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Aviation Security-Related Findings and Recommendations of the 9/11 Commission

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Summary

The 9/11 Commission found that al Qaeda operatives exploited known weaknesses in U.S. aviation security to carry out the terrorist attacks of September 11, 2001. While legislation and administration actions after September 11, 2001 were implemented to strengthen aviation security, the 9/11 Commission concluded that several weaknesses continue to exist. These include perceived vulnerabilities in cargo and general aviation security as well as inadequate screening and access controls at airports.

The 9/11 Commission issued several recommendations designed to strengthen aviation security by: enhancing passenger pre-screening; improving measures to detect explosives on passengers; addressing human factors issues at screening checkpoints; expediting deployment of in-line baggage screening systems; intensifying efforts to identify, track, and screen potentially dangerous cargo; and deploying hardened cargo containers on passenger aircraft. In addition to these specific recommendations, an overarching recommendation for transportation security policy asserts that priorities should be set based on risk, and the most practical and cost effective deterrents should be implemented assigning appropriate roles and missions to federal, state, and local authorities, as well as private stakeholders.

This report will be updated as needed.

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The Intelligence Authorization Act for FY2003 (P.L. 107-306; 116 Stat. 2383) established the National Commission on Terrorists Attacks Upon the United States (the 9/11 Commission). The bipartisan 9/11 Commission was charged with the responsibilities of examining and reporting on the facts and causes of the September 11, 2001 terrorist attacks and presenting its findings, conclusions, and recommendations for corrective measures to prevent future acts of terrorism to the President and the Congress. The 9/11 Commission concluded its investigation and released its final report on July 22, 2004. This CRS report discusses the 9/11 Commission's findings and recommendations pertaining to aviation security.

Exploited Weaknesses in Aviation Security

The National Commission on Terrorists Attacks Upon the United States (the 9/11 Commission) found that al Qaeda terrorists exploited weaknesses in the aviation security system to carry out the attacks of September 11, 2001. Weaknesses in aviation security exploited by the 9/11 terrorists included

- A pre-screening process that focused on detecting potential aircraft bombers and not potential hijackers;
- Lax checkpoint screening and permissive rules regarding small knives;
- A lack of in-flight security measures such as air marshals and reinforced cockpit doors;
- An industry-wide strategy of complying with hijackers in a non-confrontational manner; and
- A lack of protocols and capabilities for executing a coordinated Federal Aviation Administration (FAA) and military response to multiple hijackings and suicidal hijackers.

The 9/11 Commission found that underlying these specific weaknesses and vulnerabilities in the aviation system was what they termed a failure of imagination among senior policymakers and agencies responsible for intelligence, national defense, and aviation security. The 9/11 Commission concluded that while suicide hijackings were by no means a far-fetched possibility given al Qaeda's past methods and motives, "...these scenarios were slow to work their way into the thinking of aviation security experts."[1] While some agencies were concerned about hijackings

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[1] National Commission on Terrorist Attacks Upon the United States. *The 9/11 Commission*
(continued...)

and had speculated about various hijack scenarios, there were no specific constructive actions taken to defend against these possible threats prior to September 11, 2001. Furthermore, the likelihood of a suicide hijacking scenario was greatly underestimated. The 9/11 Commission also concluded that, before September 11, 2001, congressional oversight of aviation security was lacking while Congress focused its aviation oversight activities on airport congestion and passenger service. Regarding Congress's aviation related activities prior to September 11, 2001, The 9/11 Commission wrote: "Heeding calls for improved air service, Congress concentrated its efforts on a 'passenger bill of rights' to improve capacity, efficiency, and customer satisfaction in the aviation system. There was no focus on terrorism."[2]

Legislative Actions Following the 9/11 Attacks

In the aftermath of September 11, 2001, Congress moved quickly to pass the Aviation and Transportation Security Act (ATSA, P.L. 107-71). Designed to correct weaknesses in aviation security exploited by the 9/11 hijackers as well as other potential vulnerabilities in transportation systems, ATSA established the Transportation Security Administration (TSA) as a new organization within the Department of Transportation responsible for security matters in all modes of transportation. Highlights of ATSA included

- Establishing a federal security screener workforce under TSA at airports;
- Requiring explosive detection screening of all checked bags;
- Deploying air marshals on all high risk flights; and
- Hardening cockpit doors.

ATSA also gave the TSA broad authority to assess threats to security in all transportation modes, primarily focusing on aviation, and implement appropriate security measures. In this regard, ATSA was seen as a comprehensive legislative vehicle for addressing transportation security with a specific emphasis on aviation security.

The following year, the Homeland Security Act of 2002 (P. L. 107-296) established the Department of Homeland Security (DHS) and placed the TSA within this new department. The act also authorized the arming of airline pilots as an additional measure to protect aircraft against terrorist hijackers. Additional aviation security measures were included in the most recent FAA reauthorization act, Vision 100 - Century of Aviation Reauthorization Act (P.L. 108-176). Most notably, Vision 100 established an aviation security capital fund to help pay for placing explosive detection systems (EDS) "in-line" with baggage conveyers and sorting facilities in an effort to improve the efficiency and effectiveness of checked baggage screening and expanded the program to arm pilots to include pilots of all-cargo aircraft.

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[1] (...continued)
Report (New York, NY: W. W. Norton & Co., 2004), p. 344.

[2] *The 9/11 Commission Report*, pp. 85-86.

Despite these actions, congressional and administration oversight of aviation security has identified several areas of vulnerability that persist. These include air cargo operations; general aviation; access controls for airport employees; screener performance; and possible terrorist attacks using shoulder-fired missiles.

Recommendations of the 9/11 Commission

The 9/11 Commission also recognized many of these vulnerabilities. The 9/11 Commission concluded that "[m]ajor vulnerabilities still exist in cargo and general aviation security. These, together with inadequate screening and access controls, continue to present aviation security challenges."[3] Based on these findings, the 9/11 Commission made specific recommendations regarding improvements to airport passenger and baggage screening, and air cargo security. While the commission identified potential threats posed by inadequate access controls to secured areas of airports and general aviation operations, it did not issue any recommendations pertaining to these risks. Also, while the 9/11 Commission acknowledged concerns raised by previous and current administrations over possible shoulder-fired missiles attacks against commercial airliners, it did not make any specific recommendations regarding this threat.

The 9/11 Commission delineated its recommendations regarding aviation security in a section titled "A Layered Security System." As suggested by this title, the 9/11 Commission concluded that the TSA must implement a multi-layered security system that takes into consideration the full array of possible terrorist tactics. The 9/11 Commission noted that these various layers of security must each be effective in their own right and must be coordinated with other layers in a manner that creates redundancies to catch possible lapses in any one layer. This conclusion is consistent with aviation security mandates under ATSA and TSA's concept of "concentric rings of security."[4] Since many facets of aviation security have been addressed through legislation and administration actions since the 9/11 attacks, the 9/11 Commission focused its aviation security recommendations on persisting vulnerabilities in commercial aviation.

While not all recommendations offered in the 9/11 Commission's final report were formally labeled as such, CRS has identified six aviation-specific recommendations.[5] These are: 1) enhancing passenger pre-screening; 2) improving measures to detect explosives on passengers; 3) addressing human factors issues at screening checkpoints; 4) expediting deployment of in-line baggage screening systems; 5) intensifying efforts to identify, track, and screen potentially dangerous cargo; and 6) deploying hardened cargo containers on passenger aircraft. In addition to these six aviation-specific recommendations, the 9/11 Commission also issued an overarching recommendation for transportation security policy to set priorities based

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[3] *Ibid.*, p. 391.

[4] Transportation Security Administration. *Budget Estimates: Fiscal Year 2004.* March 2003

[5] For clarity, multi-part 9/11 Commission recommendations have been separately identified in this report.

on risk and implement the most practical and cost effective deterrents assigning appropriate roles and missions to federal, state, and local authorities, as well as private stakeholders.

Enhancing Passenger Pre-Screening

On September 11, 2001, passenger pre-screening consisted of three measures: the Computer Assisted Passenger Prescreening System (CAPPS), answers to two security-related questions asked by airline ticketing and gate agents, and the presentation of photo identification to airline personnel. More than half of the September 11, 2001 hijackers were identified as "selectees" based on one or more of these pre-screening techniques. However, there was little consequence to their selection because, at the time, pre-screening was used solely as a tool to screen for individuals that might try to bomb a passenger jet using methods similar to those employed in the bombing of Pan Am flight 103. While the CAPPS system is still in use, its purpose has since been expanded to screen for possible hijackers as well. CAPPS is maintained directly by the airlines as part of their security program and uses computer algorithms to identify "selectees" based on matching passengers' behaviors (e.g., method of ticket purchase) to hijacker and bomber profiles.

The follow-on to CAPPS, dubbed CAPPS II, has been embroiled in controversy for the past two years over concerns regarding protection of personal data and civil liberties. As proposed, CAPPS II would implement a two step process to: 1) authenticate a passenger's identity using commercial databases; and 2) check that name against terrorist watch lists maintained by the federal government. If flagged by the system, passengers could be either denied boarding or selected for secondary screening. The 9/11 Commission recommended that improved passenger pre-screening capabilities should not be delayed while the argument about a successor to CAPPS continues. The 9/11 Commission further recommended that the prescreening system should utilize the larger set of watchlists maintained by the federal government. Both the Homeland Security Appropriations Act for FY2004 (P.L. 108-90) and Vision 100 directed the Department of Homeland Security to address these concerns and limited implementation of CAPPS II to system testing until the Government Accountability Office (GAO) verifies that adequate steps have been taken to address these concerns. However, in February 2004, the GAO found that the TSA had adequately addressed only one of the eight concerns regarding CAPPS II implementation.[6] Continued reluctance by the airlines to provide data for testing CAPPS II due to liability concerns has also stymied progress. The 9/11 Commission recommended that airlines should be required to supply the information needed to test and implement passenger pre-screening.

Recent media reports indicate that the CAPPS II program has essentially been scrapped over privacy concerns, however Secretary of Homeland Security Tom Ridge has suggested that a new program with a different name might eventually take its

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[6] U.S. General Accounting Office. *Aviation Security: Computer-Assisted Passenger Prescreening System Faces Significant Implementation Challenges.* GAO-04-385, February 2004.

place.[7] In light of the 9/11 Commission recommendation to forge forward with implementing a passenger pre-screening system and the current lack of progress toward developing such a system, Congress may renew oversight of the CAPPS II program or its successor and engage in debate over the best way to proceed.

Improving Measures to Detect Explosives on Passengers

Evidence highlighted by the 9/11 Commission indicated that al Qaeda has had a keen interest in bombing airliners for some time. The 9/11 Commission's report describes Ramzi Yousef's 1994 bombing of a Phillippines Airlines flight bound for Tokyo as a precursor to a larger operation – the so-called "Bojinka" plot – to bomb multiple U.S.-bound airliners over the Pacific ocean. In the Philippines Airlines bombing, Yousef reportedly assembled an improvised explosive device (IED) in the airplane's lavatory and hid it under a seat during the previous flight affixing a digital watch timer he had invented.

Concerns over IEDs were brought to public attention in December 2001, when Richard Reid attempted to down a transatlantic flight using explosives concealed in a shoe. Concerns over IEDs were again raised by the media in October 2003 when a college student, Nathaniel Heatwole, snuck banned items and materials resembling plastic explosives aboard passenger jets. While neither of these high profile incidents was cited in the 9/11 Commission report, the 9/11 Commission acknowledged persisting weaknesses in the ability to detect explosives on passengers by formally recommending that the TSA and Congress give priority to improving detection of explosives on passengers. The 9/11 Commission further recommended that, as a start, all individuals selected for secondary screening undergo explosives screening.

Current screening technologies and procedures offer limited capabilities to detect explosives carried on passengers. While carry-on items and sometimes shoes are x-rayed and may be subjected to secondary chemical trace detection screening methods, passengers are typically only screened by metal detectors. New technology offers the capability to detect bomb-making chemicals on individuals using trace detection methods. These systems are being operationally tested in various transportation settings including ongoing field tests at five airport sites: T.F. Green State Airport, Providence, RI; Greater Rochester International Airport, NY; San Diego International Airport, CA; Tampa International Airport, FL; and Gulfport-Biloxi International Airport, MS . Other possible methods for detecting explosives on passengers involve body scan imaging using low dose x-ray backscatter or other techniques. Body scan technology is considered somewhat more controversial because it renders a nude image of the scanned individual which is regarded by some as overly intrusive. Alternative methods to these technologies include the use of bomb-sniffing dogs and physical searches of individuals. In light of the 9/11 Commission recommendation, Congress may debate whether and how to implement and fund an initiative for screening passengers using the most effective

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[7] Mimi Hall and Barbara DeLollis. "Plan to collect flier data canceled." *USA Today*, July 14, 2004.

means available. (See CRS Report RS21920, *Detection of Explosives on Airline Passengers: Recommendation of the 9/11 Commission and Related Issues*)

Addressing Human Factors Issues at Screening Checkpoints

The 9/11 Commission also recommended that the TSA conduct a human factors study to understand problems in screener performance and set attainable objectives for improving performance at screening checkpoints. Screener performance deficiencies were highlighted by a recent DHS Inspector General's audit that found poor screener performance among both federal and contract screeners during covert testing at screening checkpoints.[8] The TSA has launched several initiatives to address these concerns. For example, the TSA has greatly expanded the use of threat image projection (TIP), a system that tests screener on-the-job performance by projecting images of threat objects on x-ray monitors. Using data from TIP, researchers can assess certain human performance needs in aviation security. The TSA is also examining ways to improve the recurrent training of screeners.

Key human factors issues are likely to include screener selection and training, fitness for duty, and human interaction with screening technologies. While the TSA maintains a small cadre of human factors researchers and some ongoing research in this area is being conducted by universities and contractors, research on aviation security human factors and funding for these activities pales in comparison to human factors research programs in the Department of Defense and FAA's safety-related human factors activities. Also, there presently is a lack of a comprehensive strategic plan for addressing human factors in aviation security.

In light of this recommendation and persisting concerns over screener performance, Congress may conduct oversight to identify areas where TSA's human factors research efforts may not be adequately addressing concerns over passenger and baggage screening performance. Congress may also consider whether to task the National Academy of Sciences or some other independent body with examining human factors needs in aviation security. While the National Academy of Sciences did address human factors in its 1999 assessment of aviation security technologies, it has not conducted a focused study of human factors needs in the aviation security system and has not examined this issue since the terrorist attacks of September 11, 2001.[9]

Expediting Deployment of In-Line Baggage Screening Systems

The 9/11 Commission recommended that the TSA expedite installation of in-line baggage screening systems. Therefore, Congress may debate the adequacy of

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[8] Statement of Clark Kent Ervin, Inspector General, U.S. Department of Homeland Security. Before the Committee on Transportation and Infrastructure, Subcommittee on Aviation, U.S. House of Representatives, April 22, 2004

[9] National Research Council. *Assessment of Technologies Deployed to Improve Aviation Security: First Report.* Publication NMAB-482-5. Washington, DC: National Academy Press, 1999.

current funding for this activity. While Vision 100 authorizes up to $500 million annually to be deposited into the aviation security capital fund, only $250 million was appropriated in FY2004 and requested in FY2005 for this activity. Since the total cost of integrating EDS equipment at all passenger airports is estimated to exceed $4 billion, it may take several years to complete integration of baggage screening systems given current funding levels. Letters of intent (LOIs) issued to airports by the TSA were established as a vehicle to leverage limited federal funding by stretching obligations over several years. LOIs were created in appropriations legislation as a means for TSA to convey to airports its intent to obligate future funds for the purpose of EDS integration. However, the TSA has, thus far, implemented LOIs by reimbursing airports for expenses as they are incurred. This approach could further slow the progress of integrating EDS systems at airports.

The 9/11 Commission also recommended that "[b]ecause the aviation industry will derive substantial benefits from [in-line EDS] deployment, it should pay a fair share of the costs."[10] However, defining that fair share has been a significant point of contention. Airlines already indirectly pay the federal share of EDS integration because the first $250 million annually, all that was budgeted in FY2004 for this activity, must come directly from aviation security fees paid by the airlines and their passengers. Airports pay a portion of the costs too, albeit a much smaller one. Under the scheme adopted by Vision 100, large and medium-sized airports contribute 10% of the cost while small airports contribute 5%. However, the TSA has proposed to reduce the federal obligations for these programs and increase the local share to 25% at large and medium-sized airports and 10% at small airports, a proposal that airports obviously oppose. The 9/11 Commission did not specifically say what they would consider to be a more equitable contribution from industry, however their recommendation implies that they believe industry is not paying its fair share under the current scheme. Congress may continue debate over the equity of cost-sharing for EDS integration in light of this recommendation.

Intensifying Efforts to Identify, Screen, and Track Cargo

The 9/11 Commission recommended that the TSA needs to intensify its efforts to identify suspicious cargo, and appropriately screen and track potentially dangerous cargo in aviation as well as in maritime operations. Stemming from recommendations of the Aviation Security Advisory Committee (ASAC), a standing committee of aviation stakeholders, the TSA unveiled a strategic plan for cargo security in November 2003. That plan consists a multi-layered risk-based approach with four key strategic objectives: 1) enhancing shipper and supply chain security; 2) identifying elevated risk cargo through pre-screening; 3) identifying technology for performing targeted air cargo inspections; and, 4) securing all-cargo aircraft through appropriate facility security measures.[11] Goals of the plan include pre-screening all cargo shipments in order to determine their level of relative risk; working with industry and federal partners to ensure that 100% of items considered to pose an elevated risk are inspected; developing and ensuring that new information

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[10] *The 9/11 Commission Report*, p. 393.

[11] Transportation Security Administration. *Air Cargo Strategic Plan*. November, 2003.

and technology solutions are deployed; and, implementing operational and regulatory programs that support enhanced security measures.[12] The 9/11 Commission recommendations seem to imply that it concurs with TSA's overall approach as outlined in this strategic plan but feels that progress toward achieving these objectives must be accelerated, and perhaps, augmented. Since the 9/11 Commission recommendation provides no specific guidance on how to intensify the identification, tracking, and screening of cargo, Congress may further scrutinize TSA's efforts on cargo security and further debate approaches to air cargo security.

Recent debate in Congress over air cargo security has focused on the level of physical screening or inspection of cargo needed to adequately mitigate the risks posed by cargo placed on passenger aircraft. While proposals have been offered to require 100% physical screening or inspection of all cargo placed on passenger aircraft, Congress has thus far supported TSA's plan to, instead, implement a risk-based approach that relies heavily on the known-shipper program and database to assess shipments placed aboard passenger aircraft (see CRS Report RL32022, *Air Cargo Security).*

Deploying Hardened Cargo Containers

In addition to these measures to improve cargo security, the 9/11 Commission specifically recommended the deployment of at least one hardened cargo container on every passenger aircraft that also hauls cargo to carry suspicious cargo. The National Research Council examined this very concept in 1999 and concluded it would cost $125 million to acquire a sufficient number of hardened containers.[13] They also estimated that the annual industry-wide cost of lost revenue due to reduced aircraft revenue payload and increased fuel burn would total $11 million. Thus, even if a proposal were made to federally fund this initiative, passenger airlines may oppose it because it would increase operational costs.

It is likely that opponents of deploying hardened cargo containers would also argue that, if recommended initiatives are implemented to improve the identification, tracking, and screening of cargo, then hardened cargo containers are not needed. On the other hand, proponents of deploying hardened cargo containers may argue that doing so creates a redundant layer of defense, analogous to a hardened cockpit door, that is consistent with the overarching goal of establishing a multi-layered security system with built-in redundancies.

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[12] There has been considerable confusion regarding the terms *screening* and *inspection* as they pertain to air cargo, and presently no statutory or regulatory definitions of these terms exist. In general, the TSA refers to screening as a vetting process, such as the use of a known-shipper database, to assess the level of risk associated with a cargo shipment. TSA uses the term inspections, on the other hand, to refer to physical scrutiny of cargo though any of several available means such as canine teams, hand searches, or the use of x-ray equipment or explosives detection systems. In this report, the term pre-screening has been used in place of what TSA commonly calls screening to avoid confusion since this does not refer to a physical screening process.

[13] National Research Council. *Assessment of Technologies Deployed to Improve Aviation Security: First Report.*

However, using just one hardened cargo container per passenger aircraft still leaves the system open to potential vulnerabilities that are directly tied to the effectiveness of measures to conduct risk-based assessments of cargo and flag suspicious cargo. For this reason, the TSA currently requires that all cargo from shippers that have not been properly vetted and verified through the known-shipper program be carried in all-cargo airplanes and not aboard passenger airplanes. While TSA is working on expanding its capabilities to detect high risk cargo, it is unclear how this system could be adapted to assign risk levels that would permit certain suspect cargo to travel in hardened cargo containers on board passenger airplanes. Also, from a policy standpoint, it is unclear what criteria could be used to permit shipment of suspicious cargo on passenger aircraft in hardened cargo containers instead of offloading that shipment from passenger aircraft altogether. Congress may debate whether deployment of hardened cargo containers could provide an effective layer of security to protect against potential cargo bombings. A key policy issue in this debate is likely to be the possible implications of allowing suspicious cargo to travel on passenger aircraft even if they are secured in hardened cargo containers.

Risk-Based Prioritization as the Basis for Transportation Security Policy

In addition to the aviation specific recommendations discussed above, the 9/11 Commission also issued an overarching recommendation that risk-based priorities for protecting all transportation assets be established. Based on this assessment of risks, the 9/11 Commission recommended that TSA select the most practical and cost effective approaches for implementing defenses of transportation assets and develop a plan, budget, and funding to implement this effort. The plan, according to the 9/11 Commission, should assign roles and missions to federal, state, and local authorities, as well as to private stakeholders.

Strategic Plan for Aviation Security. The risk-based approach to aviation security is nothing new and has been viewed for some time as the principal policy tool for allocating limited resources. What is lacking, however, is a unified strategic plan for aviation security. To some extent, ATSA has set the strategy for aviation security following the terrorist attacks of September 11, 2001. The TSA's initial focus was on meeting the mandates of ATSA, particularly deploying air marshals and federal screeners. Now that TSA has achieved some level of normal operations, it should be better poised to focus on developing a more formal strategy for national aviation security policy. Based on TSA's strategic approaches to date, particularly in addressing air cargo security needs, it is likely that a risk-based multi-layered approach to aviation security will form the core of future aviation security policy. This appears to be largely in step with what the 9/11 Commission is recommending.

In light of the 9/11 Commission recommendation, Congress may consider whether to formally task the TSA with developing a national strategy for aviation security that addresses funding needs, budgetary implications, and the appropriate roles of federal, local, and state authorities, and industry stakeholders. While some may argue that such a plan already exists in various TSA program plans and budget documents, others may argue that a more formal strategic planning document for aviation security needs to be developed.

Cooperation and Integration. While aviation security relies extensively on cooperation and the integration of shared responsibilities, challenges persist in defining roles and allocating resources for state and local participation and industry involvement. At airports, the local role is defined in the airport security program which is tailored for each airport location. Physical security of the airport site is ultimately the role of local jurisdictions carried out by airport operators, while TSA maintains the overall role of security oversight and enforcement as well as direct responsibility for passenger screening. The role of local governments, and in some cases state authorities, in aviation security often involves both law enforcement support for airport site security and law enforcement presence at screening checkpoints. Passenger air carriers must also participate in security through procedures and training for controlling access to aircraft and secured areas of airports, carrying out security inspections of aircraft, and so on. In air cargo and general aviation, security measures rely heavily on the direct participation of aircraft owners and operators, while the federal role is one of oversight and enforcement of aviation security requirements.

While implementing aviation security already involves federal, state, local, and industry participation, what appears to be lacking is a unified plan or strategy for: assigning roles and missions to each stakeholder based on careful consideration of logistics and costs; and adopting a systems approach to define how each element contributes to the overall security strategy. In light of the 9/11 Commission recommendation, Congress and the TSA may consider ways to improve the strategic planning, resource allocation, and integration of federal, state, local, and private-sector resources for aviation security. Congress and the TSA may also consider how the specific strategies and approaches to aviation security may be integrated with an overarching transportation security strategy that encompasses rail, maritime, and highway security as well and addresses logistics, funding, and resource allocation to meet security needs in all modes of transportation.