

GAO Highlights

Highlights of [GAO-19-532](#), a report to the Committee on Transportation and Infrastructure, House of Representatives

Why GAO Did This Study

Recent developments in surveillance technologies, which provide an aircraft's location to air traffic controllers, have the potential to improve air traffic operations over the oceans. FAA has explored how to improve surveillance capabilities in U.S. oceanic airspace to take advantage of new international separation standards that could lead to the more efficient use of this airspace.

GAO was asked to review planned improvements to aircraft surveillance. This report examines: (1) FAA's approach to enhancing surveillance capabilities to improve safety and efficiency in U.S. oceanic airspace and (2) selected aviation stakeholders' perspectives on FAA's approach.

GAO reviewed documents related to FAA's planned investment in enhanced oceanic surveillance and interviewed FAA officials working on this effort. Interviews included those with the Air Traffic Organization and air traffic controllers who manage U.S. oceanic airspace. GAO surveyed representatives of 14 commercial airlines, including 11 U.S. and foreign passenger airlines, which were selected based on factors such as flight volume; and 3 U.S. cargo airlines, which were selected based on tons of cargo shipped. GAO also interviewed other aviation stakeholders, including trade associations, unions representing pilots, and foreign air navigation service providers that manage airspace adjacent to U.S. oceanic airspace.

View [GAO-19-532](#). For more information, contact Heather Krause at (202) 512-2834 or krauseh@gao.gov.

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AIR TRAFFIC CONTROL

FAA's Analysis of Costs and Benefits Drove Its Plans to Improve Surveillance in U.S. Oceanic Airspace

What GAO Found

The Federal Aviation Administration (FAA) evaluated two aircraft surveillance technologies that would allow aircraft to safely fly in closer proximity while in oceanic airspace. Based on its evaluation, FAA committed to using one in the near term and to continue to study another for future use. Specifically, in April 2019, FAA committed to implement by 2022 new international standards that allow reduced distances between aircraft, called minimum separation standards. These reduced distances would be enabled by a surveillance technology known as enhanced Automatic Dependent Surveillance-Contract (ADS-C). FAA also decided to continue studying the use of another enhanced surveillance technology known as space-based Automatic Dependent Surveillance-Broadcast (ADS-B)—to further improve surveillance in U.S. airspace. Both technologies offer increased frequency in reporting of an aircraft's location, which enhances safety, and can support new minimum separation standards. FAA decided to proceed with enhanced ADS-C in the near term because the efficiency benefits to airspace users exceeded the costs of more frequent location reporting and air traffic control system upgrades by 2 to 1. In contrast, FAA determined that the costs of using space-based ADS-B in U.S. oceanic airspace outweigh the efficiency benefits by 6 to 1. FAA officials added that operational challenges to using space-based ADS-B to manage air traffic in U.S. oceanic airspace have not yet been resolved. FAA plans to continue studying potential uses for space-based ADS-B in U.S. airspace to determine if benefits can outweigh the costs (see figure).

FAA's Near-Term, Medium-Term, and Long-Term Plans to Study Options to Enhance Surveillance

Plan	Term
Conduct operational evaluation of space-based Automatic Dependent Surveillance-Broadcast (ADS-B) in U.S. offshore airspace	Near Term (1-3 years)
Study using space-based ADS-B when ground-based surveillance infrastructure is unavailable	Medium Term (3-5 years)
Study operational challenges in U.S. oceanic airspace and potential solutions	
Study using space-based ADS-B in U.S. oceanic airspace	Long Term (5+ years)

Source: GAO analysis of FAA documents. | GAO-19-532

GAO found that most selected airlines (11 of 14) support FAA's overall approach to enhance oceanic surveillance. Selected airlines also said they expect the new minimum separation standards to improve access to more direct and fuel-efficient routes. FAA is taking steps to provide these benefits by restructuring routes in one area of U.S. oceanic airspace and by applying new minimum standards to give aircraft better access to fuel-efficient altitudes. According to FAA officials, however, additional benefits, such as redesigning other U.S. oceanic airspace, expected by selected airlines are limited by (1) relatively low rates of aircraft equipage with the technology that enables reduced separation and (2) the frequency of disruptive weather patterns in parts of U.S. oceanic airspace.