Policy that requires Federal agencies to consider cloud solutions as part of the budget process to improve IT flexibility and responsiveness and minimize cost.[16] In determining whether to use a cloud or server, FAA would need to consider the benefits and constraints of both systems. For example, FAA would need to determine how the system would integrate data feeds with external government agencies. FAA must also consider the different security requirements. The Registry holds sensitive data and could be a potential target for hackers.

---

[14] For example, FAA uses risk assessments in its oversight of air carriers and its reviews of airborne losses of separation.

[15] In contrast, the information on airmen registrations is vetted before it gets to the Registry and once the application is received by the Registry.

[16] The White House, *Federal Cloud Computing Strategy*, February 8, 2011.

Costs, Schedules, and Acquisition Strategies for Modernizing the Registry Remain Uncertain

Because FAA has not defined its requirements, the Agency lacks firm cost and schedule estimates for CARES implementation. FAA tentatively planned to implement CARES in 2024, but that was before Congress directed the Agency to accelerate the implementation of the new system by October 2021. Despite this goal, FAA has not yet established a cost estimate, timelines, or projected scope of the project. FAA expected to develop a comprehensive plan by the end of summer 2018, but could not commit to a specific date. As of November 2018, FAA was still identifying high-level requirements and evaluating how to proceed. Until FAA defines its CARES requirements and makes key decisions regarding the Registry's structure and capabilities, the Agency will not be able to develop an accurate cost estimate for modernization or develop solid milestones for CARES development and implementation.

The lack of formal milestones is due in part to the fact that FAA has yet to decide on a funding source for CARES. FAA generally funds significant modernization projects using money from its facilities and equipment (F&E) account.[17] According to FAA officials, the Agency may be able to use money from its operations and maintenance (O&M) account to fund modernization,[18] which could streamline the acquisition process. However, FAA will be unable to enter CARES into the Agency's budget until it determines which source of funding it will use.

In addition, because it is in the planning stages of Registry modernization, FAA still lacks an acquisition strategy. Specifically, FAA has yet to determine whether it can leverage existing contracts or current Agency systems for CARES. For example, FAA already has contracts for hardware, cloud-based systems, data storage, and role-based access systems that may be applicable to Registry processes. Defining requirements, developing firm cost and schedule estimates, identifying funding sources, and selecting an acquisition strategy are significant challenges for FAA in the immediate future, especially given the new congressionally mandated deadline to complete Registry modernization by October 2021.

---

[17] The 2018 FAA Reauthorization Act states that F&E funds may be used for "the modernization and digitization of the Civil Aviation Registry."

[18] FAA's Acquisition Management Policy states FAA can use operations funds for non-National Airspace System investments when the investments are intended to be entirely funded from the O&M account.

FAA Will Face Transition and Implementation Challenges When Modernizing the Registry

Once FAA defines its requirements and makes key decisions regarding Registry modernization, the Agency will still face transition and implementation challenges in key areas. Addressing these challenges will need to be accomplished early in the modernization process. These include addressing a wide range of technical issues, affecting a significant culture change within the Registry workforce, and ensuring that user needs are still met during and after implementation. In particular:

- **Transferring data.** FAA has not determined how to transition existing Registry data to the new system. Moving all of the files will be a significant data entry challenge for FAA because the Registry currently contains almost 25 million documents and 174 million image files. Many Registry files are stored as Tagged Image File Format (TIFF) images, a format not commonly used due to their large file size and the fact that they are not easily searchable. If a decision is made to convert the existing images to a different format, an extensive conversion effort will be necessary. According to an FAA official, the Agency also has not determined if it will upgrade the images to make them searchable using Optical Character Recognition (OCR). Using OCR on existing files would be time consuming and would significantly increase storage requirements.

- **Consulting with FAA's Office of Information Technology (AIT).** The Registry has also not yet formally consulted AIT on CARES planning. According to officials from AIT, this is not unusual for an early stage modernization project, but they do believe that Registry officials will need to coordinate with them once they make a decision on desired structure and capabilities. However, AIT supports current Registry systems and would be responsible for helping the Registry develop technical solutions and managing contracts.

- **Meeting user needs.** FAA has just started outreach to some of its stakeholders to ensure CARES meets all of their requirements. The Government Accountability Office (GAO) has identified stakeholder and end user involvement in the definition of requirements as a critical success factor for successful acquisitions.[19] The Registry has a significant number of external stakeholders, including aircraft title companies, financial

---

[19] GAO, *Critical Factors Underlying Successful Major Acquisitions* (GAO Report No. 12-7), October 2011.

institutions, aircraft manufacturers, airmen, other government agencies, local and State authorities, etc. The Registry is vital to the aviation industry because aircraft cannot operate without valid aircraft registration certificate and an assigned registration number. Moreover, before an aircraft can operate internationally, FAA must approve a registration application. Several industry representatives expressed concern that FAA has had limited communication with them on CARES development. This is because FAA has yet to develop a mechanism for reaching out to stakeholders to solicit their feedback during the planning and modernization process. Some users welcome the improved efficiencies proposed with CARES, while others caution that FAA needs to ensure users maintain at least the same level of access to Registry data.

- **Addressing workforce issues.** Potential changes, such as the implementation of risk-based reviews and combining the Airmen and Aircraft Registries, will require a culture change for Registry personnel. Specifically, FAA expects the role of Registry examiners to change from reviewing all incoming registration documents to a more technical review of only the higher risk registrations. This culture change is a significant risk to modernization, as the Registry will need the support of the examiners to help make changes to business processes and to continue with registration activities while assisting with modernization efforts.

FAA May Need To Update Aircraft Registration Regulations as Part of Registry Modernization

In addition to uncertainty regarding costs and timelines, FAA faces regulatory obstacles in implementing new features and controls, particularly for aircraft registration. Title 14 of the Code of Federal Regulations (CFR), Parts 47 and 49, govern the registration of aircraft and related liens, loans, or mortgages on aircraft. However, these regulations are outdated and do not reflect current technology, such as online submission of most aircraft registration forms, electronic commerce, and digital signatures.

FAA is developing a rulemaking to revise Parts 47 and 49 to allow for the electronic registration of aircraft. However, the Agency has not established a timeline for completion. This rulemaking is intended to improve controls, strengthen requirements for registration information, and make changes necessary to allow the electronic registration of aircraft such as allowing digital signatures and electronic payments. This rulemaking will likely have to occur as a parallel effort with modernization, since problems in completing the rulemaking in a timely manner may affect the Agency's ability to implement CARES.

Rulemaking is a complicated process and is impacted by policies that include DOT and OMB reviews of significant changes.[20] While FAA has identified regulations in Parts 47 and 49 that are outdated, the Agency has yet to identify which specific regulations are critical to modernization.

In addition, rulemaking can be time consuming. For example, FAA has been working to increase registration-related fees since 2013.[21] This proposed rulemaking would increase the aircraft registration fee from the current $5 to $22, increase fees for airmen certificates, and add other fees, such as a $229 fee to help cover the cost of legal reviews of certain aircraft registration submissions.[22] This proposed rulemaking has been listed on the Agenda of Proposed Regulatory and Deregulatory Actions since fall 2016, yet it has still not been issued for public comment. Due to required reviews and the mandatory public comment period, FAA does not expect to issue this rule until 2020 and has not yet established a formal date for a Notice of Proposed Rulemaking. Without estimated completion dates, the Agency is missing an opportunity to effectively track these efforts, gauge progress, and communicate with Registry stakeholders.

While FAA's Policies Regarding Access to Registry Data Generally Comply With Federal Law, Some Access Requires a Physical Presence at the Registry

We found that FAA's polices regarding access to the Registry generally complied with Federal law and Agency regulations. However, the current process for obtaining access to aircraft registration documents and information in real time is outdated because it requires a physical presence at the Registry. For a fee, the Registry allows monthly permit holders to access the PDR in person; FAA has also established a process to allow the general public to research aircraft records. FAA eventually plans to phase out the PDR but cannot do so until the Agency implements CARES.

---

[20] DOT Order 2100.5 requires that "significant" regulations be submitted to OST for concurrence. Executive Order 12866 requires that OMB review any proposed regulations.

[21] The FAA Modernization and Reform Act of 2012 required FAA to establish and collect fees for services and activities related to aircraft registration, airman certification, and airman medical certification.

[22] 78 Fed. Reg. 36416 (June 18, 2013) requires that FAA Legal Counsel review all operating agreements related to aircraft registered via non-citizen trust.

Real-Time Access Requires a Physical Presence at the Registry

FAA's policies regarding access to Registry information generally complied with Federal law and Agency regulations[23] related to privacy, public access, and charging for use of Government equipment. However, FAA's current policies and business practices are outdated. This is because RMS's limitations do not allow for full online access to aircraft registration records.

Instead, real-time information and document filing requires a physical presence at the Registry. Such access is necessary for users of the Registry who are involved in transactions such as aircraft sales or leases, or aircraft exports. These activities require assurance that the parties involved have accurate information regarding ownership of the aircraft prior to closing the transaction. While access to aircraft registration information is available online through the Registry's website, that information is only updated once per day. PDR users told us that the information available online is not sufficient because they often need live information in order to conduct business and complete aircraft-related transactions.

The Registry Has a Long-Standing Permitting System for Frequent Users

FAA operates the PDR in the Registry Building in Oklahoma City for use in accessing aircraft records and documents (see figure 1). In 1998, FAA established its current permitting system, citing authority under 49 U.S.C. 106 to enter into agreements with private entities and charge for space in a federally controlled area. Following the successful completion of a background check, permit holders can access the PDR without going through daily security screening.

---

[23] These include 31 U.SC. § 9701 and 49 U.S.C. § 106(I)(6).

Figure 1. Public Documents Room, Oklahoma City, OK

Source: OIG

The Registry's long-standing permitting system includes a large number of workstations, paid access, and PDR security. In particular:

- **Registry workstations.** As of June 2018, there are 47 workstations in the PDR, as shown in figure 1: 42 are occupied by permit holders, 2 are vacant, and 3 are reserved for public use. Twenty-four companies have permits to use the PDR; some companies have more than one station, but a company cannot occupy more than three workstations. Our analysis shows that there is minimal turnover in the permit holders. Most of the permit holders are aircraft title or trust companies and law firms that have held permits for years. If the Registry were to run out of workspaces, FAA would use a lottery system, which would require a permit holder with more than one workstation to give up a space. However, the Registry has never had to use the lottery.

- **Permit holders pay for access.** Permit holders have agreements to occupy a workstation and use a Government-furnished computer in the PDR on a month-to-month basis for a fee.[24] FAA reserves the right to terminate an agreement at any time provided it gives the permit holder 30 days' notice. Permit holder filings do not receive priority over other users of the Registry; registration filings are processed in the order that

---

[24] The permit holders pay $3,441 per year for each permit. This includes a workstation, hardware, software licenses, and a fee to cover the costs of a PDR attendant.

they are received.[25] Permit users also pay for any records that they obtain or print and are billed monthly by the Registry. The fees for space go into a Registry account that funds service contracts used to run the Registry, while the fees for records pay for a portion of FAA's IT costs related to the Registry.

- **PDR security.** FAA changed its security requirements following the attacks of September 11, 2001, and began issuing security badges for the Oklahoma City facility to PDR permit holders. Following the change, the general public was required to request access in advance. Permit holders are restricted to the PDR and adjoining common areas. They do not have access to Registry offices. Access to space and equipment in the PDR is constantly monitored by a full-time PDR attendant, FAA Contracting Officer, and Registry IT staff. Permit holders are given a unique ID and password to access PDR computers and equipment. Per FAA policy and the permit agreements, improper use of Registry computers by permit holders will result in revocation of PDR privileges. However, Registry officials stated that they were not aware of any company or firm that has requested access to the PDR and was denied.

The General Public Can Access the PDR but Must Provide Advance Notice

FAA has procedures in place to accommodate general public requests for aircraft information. These include requests to physically access the PDR and requests for aircraft files to be delivered via U.S. mail or courier service. However, FAA cannot make significant changes to these policies until it is able to modernize the current Registry system to include virtual access to real-time data. Once modernization is complete, FAA plans to phase out the PDR. However, because FAA does not yet have a timeline for CARES implementation, it cannot estimate when this will occur.

Public users of the PDR have the same access to aircraft records, including ancillary files, that permit-holders have. However, they must request access in advance. U.S. citizens must provide a 2-day notice that they wish to access a public computer in the PDR; international users must provide 3-weeks' notice. A security check is required before the individual can access a Government computer. The Registry webpage contains this information and a link to request

---

[25] Filings related to the export of aircraft receive priority processing over other filings, regardless of whether they come from a permittee.

access. We tested this link, and were able to get a response from FAA approximately 1 hour after our request.

Permit holders and public users of the PDR have the same level of access to Registry information. However, there appears to be minimal interest in accessing the public computers. In calendar year 2017, only 10 non-permit holders used the PDR. Public computers were generally used by an individual for only a few days.

The public can also request aircraft records through the Registry website or the Freedom of Information Act. The public can order printed aircraft records (or on a CD) for a small fee. In fiscal year 2017, FAA mailed out 15,000 CDs.

Conclusion

The Civil Aviation Registry provides critical services to aircraft owners, airmen, and the public. However, Registry information related to aircraft registration documents could be made more easily accessible, particularly to users who are not physically located in Oklahoma City. While FAA recognizes the need to modernize the Registry, much work and several key decisions remain before the Agency can define requirements and produce cost and schedule estimates for Registry modernization, including any needed rulemakings. Until then, FAA will face challenges meeting the FAA Reauthorization Act of 2018's mandate to modernize the Registry by 2021.

Recommendations

To improve FAA's management of the Civil Aviation Registry, we recommend that the Federal Aviation Administrator:

1. Develop and implement a timeline for making key decisions regarding Civil Aviation Registry Electronic Services (CARES), such as defining requirements, one system vs. two systems, cloud vs. server architecture, risk-based policies, and what processes FAA could automate.

2. Define what desired capabilities are technologically feasible within the Registry's desired timeframes and include in its requirements, in consultation with FAA's Office of Information Technology (AIT).

3. Develop and implement a procedure to obtain feedback on CARES from internal and external stakeholders to better ensure that CARES meets the needs of the users of the system.

4. Develop and implement a plan for maintaining real-time access to aircraft registration data prior to any potential closure of the Public Documents Room (PDR).

Agency Comments and OIG Response

We provided FAA with our draft report on March 19, 2019, and received its response on April 16, 2019, which is included as an appendix to this report. FAA also provided technical comments, which we incorporated into this report where appropriate. In its response, FAA concurred with all four of our recommendations and provided appropriate actions and completion dates for implementing the recommended actions.

Actions Required

We consider all four recommendations to be resolved but open pending completion of FAA's planned actions.

Exhibit A. Scope and Methodology

We conducted this performance audit between March 2018 and March 2019 in accordance with generally accepted Government auditing standards as prescribed by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We conducted site visits at FAA's Civil Aviation Registry (Registry) located at the Mike Monroney Aeronautical Center (MMAC) in Oklahoma City, OK. We interviewed officials from the Registry Division (including the Aircraft Registration Branch, the Airmen Certification Branch and the CARES Project Manager), the Office of Information Technology (AIT), MMAC Legal Counsel, and a representative from the Professional Aviation Safety Specialists (PASS) labor union to obtain their perspectives on the current processes and any concerns they have regarding Registry modernization. We analyzed Registry documents related to modernization, such as internal documents on requirements, acquisition strategy, funding sources and milestones, change management plans, risk assessments of the workforce, and communication strategies. We also reviewed actions that the Registry has taken to make incremental improvements to the current Registry Modernization System (RMS).

We met with FAA's Office of Rulemaking to determine the status of rulemaking efforts needed for Registry modernization and to determine if they will address key items needed for modernization. In addition, we consulted with OIG's Data Analytics and Computer Crimes (DACC) office to perform analysis of Registry data. Finally, we reviewed the 2018 FAA Reauthorization Act and other proposed legislation to determine the impact on the Registry's mission and modernization.

We interviewed officials from the Registry to identify policies and procedures for obtaining access to the Registry's Public Documents Room (PDR). We met with the Contracting Officer responsible for PDR permits to determine whether procedures are sufficient to properly vet the background of PDR users, and whether access to the PDR and computers is strictly monitored. We met with nine permit holders[26] and two aviation industry groups to gain their perspectives on PDR access, current registry processes and to determine what features or capabilities they would like to see. We contacted FAA inspectors who conduct

---

[26] We sent invitations to the 15 companies with multiple permits to discuss the Registry and PDR. There are 24 permit holders at the PDR.

investigations into aircraft registration and pilot certification issues to obtain their ideas for improving access to Registry data.

We also reviewed Federal regulations, the Registry website, and internal Registry documents related to the establishment of the PDR and permit system for users, as well as how the public can obtain access to Registry information. We collected and analyzed documents related to access to the PDR and public access to Registry information, including PDR Permits, space assignments, Aircraft Branch CD requests, PDR visitors logs, background checks, and PDR security protocols. We tested public access to the PDR to ensure users were provided timely access to Registry computers. Finally, we reviewed OIG records to determine the status of open recommendations related to the Civil Aviation Registry.

Exhibit B. Organizations Visited or Contacted

Federal Aviation Administration

Mike Monroney Aeronautical Center

Flight Standards Service, Office of Foundational Business, Oklahoma City, OK

Flight Standards Service, Civil Aviation Registry Division, Oklahoma City, OK

Central Aeronautical Regional Counsel, Oklahoma City, OK

Acquisitions & Business Services, Facilities & Aviation Safety Contracting Section, Oklahoma City, OK

Federal Aviation Administration

Flight Standards Field Offices

Flight Standards National Field Office (AFS-900), Special Emphasis Investigations Team (SEIT), Fort Worth, TX

Federal Aviation Administration Headquarters

Flight Standards Service, Office of Foundational Business, Washington, DC

Office of Security and Hazardous Materials Safety (ASH), Law Enforcement Assistance Program (LEAP), Washington DC

Office of Information Technology (AIT), Washington DC

Office of Rulemaking (ARC), Washington DC

Aircraft Title Companies/Law Firms

AEROTitle Aircraft Title and Escrow Services Inc., Oklahoma City, OK

Dixie Aire Title Service Inc., Oklahoma City, OK

Wright Brothers Title Co., Oklahoma City, OK

Insured Aircraft Title Service, Inc., Oklahoma City, OK

AIC Title Co., Oklahoma City, OK

Association of Aircraft Title Lawyers (AATL), Oklahoma City, OK

Industry Groups

National Air Transportation Association (NATA), Washington DC

National Business Aviation Association (NBAA), Washington DC

Other Organizations

Professional Aviation Safety Specialists (PASS)

Exhibit C. Status of DOT-OIG Recommendations From 2013 Report

	Recommendation	Status	Closed Date	Target Action Date
1	Develop procedures for periodic reassessments of aircraft and airman data to improve and maintain data integrity.	Closed	3/17/2017	n/a
2	Issue policy or regulations that clarify informational requirements for registration of aircraft owned by trusts for non-citizens.	Closed	08/18/2015	n/a
3	Develop procedures to ensure that airman addresses are kept current.	Closed	03/17/2017	n/a
4	Implement the provisions of the Intelligence Reform and Terrorism Prevention Act's for pilot certifications.	Open	n/a	12/31/2020
5	Implement access monitoring, user accounts, and multi-factor authentication for the Registry.	Closed	09/28/2018	n/a
6	Encrypt PII and mitigate the vulnerabilities on Registry computers. If controls cannot be implemented immediately then remove all PII or take other actions as appropriate, such as suspend the system's operation in accordance with FAA Order 1280.1B.	Open	n/a	12/31/2019
7	Ensure that the FAA contractor's computers and other third-party systems comply with information security controls required by FISMA and DOT policy.	Closed	03/20/2017	n/a
8	Mitigate contingency planning weaknesses by selecting an alternative processing site and periodically conducting comprehensive contingency tests at the alternate site in accordance with DOT policy.	Open	n/a	12/31/2019

Source: *FAA's Civil Aviation Registry Lacks Information Needed for Aviation Safety and Security Measures* (OIG Report No. FI-2013-101), June 27, 2013. OIG reports as well as the currents status of our recommendations are available at www.oig.dot.gov/.

Exhibit C. Status of DOT-OIG Recommendations from 2013 Report.   21

Exhibit D. List of Acronyms

AIT	Office of Information Technology
CARES	Civil Aviation Registry Electronic Services
CFR	Code of Federal Regulations
DACC	Data Analytics and Computer Crimes
DOT	Department of Transportation
FAA	Federal Aviation Administration
F&E	facilities and equipment
FISMA	Financial Information Security Management Act
GAO	Government Accountability Office
IT	information technology
MMAC	Mike Monroney Aeronautical Center
OCR	optical character recognition
OIG	Office of Inspector General
O&M	operations and maintenance
OMB	Office of Management and Budget
OST	Office of the Secretary of Transportation
PASS	Professional Aviation Safety Specialists
PDR	Public Documents Room
PII	personally identifiable information
RMS	Registry Modernization System
TIFF	tagged image file format
USC	United States Code

Exhibit E. Major Contributors to This Report

MARSHALL **JACKSON**	PROGRAM DIRECTOR
CHRISTOPHER **FRANK**	PROJECT MANAGER
KEVIN **MONTGOMERY**	SENIOR ANALYST
ANDREW **SOURLIS**	SENIOR ANALYST
JASON **LEWIS**	ANALYST
MICHAEL J. **SCOTT**	SENIOR ANALYST
TIM **ROBERTS**	SENIOR AUDITOR
ROBERTO **PERO**	IT SPECIALIST
SAMANTHA **SANFELICE**	STUDENT INTERN
SETH **KAUFMAN**	SENIOR COUNSEL
AUDRE **AZUOLAS**	SENIOR TECHNICAL WRITER

Appendix. Agency Comments

Federal Aviation Administration

Memorandum

Date: April 16, 2019

To: Matthew E. Hampton, Assistant Inspector General for Aviation Audits

From: H. Clayton Foushee, Director, Office of Audit and Evaluation, AAE-1

Subject: Federal Aviation Administration's (FAA) Response to Office of Inspector General
           (OIG) Draft Report: FAA Plans to Modernize Its Outdated Civil Aviation Registry
           Systems but Key Decisions and Challenges Remain

The FAA is committed to modernizing the Civil Aviation Registry. Enhancements will include
web-based access to all releasable data; automating application services; improving access to
Registry information for other Federal, State, and local government agencies and authorities; and
employing new technology to streamline processes and enhance the accuracy of information.

In fiscal year 2018, the Registry successfully:

- Issued over 400,000 airmen certificates;

- Answered over 89,000 telephone inquiries;

- Responded to over 31,000 emails;

- Processed over 667,000 aircraft documents;

- Registered over 200,000 aircrafts; and

- Assisted over 90,000 requests for information.

Modernization efforts currently under way include:

- Analyzing industry responses to a Request for Information (RFI) that sought ideas on the
  applications of state-of-the-art technology and strategies for modernization; and

- Conducting meetings in April 2019 to vet the RFI proposed solutions, decide on an
  acquisition strategy, and outline a modernization plan.

Upon review of the draft report, the FAA concurs with the OIG's four recommendations, as
written. We plan to complete actions to implement the recommendations as follows:
Recommendation 1—develop a timeline by May 31, 2019; Recommendation 2— define
capabilities by December 31, 2019; Recommendation 3—develop and implement the procedure

to obtain feedback on the Civil Aviation Registry Electronic System by October 31, 2019; and Recommendation 4—develop and implement a plan for maintaining real-time access to aircraft registration data by June 30, 2019.

We appreciate this opportunity to respond to the OIG draft report. Please contact H. Clayton Foushee at (202) 267-9000 if you have any questions or require additional information about these comments.

U.S. DOT OIG
Fraud & Safety
Hotline

hotline@oig.dot.gov | (800) 424-9071

https://www.oig.dot.gov/hotline

Our Mission

OIG conducts audits and investigations on behalf of the American public to improve the performance and integrity of DOT's programs to ensure a safe, efficient, and effective national transportation system.

OFFICE OF INSPECTOR GENERAL
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

www.oig.dot.gov