Major Management and Performance Challenges

The Department of Transportation (DOT) invests nearly $80 billion annually to build, maintain, and enhance a safe, efficient, and modern transportation system for the American people. The Office of Inspector General (OIG) has long supported the Department in carrying out its mission by performing audits and investigations that improve the performance and integrity of our Nation's transportation programs.

While DOT continues to demonstrate a strong commitment to its mission of improving the safety of our Nation's airspace, roads, pipelines, railways, and transit, a number of major management challenges remain that may affect the Department's ability to carry out its duties. Major management challenges are defined as the programmatic or management functions, within or across the Department, that have greater vulnerability to waste, fraud, abuse, and mismanagement or where failure to perform well could seriously impair the ability of DOT achieve its mission or goals. DOT is required by law to report annually on these challenges, identified by OIG[1]. The Department considers such challenges when developing performance goals, measures, and milestones and when identifying areas of high priority or need.

The OIG has identified the following major management challenges for FAA for fiscal year (FY) 2021:

- Restoring Confidence in FAA's Aircraft Certification Process

- Effectively Leveraging Collaboration and Enforcement in FAA's Evolving Air Carrier Safety Oversight Approach

- Maximizing FAA's Airspace Modernization Investments and Ensuring New Capabilities Achieve Expected Benefits

- Enhancing Oversight and Internal Controls to Address Longstanding Cybersecurity Vulnerabilities

- Preparing for the Future of Transportation

This report summarizes each management challenge, analysis of progress made towards addressing the challenge, and describes of the planned action items for mitigating the challenge.

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[1] The FY 2020 OIG report is available at https://www.oig.dot.gov/library-item/37530. The DOT response to these OIG-identified challenges can be found on page 47 of the report.

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OIG Challenge: Restoring Confidence in FAA's Aircraft Certification Process

OIG Challenge Summary

The Federal Aviation Administration (FAA) is charged with overseeing the safety and certification of all civilian aircraft manufactured and operated in the United States. This is a considerable undertaking given that the U.S. civil aviation industry encompasses more than 230,000 aircraft, 1,600 approved manufacturers, and 5,200 aircraft operators, among others. The OIG noted that while FAA has historically maintained an excellent safety record, two fatal accidents in October 2018 and March 2019 and the subsequent grounding of Boeing 737 MAX aircraft have raised significant concerns about the certification of the 737 MAX and FAA's use of delegation authority to certify new aircraft designs.

Key Challenge Components

> 1A. Resolving certification issues related to the Boeing 737 MAX aircraft (AVS)

> 1B. Enhancing FAA's oversight of aircraft certification processes (AVS)

DOT Progress Updates for FY 2020

1A. Resolving certification issues related to the Boeing 737 MAX aircraft

The FAA's decision on return to service (RTS) will be based on the agency's assessment of the sufficiency of Boeing's proposed software updates and pilot training to address the known issues for which the FAA grounded the aircraft. When the FAA decides to return the Boeing 737 MAX to service, that action will be applicable only to U.S. carriers operating in U.S. airspace. Other Civil Aviation Authorities (CAA) must take their own actions to return the Boeing 737 MAX to service for their air carriers and allow the operation of the Boeing 737 MAX in their airspace. The FAA is conducting outreach activities with our international counterparts to make sure they have the information they will need to make a timely, safety-focused decision.

1B. Enhancing FAA's oversight of aircraft certification processes

The expert reviews of the 737 MAX certification and the FAA's internal analysis have highlighted a need to enhance the FAA's oversight of the aircraft certification process, and FAA's workforce, particularly human factors technical specialists. Advancements in aircraft automation have contributed to an unprecedented level of safety in our domestic aviation system. However, those advancements reaffirm the importance of considering human factors and the

interface between aircraft pilots and systems during certification. This moves us toward an integrated approach to aircraft certification that brings with it another level of safety. The FAA is cognizant that enhancing our current and future workforce will require investment, and that is reflected in the President's budget for fiscal year 2021.

DOT Planned Actions to Address this Challenge

1A. Resolving certification issues related to the Boeing 737 MAX aircraft

The FAA is carefully considering the recommendations from the Technical Advisory Board (TAB), Joint Authorities Technical Review (JATR), National Transportation Safety Board (NTSB), and the Special Committee's Review of the FAA's Aircraft Certification Process (Special Committee), as well as the Lion Air 610 Final Accident Report published by the Indonesia Komite Nasional Keselamatan Transportasi. Some recommendations have near-term significance, while others may have more broad-based implications for our approach to safety.

The FAA is awaiting the results of the Department of Transportation Office of the Inspector General (DOT OIG) audit to compile an objective and detailed factual history of the activities that resulted in the certification of the 737 MAX.

Any recommendations associated with RTS will be addressed prior to ungrounding the aircraft and return to revenue service. The FAA is committed to considering regulations and policies that can be improved, as they relate to flight crew training and operational suitability of aircraft design.

1B.Enhancing FAA's oversight of aircraft certification processes

The use of delegation has long been a key part of the FAA's safety system. Organization Designation Authorization (ODA) is a form of delegation. The FAA grants ODA authority based on the needs of the agency. The FAA may issue an ODA once it determines that a company or organization meets stringent eligibility requirements, including professional integrity, technical competency, and a history of compliance assurance.

As part of our delegation oversight program we conduct supervision and inspection. In addition to our review of audits and an annual assessment, the FAA conducts an on-site detailed inspection every two years to ensure compliance. Substandard performance can result in increased FAA involvement, suspension, or termination of ODA granted by FAA.

The FAA Reauthorization Act of 2018 [Sec 212(b)] mandates establishment of a centralized office to be known as the Organization Designation Authorization (ODA) Office, within the Office of Aviation Safety (AVS). Among other functions, this office will oversee and ensure the consistency of the FAA's audit functions under the ODA program across the FAA. The FAA's FY 2021 Budget Request establishes a new ODA Office, which will be responsible for providing guidance and promoting standardization and enhanced coordination for all AVS ODA holder activities.

DOT Associated Performance Goals/Measures/Milestones

1B. Enhancing FAA's oversight of aircraft certification processes

The new AVS ODA Office is another progression in the FAA's continuous improvement process. In addition to ensuring a cross-organizational focus on oversight, this office will further facilitate decision-making based on issues that pose the highest risks to safety.

With respect to evolving safety oversight in AIR, FAA published the FAA Integrated Oversight Philosophy (IOP) in June 2017, which provides foundational principles that each FAA oversight program must adopt to evolve safety oversight. It also established the Air Integrated Oversight team to manage the implementation of the IOP within AIR and support AIR's strategic plan for a system oversight approach. FAA will measure progress based on the implementation of FAA IOP activities and AIR Evolving Safety Oversight activities, which are tracked as part of AVS business planning and the AIR Integrated Implementation, respectively.

Responsible Agency Official(s)

Implement Effective Air Carrier Oversight	
Earl Lawrence	Executive Director, AIR-1
Support R&D and Reshape the Workplace to Meet Future Needs	
Earl Lawrence	Executive Director, AIR-1
Michael Romanowski	Director, AIR-600
Jeff Duven	Director, AIR-800
Van Kerns	Deputy Director, AFS-2A

OIG Challenge: Effectively Leveraging Collaboration and Enforcement in FAA's Evolving Air Carrier Safety Oversight Approach

OIG Challenge Summary

The Federal Aviation Administration (FAA) is responsible for maintaining the safety of a diverse, complex, and rapidly evolving aviation industry. Despite the Nation's air carrier safety record, recent events have highlighted challenges that FAA faces in its safety oversight and garnered both public interest and congressional attention. These include the April 2018 Southwest Airlines engine failure—which resulted in the first fatality at a U.S. commercial passenger air carrier in over nine years—and several safety incidents at airports, such as the near miss of an Air Canada Flight in San Francisco in July 2017. In recent years, FAA's systems and strategies for safety oversight have evolved, with air carriers taking on a larger role in identifying and mitigating safety risks. However, to maintain the highest level of safety, FAA must strike an effective balance between collaboration and enforcement when overseeing critical air carrier safety programs.

Key Challenge Components

2A. Balancing collaboration and enforcement through FAA's Compliance Program (AVS)

2B. Overseeing air carriers' new systems for managing safety risks (AVS)

DOT Progress Update for FY 2020

2A. Balance Collaboration and Enforcement through the Compliance Program

FAA provided published guidance concerning this challenge in several public documents, including:

FAA-Wide Guidance	
FAA Order 8000.373A, Paragraph 4	Provides an overview of the Compliance Program.
FAA Order 2150.3C, Chapter 5	Describes the "Responsibilities of Program Offices When Selecting Among Compliance, Administrative, and Legal Enforcement Actions."

In addition, program offices within AVS have developed guidance specific to their safety oversight responsibilities, as outlined below.

Flight Standards (AFS) Service Guidance	
Order 8900.1, Volume 14, Chapter 1, Section 1, Paragraph 14-1-1-7	Provides guidance to AFS personnel on addressing safety deviations, including specific instances when enforcement is required.
Order 8900.1, Volume 14, Chapter 1, Section 1, Paragraph 14-1-1-11	Provides guidance to AFS personnel on expectations when investigating a safety deviation.
Order 8900.1, Volume 14, Chapter 1, Section 2	Provides AFS personnel a process to determine if a compliance action (e.g., a non-enforcement response to a deviation) is appropriate.
Aircraft Certification (AIR) Service Guidance	
Technical Business Process AIR-002-035, Section 7	Provides guidance to AIR personnel on how to determine the appropriate type of compliance or enforcement action based on the criticality, complexity, and attitude of the regulated entity (including safety concerns).
Technical Business Process AIR-002-035, Section 9	Provides guidance to AIR personnel on how to initiate and process compliance actions, including a requirement to verify whether corrective action was implemented and effective in mitigating the noncompliance identified prior to closure. This section also provides guidance on elevating actions to enforcement if the noncompliance persists.
Technical Business Process AIR-002-035, Section 10	Provides supplemental guidance to AIR personnel on how to initiate and process enforcement actions and supports FAA Order 2150.3 in determining the sanction warranted for specific types of noncompliance. This section also includes guidance on verifying that corrective action was implemented and effective.

Training Updates

FAA provided training courses to its employees during the initial implementation of the Compliance Program. One such course, the FAA Compliance Philosophy Briefing, introduced the FAA's new Compliance Philosophy as the overarching guidance for implementing the FAA's strategic safety oversight approach to meeting the challenges of today's rapidly changing aerospace system.

In addition, each program office is responsible for developing training material specific to their employees, as outlined below.

AFS Service Training	
Compliance Philosophy Supplemental Briefing (FAA 27100253)	Provides foundational information on the Compliance Program and includes a video from the former AFS Executive Director. The video discusses focusing on the underlying precursors, and willingness and ability of the subject of the investigation, when determining action. The video also stresses interdependence and critical thinking when determining FAA's responses to a safety deviation.

Safety and Compliance Course (FAA 27100259)	Provides newly hired AFS personnel who are responsible for investigative duties with information on "just culture." The course notes that there is a difference between unsafe acts that can be effectively addressed through the use of compliance tools and unacceptable behavior that requires the use of enforcement action. This course also reinforces the need for individuals to be both willing and able to resolve regulatory deviations with compliance actions.
Safety and Compliance Practical Application Workshop (FAA 21000136)	Offers multiple compliance-related exercises designed to educate participants on investigative procedures and determining what actions are appropriate in response to deviations.
Enforcement Procedures Course (FAA 21000148)	Provides further training on circumstances in which enforcement action is necessary and required.
AIR Service Training	
Aircraft Certification Compliance and Enforcement Course (FAA 22000084)	Provides AIR personnel information on the FAA Compliance Program and the AIR Compliance and Enforcement Program. This includes detailed lessons on identifying types of non-compliances, tying non-compliances back to regulatory requirements, determining the type of compliance or enforcement action needed (including identifying safety issues, and reckless or intentional behavior), processing actions, and determining if corrective action is acceptable and verifying corrective action to ensure it is implemented and effective in mitigating the cause.
2016 Air Roadshow	Provided field offices with information on the Compliance Program during roll-out. This training session included an explanation of the intent of the Compliance Philosophy and an outline of the guidance, including initiating actions, reviewing root cause and corrective action, and verifying the effectiveness of corrective action.

Additional Progress Updates

The Flight Standards Compliance Program Focus Team (CPFT) continues to provide support by conducting site visits to over sixty Safety Assurance offices (i.e., Flight Standards District Offices and Certificate Management Offices) to provide briefings on the Compliance Program.

AIR completed an assessment and analysis of data collected over the last three years and is creating a report with opportunities for improvement with respect to the compliance and enforcement process. It also is in the early stages of deployment for its Compliance and Enforcement Action (CEA) tool, an automated system that supports the standardization of the compliance and enforcement process.

2B. Oversee New Air Carrier Systems for Managing Safety Risks

The DOT's Office of Inspector General (OIG) has audited FAA on this subject (Project #18A3007A000, *FAA Has Not Effectively Overseen Southwest Airlines' Systems for Managing Safety Risks*), and publication of the final audit report is expected in early calendar year 2020.

DOT Planned Actions to Address this Challenge

2A. Balance Collaboration and Enforcement through the Compliance Program

FAA continues to discuss and promote the Compliance Program through a variety of executive engagements with the aviation industry. The Office of Aviation Safety (AVS) program office actions are outlined below. Additional planned actions within affected program offices continue as needed.

- Continue ongoing Safety Assurance Office site visits by the CPFT

- Initiate a comprehensive revision to the FAA Safety and Compliance courses and the Enforcement Procedures course. The updated AFS training materials will incorporate collected feedback to aid in balancing the appropriate response from FAA.

- Initiate development of an AFS Recurrent Safety and Compliance course that will be required for all personnel with investigative duties and responsibilities.

- Continue ongoing assessments and feedback sessions between AIR and field offices to determine the continued effectiveness of the Compliance Program.

- Initiate development of a Recurrent Compliance and Enforcement course, which will be required for all AIR personnel with oversight duties and responsibilities.

- Continue deployment of CEA, which will support standardization and the ability to better track issues to ensure effective corrective actions.

2B. Oversee New Air Carrier Systems for Managing Safety Risks

AVS is awaiting issuance of the OIG's final audit report and will produce action plans to respond to the recommendations in the report.

DOT Associated Performance Goals/Measures/Milestones

2A. Balance Collaboration and Enforcement through the Compliance Program

FAA continues to develop measures and seek feedback from the workforce to inform any needed changes or additions to the guidance, training, and messaging described above. This is predominately accomplished at the program office level. AFS and AIR use the metrics listed below:

- Volume of compliance and enforcement actions
- Timeliness in processing actions
- Measure voluntary safety reporting rates
- Accident and incident data
- Recidivism rates
- Assess the documentation data quality of FAA actions for validity, reliability, and consistency
- Feedback to gauge opinions on safety impact and effectiveness
- Quality and in-service data

2B. Oversee New Air Carrier Systems for Managing Safety Risks

AVS is awaiting the issuance of the final report and will produce action plans with performance goals, measures, and/or milestones to respond to the recommendations in the report.

Responsible Agency Official(s)

Balance Collaboration and Enforcement through the Compliance Program	
Michael Romanoswki	Director, AIR-600
Lance Gant	Director, AIR-700
Jeff Duven	Director, AIR-800
Hillary Heintz	Compliance and Enforcement Program Manager, AIR
Tim Shaver	Director, AFS-1
Jeffrey Smith	FS, CPFT Lead
Oversee New Air Carrier Systems for Managing Safety Risks	
Jodi Baker	Deputy Director, Air Carrier Safety Assurance

OIG Challenge: Maximizing FAA's Airspace Modernization Investments and Ensuring New Capabilities Achieve Expected Benefits

OIG Challenge Summary

The Federal Aviation Administration (FAA) continues to modernize the National Airspace System (NAS) through the multibillion-dollar Next Generation Air Transportation System (NextGen) program. As envisioned, NextGen will provide safer, more efficient air traffic management by 2025. While it has implemented new capabilities, FAA still faces challenges in upgrading aging infrastructure, continuing NextGen's deployment, and achieving intended benefits in a cost-effective manner.

Key Challenge Components

3A. Sustaining and modernizing the En Route Automation Modernization (ERAM) system while integrating new capabilities (ATO)

3B. Realizing the anticipated benefits of Automatic Dependent Surveillance-Broadcast (ADS-B) investments (ATO/ANG)

3C. Resolving obstacles to implementing new flight procedures and delivering benefits to airspace users (ATO)

3D. Auctioning off electromagnetic spectrum to finance and deploy new radars (ATO)

DOT Progress Update for FY 2020

3A. Sustain and Modernize the ERAM System

FAA has been integrating new capabilities and external programs such as Data Communications (Data Comm) into the ERAM platform using the New Program Integration (NPI) process. The NPI process incorporates all activities from receipt of request for integration (e.g., a new program requesting a change in ERAM hardware, interface, and/or software requirements) to establishing ERAM commitments for the schedule and lifecycle cost estimates of the requesting program.

This information is fed into the ERAM strategic release planning process where it assists in coordinating ERAM sustainment, Data Comm deployment, and software upgrades in the proper order. This process has ensured that ERAM sustainment and Data Comm deployment proceeds smoothly.

Data Comm has released supporting software to enable planned deployment of initial en route services at two air route traffic control center (ARTCC) key sites. Initial operating capability at both sites occurred in November 2019.

FAA continues to replace obsolete ERAM system equipment with modern, sustainable hardware platforms. In April 2019, FAA completed the Early D portion of ERAM Sustainment 2 equipment refresh at all 20 ARTCCs, including the deployment of new processors in the ERAM Radar Assistance Controller D Position consoles. In July of that same year, FAA deployed adaptation enhancements software for ERAM Enhancements 2, a program which allows the introduction of new controller functionality in cost efficient intervals that do not overload current software/test capabilities or conflict with other airspace programs. In December 2019, FAA began full deployment of the ERAM Sustainment 2 at three key sites (Fort Worth, Minneapolis, and Cleveland). Phase 2 of this full deployment, which includes limited installation of new radar position processors and monitors on the operational floor, was completed at these key sites. FAA also completed baselining of the ERAM Sustainment 3 program, which replaces the balance of original ERAM equipment. It is scheduled to be completed in September 2026.

3B. Realize Anticipated Benefits of ADS-B Investments

FAA completed notices to FAA Orders 7110.65 (Air Traffic Control) and 7210.3 (Facility Operation and Administration) authorizing ADS-B for 3NM separation in the Enterprise Architecture System and working on signatures/approvals. It also determined waterfall schedule and began key site activities and outreach.

With respect to ADS-B, FAA initiated modeling analyses to conduct an airline-specific ADS-B In benefits study of the Northeast Corridor. It also began planning for flight inspection at the Miami air route traffic control center and is on schedule to deploy an ADS-B Deviation Authorization Pre-Flight Tool (ADAPT) to support the ADS-B Out Mandate. Finally, FAA initiated the development of a Safety Management Plan and established a bi-weekly meeting cadence with respect to radar divestiture.

3C. Resolve Obstacles to Implementing New Flight Procedures

Community Concerns about Aircraft Noise

To ensure communities receive accurate information and the Agency receives constituent and local official/state government feedback, FAA is providing appropriate representation at community meetings, noise committees, airport roundtables, and other forums.

FAA also initiates public workshops and community outreach events on an as-needed basis in accordance with FAA community involvement strategy to present information to the public and gain public comment to proposed airspace actions.

Thirty-five regional-level Airport Reservation Office (ARO) employees, including newly assigned Community Engagement Officers (CEOs), work on community outreach with support from the FAA Office of Communications. These employees are dedicated to regional offices and service centers to address aviation noise concerns and community engagement activities. The CEOs and other employees designated by the corresponding Regional Administrator also

manage responses. Five headquarters-level employees work on community outreach, mainly providing guidance and developing policy.

Each Service Center Environmental, Community Involvement, and National Airspace System Analytics (ECINA) team has also begun to restructure, align, and increase staffing to ensure the appropriate level of personnel are available to respond to inquiries tracked in the noise complaint initiative, Noise Portal. This additional staffing among ECINA Teams will also manage congressional-level noise inquiries and concerns as the direct response provider.

Automated Decision Support Tools for Controllers

The FAA is coordinating with industry partners to evaluate various tools and technologies that will make automated spacing, sequencing, and separation of air traffic possible while also increasing airspace capacity and adding additional safety protocols to the national airspace. Examples of these efforts include Terminal Sequencing and Spacing, Time-Based Flow Management (TBFM), and initial Trajectory-Based Operations (iTBO).

In 2019, the TBFM Operations Team and the TBFM Program Management Office (PMO), in support of the Field Automation Support Teams, implemented more adjacent metering efforts along with the remaining Metroplex projects. Significant progress has been made in expanding effective use of TBFM in the iTBO operating areas providing better training, education, and change management initiatives.

Terminology Used by Pilots and Controllers

The air traffic control handbook revision project was established to address identified concerns by various users of the national airspace pertaining to phraseology and procedures as described in FAA Order JO 7110.65, "Air Traffic Control." The following are some of the associated phraseology and procedure issues that were addressed:

- Reduction of Diagonal Separation for Parallel Dependent Approaches
- Treat Go-Around/Missed Approach Ops as a Normal Departure
- Expanding the Definition of Radar (Radar Contact/Contact Lost)
- Reorganize Approach Clearance Differentiations
- Tower Applied/Pilot Applied Visual Separation

Procedure Amendment Processes

FAA established a working group to evaluate and help resolve the issue of lengthy procedure amendment processes. The working group reviewed and rewrote the "Flight Procedure Management Program" Order 8260.43 to strengthen the Instrument Flight Procedure (IFP) request validation and prioritization processes.

- *Validation:* The goal of the new validation process is to eliminate invalid requests from consideration and reduce FAA workload.

- *Prioritization:* The goal of the prioritization process is to enforce national IFP strategies and priorities in order to provide the national airspace with timely procedures. The prioritization team schedules IFPs based on real-time national IFP system capacity and ensures that they do not exceed IFP production limitations.

3D. Auction off Electromagnetic Spectrum to Finance and Deploy New Radars

During FY 2019, FAA, serving as the Lead Acquisition Agency for the Spectrum Efficient National Surveillance Radar (SENSR) program, continued to manage the unique challenges associated with a cross-agency team and the Spectrum Relocation Fund (SRF) funding mechanism. This required strategic communication and engagement with various government stakeholders, including the National Telecommunications and Information Administration (NTIA), Office of Management and Budget (OMB), and the Federal Communications Commission (FCC).

During the feasibility phase of the program (to culminate in a Final Investment Decision and Contract Award), FAA worked diligently to determine the scope of the program and establish the program management infrastructure required to support the functional cross-agency program team.

Throughout FY 2019, engagement with industry partners continued to be crucial to a collaborative resolution of program challenges. To that end, the SENSR team released multiple requests for information (RFIs) to seek industry input on the program's overall approach, requirements, and acquisition strategy. In addition, the team held one-on-one meetings with vendors in the Spring of 2019 and additional vendor meetings later in Summer 2019.

The RFIs and vendor engagement events with industry partners facilitated an exchange of information that was vital to the initial feasibility assessment, the refinement of the program's scope and requirements, and the development of the draft Screening Information Request (SIR) (referred to as a request for proposal).

Milestones completed in FY 2019 include:

- October 2018: Submitted acquisition strategy for approval to Joint Resources Council
- December 2018: Drafted cost estimating plan and submitted to Office of Budget and Programs, Investment Planning and Analysis
- March 2019: Held one-on-one meetings with vendors about RFI 2.1
- April 2019: Submitted Phase I Extension SENSR Pipeline Plan to Tech Panel
- May 2019: Completed RFI 2.1 Synopsis Report
- August 2019: Conducted Industry Week with vendors

DOT Planned Actions to Address this Challenge

3A. Sustain and Modernize ERAM System

FAA will continue to integrate new capabilities and external programs such as Data Comm and ADS-B into the ERAM platform using the New Program Integration NPI process.

FAA will also continue to utilize the ERAM strategic release planning process to ensure that both ERAM sustainment and Data Comm deployment schedules remain de-conflicted.

Specific goals and milestones for FY 2020 include:

- ERAM Sustainment 2 (S2): Complete Installation of "Full" Equipment Components at three key ARTCCs.

- ERAM Sustainment 2 (S2): Complete In-Service Decision for the "Full" deployment waterfall.

- ERAM Sustainment 3 (S3): Complete handoff to Integration and Test of extension of Gigabit ports for monitor and control LAN capability in EAF200 (software build) to form the foundation for planned ERAM Sustainment 3 equipment deployments.

- ERAM Enhancement 2 (E2): Deliver to key sites direct Transmission Control Protocol/Internet Protocol (TCP/IP) interface with NAVCanada capability in EAE400 (software build) to progress toward the Acquisition Program Baseline milestone for delivery of NAVCanada Automated Radar Handoff Capabilities in 2022.

- Space-Based ADS-B: Software release build to support operational evaluation at Miami Center.

3B. Realize Anticipated Benefits of ADS-B Investments

During FY 2020, FAA plans to enable three Nautical Mile Separations (NMS) using ADS-B within En Route Airspace for the ERAM system at an air route traffic control center. It will also continue radar divesture analysis, safety risk management activities, and site outreach activities to potential candidates for radar divestiture with the goal of identifying two radar locations as sites for discontinuance.

FAA also plans to achieve Initial Operating Capability (IOC) of space-based ADS-B data within ERAM, while enhancing ADS-B In benefits by conducting Flight Interval Management (FIM) Northeast Corridor benefits study. Finally, FAA will deploy ADAPT to support for Air Traffic Controller (ATC) authorizations for operator equipment exceptions.

3C. Resolve Obstacles to Implementing New Flight Procedures

Community Concerns about Aircraft Noise

FAA's goal for FY 2020 is to continue ongoing community involvement efforts and pursue more open dialogue in collaboration with local airports and communities. FAA has developed continuous and scalable community outreach programs to aid in this undertaking. These programs establish a basis of communication with local communities, to work effectively with airports to address our mutual challenges. These challenges include identifying and avoiding environmentally sensitive areas and designing instrument flight procedures that ensure safe and environmentally friendly routes in the national airspace.

The community engagement officers and regional ombudsman have been established to help accurately document Agency and public interactions. Metrics gathered will be used to more effectively and efficiently tailor future responses to noise concerns and improve support of community outreach events and activities.

Additional ECINA staffing has been requested and approved among Service Centers. Western and Eastern ECINA teams have each been approved for 10 additional positions. Some positions have been filled, with the remaining positions to be filled throughout FY 2020 and FY 2021. Additional staffing will enable more efficient and timely responses to both congressional-level inquiries and aircraft noise complaints received through the Noise Portal (upon its release), and

will provide support for inquiries received by community engagement officers and regional noise ombudsman.

Automated Decision Support Tools for Controllers

FAA will continue the deployment and implementation of traffic sequencing, metering, and/or merging and spacing automation tools to decrease controller workload and promote the use of performance-based navigation procedures.

TBFM Standards, Procedures, and Policy are being incorporated throughout the national airspace. TBFM is deployed at 20 En Route centers, 30 terminal radar approach control facilities, and 41 towers. FAA will continue implementing Integrated Departure and Arrival Capability (IDAC), with installation at Denver Tower by September 30, 2020. The IDAC system prevents departure conflicts by monitoring departure demand and identifying slots in the overhead stream of traffic.

The terminal sequencing and spacing tool will be expanded to extend the metering and sequencing capability of TBFM into terminal airspace. FAA continues to move forward with implementation of this suite of traffic sequencing, metering, and/or merging and spacing capabilities. Due to the dynamic nature of implementing complex technical solutions and periodic budget uncertainties, it is anticipated this will be an ongoing process for the near future.

Terminology Used by Pilots and Controllers

The Mission Support Systems Policy Directorate (AJV-P) is tracking the processing and implementation of terminological revisions identified by the Air Traffic Control Handbook Project Steering Committee.

Procedure Amendment Processes

Revised FAA Order 8260.43 was fully implemented in October 2019. Metrics have been established to track and monitor the health of the new process, which will assist in identifying inefficiencies and ensuring that cross-agency perspectives are considered when making the decision to invest in a given procedure. Focusing resources on high-priority procedures should reduce the time needed to initiate a project-related procedure development and the time to deploy the procedure.

Upgrades to FAA's design, evaluation, periodic review, and workflow tracking software systems will increasingly automate manual tasks, greatly reducing procedure development and maintenance costs by September 30, 2020.

3D. Auction off Electromagnetic Spectrum to Finance and Deploy New Radars

During the beginning of FY 2020, FAA has continued to manage the unique challenges associated with a cross-agency team and the Spectrum Relocation Fund (SRF) funding mechanism, including the required strategic communications and engagement with various government stakeholders (e.g., NTIA, OMB, and FCC).

While FAA awaits the meeting with various government stakeholders to determine the feasibility phase and a possible final investment decision which may lead to a contract award, FAA has plans to:

- Diligently work to mature the scope of the program and develop a course of action that maximizes its feasibility, while addressing current legislative limitations and program/acquisition constraints.

- Sustain the program management infrastructure required to support a functional cross-agency program team.

- Continue engagement between the Joint Program Office (JPO) and industry partners throughout FY 2020 on the SENSR requirement through the release of a draft Screening Information Request (SIR) in June 2020 and other program planning activities.

DOT Associated Performance Goals/Measures/Milestones

3A. Sustain and Modernize the ERAM System

FAA measures the performance of ERAM sustainment and enhancements programs, and other programs dependent on ERAM (such as Data Comm), using programmatic and yearly milestones with progress reported monthly. In addition, the NPI and strategic release planning process working groups meet regularly and keep scorecards of progress toward completion of process activities.

3B. Realize the Anticipated Benefits of ADS-B Investments

FAA plans to realize the anticipated benefits of ADS-B investments through the following activities:

- Deploy ADAPT through the successful submission of an operator request for an ATC authorization. ADAPT was deployed on December 31, but use by operators was required starting January 2.

- *March 31, 2020:* Achieve IOC of Space-based ADS-B data within ERAM.

- *April 30, 2020:* Enable 3 NMS using ADS-B within En Route Airspace for the ERAM system at an ARTCC. ERAM will be adapted to utilize Track-Based Display Mode (TBDM) with ADS-B at a key site for use in 3NMS below Flight Level.

- *June 30, 2020:* Enhance ADS-B In benefits by conducting a FIM Northeast Corridor benefits study.

- *September 30, 2020:* Continue radar divesture analysis, safety risk management activities, and site outreach activities for the first two initial sites.

3C. Resolve Obstacles to Implementing New Flight Procedures

Initial measures include tracking the volume of complaints, trends in geographical noise complaints, and complaint response time. Additional metrics may be identified as work continues.

3D. Auction Off Electromagnetic Spectrum to Finance and Deploy New Radars

Key milestones for FY 2020 include:

- *March 31, 2020:* Achieve Initial Investment Decision
- *June 30, 2020:* Release Draft SIR
- *September 30, 2020:* Submit SENSR Spectrum Pipeline Plan update to Tech Panel

Responsible Agency Official(s)

Sustain and Modernize the ERAM System	
James Benjamin	ERAM Program Manager (AJM-213)
Realize the Anticipated Benefits of ADS-B Investments	
Ammyanna Williams	Acting Group Manager, Surveillance and Broadcast Services (AJM-42)
Resolve Obstacles to Implementing New Flight Procedures	
Angela McCullough	Vice President, Mission Support Services
Steve Ryan	Acting Strategy Director, Mission Support Services
Robert Novia	Acting Group Manager, Airspace Modernization
Auction Off Electromagnetic Spectrum to Finance and Deploy New Radars	
Michael Freie	SENSR Group Manager (AJM-43)

OIG Challenge: Enhancing Oversight and Internal Controls to Address Longstanding Cybersecurity Vulnerabilities

OIG Challenge Summary

The Department's cybersecurity program is critical to protecting the vast network of information technology (IT) systems from malicious attacks or other breaches that may inhibit the Department's ability to carry out its mission. However, the Department faces challenges in strengthening its oversight and internal controls to resolve longstanding cybersecurity vulnerabilities, some of which have been reported for more than 10 years. In addition, the Federal Aviation Administration (FAA) must work to implement congressionally mandated initiatives aimed at protecting critical systems within the National Airspace System (NAS).

Key Challenge Components

> 4A. Addressing longstanding cybersecurity vulnerabilities and strengthening internal controls (AFN)

> 4B. Implementing congressionally mandated aviation cybersecurity initiatives to protect flight-critical systems (AFN/ATO)

DOT Progress Update for FY 2020

4A. Address Cybersecurity Vulnerabilities and Strengthen Internal Controls

FAA participated in the Department's Office of the Chief Information Officer (OCIO) program performance oversight and reviews of Operating Administrations' cybersecurity programs in February 2019. As part of the performance oversight review, FAA provided the OCIO with risk acceptance memos for FAA systems with expired authority to operate (ATO) and updates to the Plan of Action and Milestones (POAMs) reviewed for inaccurate data, missing information, and timely updates.

FAA enforces the policy mandates within FAA Order 1370.121 *FAA Information Security and Privacy Program & Policy* to ensure that security awareness and role-based training are completed annually. Progress updates are monitored regularly and reported to FAA and DOT management to ensure that compliance requirements are achieved.

FAA and DOT previously reported that neither Federal nor DOT/FAA policies require the creation of technical vulnerabilities, such as individual POAM, as such a process would be highly inefficient and burdensome.

Instead, DOT proposed to address OIG's findings by focusing on the effectiveness of Operating Administrations' vulnerability management programs and any associated control-level

weaknesses. The FAA Cybersecurity Steering Committee (CSC) continuously monitors and reports progress on the status of remediation that addresses the 2015 Government Accountability Office (GAO) audit recommendations.

FAA implemented the additional technical recommendations received from GAO in February 2019. The DOT Cybersecurity Committee established a risk management practice working group to assess the current debt of weaknesses, evaluate options for addressing the open weaknesses, and provide recommendations to the DOT cybersecurity community and DOT Chief Information Security Officer (CISO) on rationalizing the population of weaknesses to have them accurately reflect current issues for action and remediation.

Throughout FY 2019, DOT OCIO continued to work with FAA, an integration partner, and the Department of Homeland Security (DHS) to implement the agency-wide Continuous Diagnostics and Mitigation (CDM) dashboard and provide data to the Federal Enterprise CDM dashboard as required by the Chief Financial Officers Act. These dashboards serve to collect detail-level vulnerability and weakness information, prioritize vulnerabilities for mitigation, and provide operators and management with actionable information to mitigate the vulnerabilities. The Department began attributing the automatically collected data and their vulnerabilities to DOT systems, and subsequently to DOT investments, in order to support an integrated approach to the assessment of risk, prioritization, and allocation of resources via the DOT IT Spend Review process.

4B. Implement Congressionally Mandated Aviation Cybersecurity Initiatives

FAA took multiple steps taken to address the recommendations provided by the Office of Inspector General (OIG) within the report, *FAA Has Made Progress but Additional Actions Remain to Implement Congressionally Mandated Cyber Initiative.*

The Office of Aviation Safety (AVS) identified target dates to address the four deferred recommendations made by the Aviation Rulemaking Advisory Committee (ARAC) Aircraft Systems Information Security Protection (ASISP) Working Group. These target dates were included in the AVS Strategic ASISP Plan to address the working group's four deferred recommendations to enhance aircraft systems cybersecurity.

The Cyber Security Risk Model (CyRM) Strategy and Plan was updated to outline a four-year approach for a fully integrated lifecycle methodology to effectively defend against cybersecurity threats and manage its cybersecurity risk on a continual basis.

The Next Generation Air Transportation System (NextGen) updated FAA's Cyber Research & Development (R&D) Plan. The strategy identifies the research required to support the detection, response, and resilience to cyber-attacks on FAA and aviation infrastructure. The plan also outlines the research strategy (i.e., ongoing and prospective R&D activities relative to the goals and objectives specified in the Cybersecurity Strategy) across budget types for the next five years, whether identified directly as cyber product or as part of a larger effort.

FAA has submitted closure requests to OIG for all three recommendations. Currently, two of the recommendations have been closed by OIG.

DOT Planned Actions to Address this Challenge

4A. Address Cybersecurity Vulnerabilities and Strengthen Internal Controls

FAA will continue to report on expired ATOs and POAMs as part of the performance oversight and review. It will also continue to regularly monitor and report on security awareness and role-based training progress.

DOT OCIO will continue working with the OAs to prioritize system authorizations to improve DOT's cybersecurity. DOT OCIO will leverage the DOT IT Spend Review to identify the level of resourcing being directed to these efforts. In line with DHS and OMB metrics, Operating Administrations (OAs) will be scored on progress towards authorizing all DOT systems in accordance with Federal requirements.

DOT OCIO will update internal policy and guidance, and modernize its use of its primary governance, risk, and compliance (GRC) system to improve process, data quality, risk management, and reporting. As part of those efforts, DOT OCIO will also coordinate with all OAs to implement the rationalization guidance for control weaknesses and seek to coordinate reporting with the Department's enterprise risk management program as recommended by GAO.

Standardization of Processes to Manage Enterprise-Wide Cybersecurity Risks

DOT OCIO will continue to realign commodity IT to provide greater consistency in implementing common controls and services; award several enterprise contract, including one for cybersecurity, to standardize contractual language, oversight, and execution for improved outcomes and reduced risks; and update its policies and implementation guidance to more effectively execute the authorities and responsibilities established through the Federal Information Technology Acquisition Reform Act (FITARA) and the Federal Information Security Management Act (FISMA).

Network Visibility – Proactively Preventing and Responding to Security Incidents

DOT OCIO will work towards the completion of the network modernization for the headquarters and field networks that service the non-FAA Operating Administrations (OAs) and Office of the Secretary of Transportation (OST) offices. The modernized network, combined with the Department's CDM capability, provides detailed insight into network infrastructure and endpoints operating on the DOT network, configurations, deviations, and vulnerabilities. That information is shared between the IT Shared Services operational staff and the DOT CISO's cybersecurity team for the identification of vulnerabilities for mitigation or anomalous or malicious activity that requires agency response.

Resolving Longstanding Security Weaknesses to Strengthen Information Technology Infrastructure

As a result of the transformational changes to be undertaken by the DOT OCIO in FY 2019 and FY 2020, a number of longstanding weaknesses will be directly addressed, particularly with respect to the consistency of policy, guidance, and the implementation of controls. Additional efficiencies that are achieved will be applied to address many of the other weaknesses in implementation.

4B. Implement Congressionally Mandated Aviation Cybersecurity Initiatives

FAA will continue to work with OIG to ensure closure of the final recommendation of establishing priorities for FAA-led research and development activities and incorporating these priorities into the budget process.

DOT Associated Performance Goals/Measures/Milestones

4A. Address Cybersecurity Vulnerabilities and Strengthen Internal Controls

FAA has set a target date of August 15, 2020 to achieve compliance requirements for security awareness and role-based training.

The Department set a target for 99% of information systems to be properly authorized in FY 2019. At the end of FY 2019, it achieved 100% of systems authorized, with an inventory reduction from 459 to 436 systems through additional planning and oversight of security assessment and authorization activities.

The Department set a goal of achieving 50% of its information systems converted to an ongoing authorization process in FY 2019. At the end of FY 2019, only 25% of agency systems had been converted to an ongoing authorization process, due in part to delays resulting from the lapse in appropriations, contract award challenges, and contention with other OA and Departmental IT priorities.

4B. Implement Congressionally Mandated Aviation Cybersecurity Initiatives

OIG has updated the revised target action date to the end of February 2020 to allow for completion of its review and follow-up questions to the updated FAA's Cyber R&D Plans submitted for closure.

Responsible Agency Official(s)

Address Cybersecurity Vulnerabilities and Strengthen Internal Controls	
Melanie Boteler	AT
Implement Congressionally Mandated Aviation Cybersecurity Initiatives	
Melanie Boteler	AIT
Michael Romanoswki	Office of Aviation Safety
Joseph Post	ANG
Shelley Yak	ANG

OIG Challenge: Preparing for the Future of Transportation

OIG Challenge Summary

The Department has several initiatives currently underway to address the future transportation environment. As the Fixing America's Surface Transportation (FAST) Act of 2015 concludes and a new authorization begins, the Department's challenge will be to address the impact of emerging technologies and industries.[2] The Department must also respond to increasing and evolving demands on the Nation's transportation system, such as by leveraging innovative financing, supporting research and development (R&D), and reshaping its workplaces.

Key Challenge Components

> 9B. Safely integrating the Unmanned Aircraft Systems (UAS) and the commercial space industry into the National Airspace System (NAS) (AVS/ATO/AST)

> 9D. Supporting research and development and reshaping the workplace to meet future needs (ANG)

DOT Progress Update for FY 2020

9B. Integrate UAS and Commercial Space Industry into the NAS

Over the past year, FAA has achieved several successes through its Integrated Pilot Program (IPP) and Partnership for Safety (PSP) program:

- First commercial delivery under Part 135 by United Parcel Service

- Over 2300 miles of electrical transmission lines inspected by Xcel Energy

- Increased interest from industry to engage in concerted efforts to develop safe operations, infrastructure, and management solutions

In October 2019, FAA published FAA Order 8040.6, *Unmanned Aircraft Systems Safety Risk Management*, which established a structured approach to conducting safety risk assessments for specific operations.

FAA also increased its outreach efforts to raise UAS awareness among Federal, local, and private entities through meetings and events such as the General Aviation Safety Assurance (GASA) outreach, 2019 UAS Symposium, and attendance both nationally and internationally at numerous UAS Conventions.

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[2] Pub. L. No. 114-94.

FAA is implementing provisions for recreational flyers, including:

- Implemented functions in Low Altitude Authorization and Notification Capability (LAANC) and DroneZone to allow recreational flyers to obtain airspace authorizations more quickly.

- Issued authorizations for fixed sites to fly in controlled airspace at altitudes below the UAS Facility Maps.

- Participated in an industry roundtable to gather perspectives and positions on the required knowledge test.

- Issued a Request for Information (RFI) to develop a relationship between FAA and third party entities (commercial, non-profit, academic, or other) who could provide recommendations on test design and administration, as well as support initial deployment of the knowledge test.

- Formally selected and announced the third-party entities (referred to as the cohorts).

- Assembled an Airman Examination Board (AEB) that has written the testing content and questions.

- Drafted an Advisory Circular with guidance on compliance with section 44809 of the 2018 FAA reauthorization concerning recreational drones.

- Begin issuing Letter of Agreements for fixed sites in controlled airspace.

- Conducted a safety risk management panel for UAS operations over 400 feet above the ground.

FAA is collaborating with the Unmanned Aircraft Safety Team (UAST) and the National Aeronautics and Space Administration (NASA) to expand the Aviation Safety Reporting System (ASRS) for use on UAS issues. UAST submitted a proposed form for data collection to FAA, and NASA has put a placeholder in the Paperwork Reduction Act justification for the expansion to UAS. FAA has also drafted updates to the advisory circular to expand protections to UAS.

FAA has also taken the following actions to resolve technological and regulatory challenges:

- Drafted the notice of proposed rulemaking, which both FAA and DOT have cleared (currently in interagency coordination).

- Launched the remote ID implementation team in October 2019 and developed an initial breakdown of work activities.

- Drafted UAS traffic management (UTM) Concept of Operations 2.0 (currently in interagency coordination).

- Issued a request for proposal for industry members to partner with FAA to complete Phase II of the UTM pilot program. Phase II will capture requirements from the 2018 reauthorization act not in Phase I efforts.

The Air Traffic Organization (ATO) implemented enhanced procedures for the safe and efficient integration of launch and reentry operations in to the NAS. These procedures were deemed appropriate and are approved by FAA as an acceptable level of risk on October 15, 2019.

DOT Planned Actions to Address this Challenge

9B. Integrate UAS and the Commercial Space Industry into the NAS

With respect to UAS, FAA will implement provisions for recreational flyers in early 2020, including:

- Finalize knowledge test administration requirements and Memoranda of Agreement

- Develop policy for fixed sites and sanctioned events that are above the current authorized altitudes

- Publish AC for comment and finalize guidance

- Implement the knowledge test

FAA will create a robust system for safety data related to UAS through the following actions:

- Issue updated advisory circular on ASRS and fund an update to the ASRS

- Collaborate with NASA to establish data sharing mechanisms for UAST, including de-identification and protection requirements

- Collaborate with UAST to promote ASRS to the UAS community.

- Work with partners in the IPP and PSP to develop a robust system for obtaining, tracking, and analyzing UAS safety data. The data are divided into two components: program data, which is regularly submitted to FAA, and operational data or reports as required by the operational provisions of waivers granted. The reports are used to determine the appropriate level of safety demonstrated by the operation.

FAA will resolve technological and regulatory challenges related to UAS, such as remote ID, through the following actions:

- Issue notice of proposed rulemaking (completed in December 2019)

- Execute items on the remote ID implementation schedule

- Issue final rule for Operations Over People

- Issue the 2209 Notice of Proposed Rulemaking (NPRM) Safety and Security Over Military Installations by December 31, 2020 as scheduled

With respect to the commercial space industry, FAA has a number of planned actions to address this challenge:

- FAA is conducting industry outreach with airline stakeholders to educate them on time-based launch/reentry procedures and notices to airmen (NOTAMs) that are used to notify the aviation community of launch and reentry operations.

- *June 30, 2020:* Complete implementation of time-based launch/reentry procedures (already in development) to more efficiently manage air traffic affected by and in the vicinity of launch/reentry activity.

- *September 30, 2020:* Release software related to dynamic launch/reentry windows based on time-based launch/reentry procedures. The operational triggers will provide greater efficiencies for NAS users.

- *September 30, 2020:* Deploy space data integrator Phase 1 Build 1 minimum viable product (MVP) to the Joint Space Operations Group (JSpOG)

9D. Support R&D and Reshape the Workplace to Meet Future Needs

FAA plans to address this challenge through a number of initiatives, including conducting an assessment on R&D Other Transaction Agreement (OTA) needs and developing and implementing OTA guidance for R&D and Prototype Project.

DOT Associated Performance Goals/Measures/Milestones

9B. Safely Integrate UAS and the Commercial Space Industry into the NAS

FAA is using numerous associated performance goals, measures, and metrics to address this challenge:

- *March 2020:* Submit an RFI with respect to how manned aviators can partake in remote ID efforts

- *Late Spring 2020:* Provide guidance to examination providers for the UAS knowledge test. FAA's legislative implementation plan for recreational flyers addresses Section 349 of the 2018 FAA reauthorization. This section, which replaces Section 336, levels the playing field by allowing the establishment of rules for all UAS. It requires even recreational operators to register their drones and to successfully complete a knowledge test.

- *Summer 2020:* Develop and publish standards for the recognition of UAS community-based organizations

- *September 2020:* Submit annual PSP Project Management Review (PMR) report to the Office of Aviation Safety (AVS). The first FY 2020 quarterly PMR was conducted in December 2019 and several actions were taken to increase communications and data-sharing capabilities between the ATO and AVS organizations.

- Flight Standards will provide a comprehensive safety review at the end of each fiscal year showing UAS operations are not inadvertently introducing risk into the NAS.

- Provide regularly scheduled updates to executives regarding development of the UTM program with NASA and FAA executives.

- The AUS Program & Data Management Branch has taken on the responsibility of re-designing their PSP program, with the goal of developing a quality management system

process, with schedule, reporting, risk management plans, and templates in place by the end of the third quarter of 2020.

- Track and report ASRS updates by UAST during quarterly meetings.

- Report remote ID implementation to the UAS Executive Working Group monthly. As of January 2020, this information will be reported out bi-weekly.

- Remote ID rule is captured in FAA's strategic rulemaking plan and reported out to FAA executives bi-weekly.

- Remote ID implementation is reported to the UAS Executive Working Group monthly and as of January 2020 will be reported out bi-weekly.

- Submit UTM implementation plan to Congress one year after completion of IPP Phase II. UTM research and concept of operations (Conops) are part of FAA's implementation plan and reported out monthly.

With respect to the commercial space industry, the planned action in the Office of Management and Budget's (OMB) FAA FY 2020-FY 2021 Agency Priority Goal (APG) on integrating space launches into the national airspace will use time-based launch/reentry procedures to improve national airspace efficiency. FAA reports its progress on the APG monthly to the FAA Performance Committee and quarterly to DOT and OMB.

Responsible Agency Official(s)

Safely Integrate UAS and the Commercial Space Industry into the NAS	
Jay Merkle	Executive Director, AUS
Duane Freer	Manager, Space Operations, UAS, and Central Altitude Reservation Function (CARF), ATO, AJOR
Support R&D and Reshape the Workplace to Meet Future Needs	
Pamela Whitley	Assistant Administrator for NextGen (A), ANG-1