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Aviation, Committee on Transportation
and Infrastructure, House of
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NATIONAL
TRANSPORTATION
SAFETY BOARD

Progress Made in
Management Practices,
Investigation Priorities,
Training Center Use, and
Information Security, But
These Areas Continue to
Need Improvement

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Highlights of [GAO-08-652T](#), a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

Why GAO Did This Study

The National Transportation Safety Board (NTSB) plays a vital role in advancing transportation safety by investigating accidents, determining their causes, issuing safety recommendations, and conducting safety studies. To support its mission, NTSB's training center provides training to NTSB investigators and others. It is important that NTSB use its resources efficiently to carry out its mission. In 2006, GAO made recommendations to NTSB in most of these areas. In 2007, an independent auditor made information security recommendations. This testimony addresses NTSB's progress in following leading practices in selected management areas, increasing the efficiency of aspects of investigating accidents and conducting safety studies, increasing the utilization of its training center, and improving information security. This testimony is based on GAO's assessment of agency plans and procedures developed to address these recommendations.

What GAO Recommends

To assist the agency in continuing to strengthen its overall management as well as information security, GAO recommends that NTSB report the status of GAO recommendations to Congress annually, encrypt all laptops, and remove excessive access privileges for users' workstations. NTSB agreed with the recommendations.

To view the full product, including the scope and methodology, click on [GAO-08-652T](#). For more information, contact Gerald L. Dillingham, Ph.D. at (202) 512-2834 or dillingham@gao.gov.

NATIONAL TRANSPORTATION SAFETY BOARD

Progress Made in Management Practices, Investigation Priorities, Training Center Use, and Information Security, But These Areas Continue to Need Improvement

What GAO Found

NTSB has made progress in following leading management practices in the eight areas in which GAO made prior recommendations. For example, the agency has improved communication from staff to management by conducting periodic employee surveys, which should help build more constructive relationships within NTSB. Similarly, the agency has made significant progress in improving strategic planning, human capital management, and IT management. It has issued new strategic plans in each area. Although the plans still leave room for improvement, they establish a solid foundation for NTSB to move forward. However, until the agency has developed a full cost accounting system and a strategic training plan, it will miss other opportunities to strengthen the management of the agency.

NTSB has improved the efficiency of activities related to investigating accidents and tracking the status of recommendations. For example, it has developed transparent, risk-based criteria for selecting which rail, pipeline, hazardous materials, and aviation accidents to investigate at the scene. The completion of similar criteria for marine accidents will help provide assurance that NTSB is managing its resources in a manner to ensure a maximum safety benefit. Also, it is in the process of automating its lengthy, paper-based process for closing-out recommendations.

Although NTSB has increased the utilization of its training center—from 10 percent in fiscal year 2006 to a projected 24 percent fiscal year 2008—the classroom space remains significantly underutilized. The increased utilization has helped increase revenues and reduce the center's overall deficit, which declined from about \$3.9 million in fiscal year 2005 to about \$2.3 million in fiscal year 2007. For fiscal year 2008, NTSB expects the deficit to decline further to about \$1.2 million due, in part, to increased revenues from subleasing some classrooms starting July 2008. However the agency's business plan for the training center lacks specific strategies to achieve further increases in utilization and revenue.

NTSB has made progress toward correcting previously reported information security weaknesses. For example, in an effort to implement an effective information security program, the agency's Chief Information Officer is monitoring corrective actions and has procured and, in some cases, begun to implement automated processes and tools to help strengthen its information security controls. While improvements have been made, work remains before the agency is fully compliant with federal policies, requirements, and standards pertaining to information security, access controls, and data privacy. In addition, GAO identified new weaknesses related to unencrypted laptops and excessive user access privileges. Agency officials attributed these weaknesses to incompatible encryption software and a mission need for certain users. Until the agency addresses these weaknesses, the confidentiality, integrity, and availability of NTSB's information and information systems continue to be at risk.

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to testify before you today as you consider the reauthorization of the National Transportation Safety Board (NTSB). NTSB is a relatively small agency that has gained a worldwide reputation as a preeminent agency in conducting transportation accident investigations. With a staff of about 400 and a budget of \$84.8 million in fiscal year 2008, NTSB is charged with investigating every civil aviation accident in the United States and significant accidents in the other modes, determining the probable cause of these accidents, and providing recommendations to address safety issues identified during accident investigations and safety studies of multiple accidents. To support its mission, NTSB built a training academy that opened in 2003 and provides training to NTSB investigators and other transportation safety professionals.

While new transportation technologies and NTSB's safety recommendations have made transportation safer than ever, the expected increase in the demand for all transportation modes has the potential to increase the number of accidents, which could place a strain on the ability of NTSB to continue playing its vital role in transportation safety. As the nation's large and growing long-term fiscal imbalance demands a growing share of federal resources, making increases in the budgets of individual agencies uncertain, it is critical that NTSB use its resources in an efficient manner to carry out its safety mission and maintain its preeminent position. For this reason, in 2006, we conducted a broad review of the agency's management practices, examined how it carried out its activities related to accident investigations and safety studies, and analyzed whether its training center was cost-effective.¹ We made recommendations in each of these areas. In addition, in recent years, other entities have conducted reviews and made recommendations to NTSB related to information security practices. Our testimony addresses NTSB's progress in (1) following leading practices in management areas such as strategic planning, human capital management, and financial management; (2) increasing the efficiency of activities related to investigating accidents, issuing recommendations, and conducting safety studies; (3) increasing the utilization of its training center; and (4) responding to

¹ GAO, *National Transportation Safety Board: Progress Made, Yet Management Practices, Investigation Priorities, and Training Center Use Should Be Improved*. [GAO-07-118](#) (Washington, D.C.: Nov. 22, 2006).

recommendations from an independent information security audit. In discussing NTSB's progress in these areas, we will also provide views on several related provisions in the agency's reauthorization proposal.

Our testimony is based on our analysis of policies and procedures developed by NTSB in response to recommendations made by GAO and the independent audit, updates to information we reported in 2006, and our analysis of provisions in NTSB's reauthorization proposal. We considered NTSB to have made *limited progress* in implementing a recommendation when the agency was in the early planning stages and documents or milestones for actions did not exist or they did not follow leading practices. Recognizing that many recommendations may take considerable time and effort to fully implement, we considered NTSB to have made *significant progress* in implementing a recommendation if the agency had taken steps beyond the early planning stages toward addressing the concerns. In this case, documents or policies had been developed that, for the most part, followed leading practices. We considered NTSB to have *fully implemented* a recommendation when the agency had fully implemented plans or processes that followed leading practices. We undertook this work in response to a legislative mandate that we conduct an annual audit of NTSB.² Appendix I provides additional information on the recommendations discussed below.

NTSB Has Made Progress in Improving Many Management Practices, But Further Improvements are Needed in Training and Financial Management

Overall, NTSB has made progress in following leading management practices in the eight areas in which we made recommendations in 2006. Our recommendations are based on leading practices identified through our government wide work that are important for managing an agency. Although NTSB is a relatively small agency, such practices remain relevant. Figure 1 provides a summary of NTSB's progress in implementing our 12 management recommendations.

²The National Transportation Safety Board Reauthorization Act of 2006 (P.L. 109-443) requires GAO to conduct an annual review of NTSB.

Figure 1: Status of GAO's Recommendations Related to NTSB's Management

| Area | GAO recommendation | Status |
|-----------------------------|---|--------|
| Communication | Develop mechanisms to facilitate communication from staff to management | ● |
| Strategic planning | Develop a revised strategic plan | ◐ |
| Information technology (IT) | Develop an IT plan | ◐ |
| Knowledge management | Develop a knowledge management plan | ◐ |
| Organizational structure | Align organizational structure to implement strategic plan | ● |
| | Eliminate unnecessary management layers | ◐ |
| Human capital management | Develop a human capital plan | ◐ |
| Training | Develop a strategic training plan | ○ |
| | Develop a core curriculum for investigators | ○ |
| Financial management | Correct violation of the Anti-Deficiency Act related to purchasing accident insurance for employees on official travel ^a | ● |
| | Correct violation of the Anti-Deficiency Act related to agency's lease of the training center | ◐ |
| | Develop a full cost accounting system to track time employees spend on each investigation and in training | ○ |

Status key: ● Fully implemented ◐ Significant progress ○ Limited progress

Source: GAO.

^aWe did not make a recommendation regarding this violation of the act because we reported the violation in a Comptroller General's decision, and such decisions do not include recommendations. Nevertheless, a Comptroller General's decision that an agency has violated the Anti-Deficiency Act, in and of itself, suggests that the agency should correct the deficiency.

Among the areas that NTSB has made the most progress is improving communication from staff to management, which should help staff and management build more constructive relationships, identify operational and work-life improvements, and enable management to better understand and respond to issues faced by investigators and other staff. The agency managers have, for example, hosted brown bag lunches with staff to facilitate communication and conducted periodic surveys of employees to determine, among other things, their level of satisfaction and ways to improve communication. In addition, NTSB has made significant progress in improving its strategic planning and human capital management, and

progress in developing an information technology (IT) strategic plan. For example, NTSB has revised its strategic plan to follow some performance-based requirements, and it has developed strategic human capital and IT plans. Although these plans still offer room for improvement, they establish a solid foundation for NTSB to move forward, both broadly as an agency and specifically with respect to IT efforts.

In addition, NTSB has made significant progress in improving its knowledge management (i.e., a way for it to create, capture, and reuse knowledge to achieve its objectives). While the agency has adopted a strategy for knowledge management activities and hired a chief information officer (CIO) to implement policies and procedures on information sharing, until NTSB completes its strategic training plan, which NTSB has told us will include a knowledge management component, the implementation of NTSB's knowledge management strategy will be unclear.

To its credit, NTSB has taken some steps to improve its training activities, such as hiring a training officer in April 2007 and requiring all staff to complete individual development plans aimed at improving their capabilities in support of the agency's needs; however, NTSB does not expect to complete a strategic training plan until later this year. In addition, NTSB's core competencies and associated courses for its investigators lack sufficient information on the knowledge, skills, and abilities for each competency to provide assurance that the agency's training curriculum supports its mission.

NTSB has also improved some aspects of its financial management by correcting a violation of the Anti-Deficiency Act related to purchasing accident insurance for employees on official travel, making progress toward correcting another violation of the Act related to lease payments of its training center, and receiving an unqualified or "clean" opinion from independent auditors on its financial statements from fiscal years ending September 30, 2003, through 2007. However, NTSB has made limited progress in developing a full cost accounting system to track the time employees spend on each investigation and in training. It intends to request funding to begin this effort in fiscal year 2010. Without a full cost accounting system, project managers lack a comprehensive means to understand how staff resources are utilized and to monitor workload. Until NTSB improves its financial management and develops a strategic training plan, it will miss the opportunity to better understand how its limited resources are applied to activities that support the agency's

mission, such as accident investigation, as well as individual staff development.

In addition, a provision of NTSB's reauthorization proposal would exempt the agency from the Anti-Deficiency Act and allow it to incur obligations both for the acquisition and lease of real property in advance or in excess of an appropriation. If Congress decides to grant this exemption, we suggest more narrow authority that addresses NTSB's particular need to obtain a new lease for its headquarters when the current lease expires in 2010. For example, authority to enter into leases for up to a specified number of years using annual funds over the term of the lease would be a more appropriate option. Typically, federal agencies do not require such an exemption because they rent real property through the General Services Administration (GSA), which has realty specialists, staff knowledgeable about the leasing market, and experience in lease administration. As part of the fee that GSA charges agencies (7 percent for NTSB), agencies have the ability to walk away from a lease with 120 days notice. If NTSB does not lease through GSA and instead is granted delegation authority to deal directly with lessors, it might not have the 120-day agreement and would be responsible for all aspects of negotiating and administering its leases.

NTSB Has Made Improvements Related to Accident Investigation, But Its Safety Impact Could be Greater with More Safety Studies

NTSB has improved the efficiency of activities related to investigating accidents, such as selecting accidents to investigate and tracking the status of recommendations, but it has not increased its use of safety studies (see fig. 2). Since 1997, NTSB has issued about 2,400 recommendations. The agency has closed about 1,500 (63 percent) of those recommendations, and of those it closed, 88 percent were closed with the agency having taken acceptable action, while 12 percent were closed with an "unacceptable" status.

Figure 2: Status of Recommendations Related to NTSB’s Accident Investigation Mission and Safety Studies

| Area | Recommendation(s) | Status |
|---|---|--------|
| Accident selection | Develop agency orders for all modes articulating risk-based criteria for selecting which accidents to investigate | ● |
| Recommendation close-out | Computerize related documentation and use concurrent reviews | ● |
| Report development | Identify better practices in the agency and apply them to all modes | ● |
| Safety studies | Increase utilization of safety studies | ○ |
| Status key: ● Fully implemented ● Significant progress ○ Limited progress | | |

Source: GAO.

NTSB is required by statute to investigate all civil aviation accidents and selected accidents in other modes—highway, marine, railroad, pipeline, and hazardous materials. NTSB has improved its process for selecting accidents to investigate by developing transparent, risk-based criteria for selecting which rail, pipeline, and hazardous materials accidents to investigate and which aviation accidents to investigate at the scene, or remotely, in a limited manner. The completion of its effort to develop similar criteria for marine accidents will help provide assurance and transparency that the agency is managing investigative resources in a manner that ensures a maximum safety benefit. NTSB has also made significant progress in improving its recommendation close-out process by working to automate this process by the end of this fiscal year. Completion of the automation should help speed the process and aid the expedient delivery of information about recommendation status to affected agencies. In addition, NTSB has begun to identify and share best practices for accident investigations among investigators in all transportation modes. These activities, when fully implemented, will help to ensure the effective and efficient use of agency resources. In contrast, NTSB has not increased its utilization of safety studies, which provide analyses of multiple accidents and usually result in safety recommendations. NTSB officials told us that the agency does not have enough staff to increase the number of safety studies and, therefore, they hope to identify more cost effective ways to conduct the studies. We believe that greater progress in this area, which could result in more safety recommendations, would improve NTSB’s impact on safety.

Figure 3: NTSB Investigators at an Accident Site



Source: NTSB.

NTSB's reauthorization proposal seeks to make several changes to the agency's accident investigation process that have the potential to expand the scope of the agency's authority. For example, the proposal would expand the definition of accidents to include events that affect transportation safety, but do not involve destruction or damage. It is unclear if this new authority would expand NTSB's workload, since "events" are not defined in the proposal, unlike "accidents" and "incidents," which NTSB already investigates and are defined in regulation. In addition, NTSB has not explained the criteria for identifying events to investigate. Without explicit criteria, the agency cannot be assured it is making the most effective use of its resources.

NTSB Has Made Progress in Increasing the Utilization of the Training Center, But the Facility Remains Underutilized

While NTSB has taken steps to increase the utilization of the training center and to decrease the center's overall deficit, the classroom space remains significantly underutilized. The agency increased utilization of classroom space in the training center from 10 percent in fiscal year 2006 to 13 percent in fiscal year 2007. In addition, NTSB is finalizing a sublease agreement with the Department of Homeland Security to rent approximately one-third of the classroom space beginning July 1, 2008, which would help increase utilization of classroom space to 24 percent in fiscal year 2008. Further, in 2008, NTSB expects to deliver 14 core investigator courses at the training center. While we do not expect any classroom space ever to be 100 percent utilized, we believe a 60 percent utilization rate for training center classrooms would be reasonable, based on our knowledge of similar facilities.

The agency's actions to increase utilization also helped increase training center revenues from about \$630,000 in fiscal year 2005 to about \$820,000 in fiscal year 2007. By simultaneously reducing the center's expenses—for example, by reducing the number of staff working at the center—NTSB reduced the training center's annual deficit from about \$3.9 million to about \$2.3 million over the same time period. We believe these actions to increase utilization and their impact on the financial position of the training center are positive steps and provide some progress toward addressing our recommendations (see fig. 4).

Figure 4: Status of Recommendations Related to Training Center Utilization

| Recommendation | Status |
|--|--------|
| Maximize the delivery of core investigator curriculum at its training center | ○ |
| Develop plans to increase utilization of the training center | ○ |

Status key: ● Fully implemented ○ Significant progress ○ Limited progress

Source: GAO.

In addition, for fiscal year 2008, NTSB's March 2008 business plan for the training center estimates that revenues will increase by about \$570,000 to about \$1.4 million and expenses will be \$2.6 million, leaving a deficit of about \$1.2 million. The increase in revenues is due primarily to subleasing all available office space at the training center to the Federal Air Marshals starting in September 2007 for \$479,000 annually. According to agency

officials, the projected deficit is no more than they would pay to provide training and store accident wreckage somewhere else,³ but as discussed in detail in appendix I, we do not believe that the plan provides enough information to support this conclusion.

Going forward, however, the agency's business plan for the training center lacks specific strategies to explain how further increases in utilization and revenue enhancement can be achieved. According to agency officials, they do not believe further decreases in the deficit are possible. However, without strategies to guide its efforts to market its classes and the unused classrooms, NTSB may be missing further opportunities to improve the cost-effectiveness of the center.

NTSB Has Made Progress in Implementing Information Security-Related Recommendations, But Weaknesses Remain

Overall, NTSB has made progress in resolving or addressing weaknesses identified in an independent external audit of NTSB's information security program, as required by the Federal Information Security Management Act of 2002 (FISMA).⁴ This evaluation, which was performed for fiscal year 2007 made eight recommendations to NTSB to improve compliance with FISMA, strengthen system access controls, and take steps to meet the requirements of the Privacy Act and related guidance by the Office of Management and Budget (OMB). Regarding FISMA compliance, NTSB made important progress by, among other things, hiring a contractor to perform security testing and evaluation of its general support system—an interconnected set of information resources, which supports the agency's two major applications. Although the contractor identified 113

³ The training center contains a large area that houses reconstructed wreckage from TWA 800, damaged aircraft, and other wreckage.

⁴ The Federal Information Security Management Act of 2002 (FISMA) requires that each agency shall have performed an independent evaluation of the information security program and practices of that agency to determine their effectiveness. Agencies that do not have an Inspector General, such as the National Transportation Safety Board (NTSB), shall engage an independent external auditor to perform the evaluation. NTSB contracted with Leon Snead & Company to perform the independent external audit. See Leon Snead & Company, P.C., *National Transportation Safety Board: Compliance with the Requirements of the Federal Information Security Management Act, Fiscal Year 2007* (Sept. 24, 2007). The audit, which was performed for fiscal year 2007 and submitted to OMB, as required by FISMA, identified weaknesses in NTSB's compliance with FISMA requirements and included an assessment of the agency's actions to address recommendations in prior year FISMA reports. Those prior reports include U.S. Department of Transportation, Office of Inspector General, *Information Security Program: National Transportation Safety Board*, Report No. FI-2006-001 (Washington, D.C.: Oct. 7, 2005); and *Information Security Program: National Transportation Safety Board*, Report No. FI-2007-001 (Washington, D.C.: Oct. 13, 2006).

vulnerabilities which collectively place information at risk, NTSB has documented these vulnerabilities in a plan of action and milestones. NTSB officials stated that they have resolved many of the vulnerabilities and have actions under way to address the remaining vulnerabilities. Figure 5 shows NTSB’s progress specific to each of the recommendation made in the independent evaluation.

Figure 5: Status of Recommendations from an Independent Evaluation

| Information security area | Recommendation | Status |
|---------------------------|---|--------|
| FISMA | Ensure that the CIO monitors all key corrective actions and provides the necessary funding and human resources | ● |
| Access controls | Remove access authorities to NTSB’s systems from personnel who are no longer NTSB employees | ● |
| | Maintain documentation supporting the initial access granted to a user | ● |
| | Develop detailed operational procedures to guide system security officers and system owners in the process of recertifying users | ○ |
| | Develop a process to properly analyze and complete the annual recertification of users’ access authorities | ○ |
| | Implement a control to automatically suspend an account after a period of non-use | ○ |
| Privacy Act | Update the plan of action and milestones to reflect the current status of NTSB’s actions to address Privacy Act and OMB Memoranda | ● |
| | Comply with requirements of the Privacy Act and policy set forth by OMB Memoranda | ○ |

Status key: ● Fully implemented ● Significant progress ○ Limited progress

Source: GAO.

In addition to the weaknesses addressed in these recommendations, our limited review of NTSB’s information security controls identified two new weaknesses regarding unencrypted laptop computers and excessive access privileges on users’ workstations. Federal policy requires agencies to encrypt, using only National Institute of Standards and Technology (NIST) certified cryptographic modules, all data on mobile computers/devices that contain agency data unless the data are determined not to be sensitive by the agency’s Deputy Secretary or his/her designate. However, according to NTSB officials, the agency has not encrypted data on 184 of 383 of its laptop computers. As a result, agency data on these laptops are at increased risk of unauthorized access and

unauthorized disclosure. According to NTSB officials, the hardware on these laptops is not compatible with NTSB's encryption product. To help mitigate the risk, NTSB officials stated that employees in the agency's telework program use encrypted laptops and that non-encrypted laptops are to remain in the headquarters building. NTSB officials stated that they have ongoing efforts to identify and test compatible encryption software for these laptop computers. Until NTSB encrypts data on its laptops, agency data will remain at increased risk of unauthorized access and unauthorized disclosure.

With regard to access, NTSB has inappropriately granted excessive access privileges to users. Users with local administrator privileges on their workstations have complete control over all local resources, including accounts and files, and have the ability to load software with known vulnerabilities, either unintentionally or intentionally, and to modify or reconfigure their computers in a manner that could negate network security policies as well as provide an attack vector into the internal network. Accordingly, industry best practices provide that membership in the local administrators' groups should be limited to only those accounts that require this level of access. However, NTSB configures all users' workstations with these privileges in order to allow investigators the ability to load specialized software needed to accomplish their mission. As a result, increased risk exists that these users could compromise NTSB's computers and internal network. NTSB officials stated that they are planning to deploy standard desktop configurations, which they believe should address this vulnerability; however, the agency has not yet provided a timeframe when this will be completed. In the meantime, the agency asserts that it continuously monitors and scans workstations for vulnerabilities and centrally enforces the deployment and use of local firewall applications. Until NTSB takes action to remove or limit users' ability to load software and modify configurations on their workstations, the agency is at increased risk that its computers and network may be compromised. We believe that by fully resolving the weaknesses described in the 2007 FISMA evaluation and addressing the newly identified weaknesses, NTSB can decrease risks related to the confidentiality, integrity, and availability of its information and information systems.

Conclusions

While NTSB has made progress in improving its management processes and procedures, the full implementation of effective management practices are critical to NTSB being able to carry out its accident investigation mission and maintain its preeminent reputation in this area. Further, until NTSB protects agency data and limits users' access to its

systems, its information and information systems are at increased risk of unauthorized access and unauthorized disclosure. For continuing Congressional oversight, it is important that Congress have updated information on challenges that the agency faces in improving its management. While NTSB is required to submit an annual report on information security, there is no similar reporting requirement for the other management challenges.

Recommendations for Executive Action

To assist NTSB in continuing to strengthen its overall management of the agency as well as information security, we are making three recommendations to the Chairman of the National Transportation Safety Board. To ensure that Congress is kept informed of progress in improving the management of the agency, we recommend that the Chairman (1) report on the status of GAO recommendations concerning management practices in the agency's annual performance and accountability report or other congressionally approved reporting mechanism.

We also recommend that the Chairman direct NTSB's Chief Information Officer to (2) encrypt information/data on all laptops and mobile devices unless the data are determined to be non-sensitive by the agency's deputy director or his/her designate and (3) remove user's local administrative privileges from all workstations except administrators' workstations, where applicable, and document any exceptions granted by the Chief Information Officer.

Agency Comments

We provided NTSB a draft of this statement to review. NTSB agreed with our recommendations and provided technical clarifications and corrections, which we incorporated as appropriate.

Scope and Methodology

To determine the extent to which NTSB has implemented the recommendations we issued in 2006, we reviewed NTSB's strategic plan, IT strategic plan, draft human capital strategic plan, training center business plan, and office operating plans. To obtain additional information about these documents and other efforts to address our recommendations we interviewed NTSB's Chief Information Officer, Chief Financial Officer, General Counsel, and other agency officials as well as representatives from NTSB's employees union. To determine the extent to which NTSB has implemented other auditors' recommendations related to information security, we reviewed work performed in support of the fiscal year 2007 FISMA independent evaluation, as well as FISMA independent evaluations performed by the Department of Transportation's Office of

Inspector General in 2005 and 2006. We obtained evidence concerning the qualifications and independence of the auditors who performed the 2007 FISMA review, and determined that the scope, quality, and timing of the audit work performed by this audit supported our audit objectives. In addition, we reviewed agency documents, and interviewed agency officials, including information security officials. We compared evaluations presented in audit documentation with applicable OMB and NIST guidance, and the Federal Information Security Management Act legislation. We also conducted a limited review of security controls on NTSB's information systems. We considered NTSB to have made *limited progress* in implementing a recommendation when the agency was in the early planning stages and documents or milestones for actions did not exist or they did not follow leading practices. Recognizing that many recommendations may take considerable time and effort to fully implement, we considered NTSB to have made *significant progress* in implementing a recommendation if the agency had taken steps beyond the early planning stages toward addressing the concerns. In this case, documents or policies had been developed that, for the most part, followed leading practices. We considered NTSB to have *fully implemented* a recommendation when the agency had fully implemented plans or processes that followed leading practice.

This work was conducted in accordance with generally accepted government auditing standards between October 2007 and April 2008. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Contacts and Acknowledgments

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Appendix I: Additional Information on Prior Recommendations Issued to NTSB by GAO and an Independent Auditor

Management-Related Recommendations

Communication

What Was Found

In 2006, we found that NTSB had taken positive steps to improve communications from senior management to staff, such as periodically sending e-mails to all staff to share information on new developments and policies. However, the agency lacked upward communications mechanisms—such as town hall meetings, regular staff meetings, and confidential employee surveys—which are central to forming effective partnerships within the organization.

What Was Recommended

To improve agency communications, we recommended that NTSB develop mechanisms that will facilitate communication from staff level employees to senior management, including consideration of contracting out a confidential employee survey to obtain feedback on management initiatives.

Our Assessment of NTSB's Progress

NTSB has fully implemented this recommendation. NTSB management officials have put in place processes to improve communication within the agency, and NTSB union officials told us that they believe that upward communication has improved as a result. For example, managers and Board members hold periodic meetings with staff, such as brown bag lunches; conduct outreach visits to regional offices; hold "town-hall" meetings in which NTSB employees ask questions of the managing director; and conduct meetings with union leadership to provide information on upcoming actions by the agency and to allow union leaders the opportunity to pose questions to management.

In addition, the agency has formed two bodies comprising representatives from management and staff intended to enhance internal communication, including upward communication. One body is comprised of employees from NTSB's administrative offices, and the other from NTSB's program offices. In addition, NTSB has begun conducting several periodic surveys of employees, including (1) a survey to measure staff satisfaction with internal communications; (2) a survey to obtain employees' views on the mission statement and goals that NTSB proposed for its revised strategic plan; (3) four separate surveys to measure employee satisfaction with services provided by NTSB's administrative, human resources, and acquisition divisions and NTSB's health and safety program; and (4) a biennial survey to obtain employee feedback on NTSB's human resources efforts. This latter survey supplements—by being conducted during alternating years—the Office of Personnel Management's biennial survey of federal employees that measures employees' perceptions of the extent to which conditions characterizing successful organizations are present in their agencies. NTSB officials told us that because the communications survey indicated a need for NTSB's individual offices to hold more frequent staff meetings, the agency has established a goal for fiscal year 2008 for each of its offices to achieve 75 percent of staff being either satisfied or very satisfied with their office staff meetings.

Strategic Planning

What Was Found

In 2006, we found that NTSB's strategic plan, issued in December 2005 for fiscal years 2006 through 2010, generally did not follow performance-based strategic planning requirements in the Government Performance and Results Act of 1993 (GPRA)¹ and related guidance in the Office of Management and Budget's Circular A-11.

As required by GPRA, the plan had a mission statement, four general goals and related objectives, and mentioned key factors that could affect the agency's ability to achieve those goals. However, the goals and objectives in the plan did not have sufficient specificity to know whether they had been achieved, and the plan lacked specific strategies for achieving those goals, including a description of the operational processes, skills and technology, and the resources required to meet the goals and objectives as mandated by GPRA. Without a more comprehensive strategic plan, NTSB could not align staffing, training, or other human resource management to its strategic goals or align its organizational structure and layers of management with the plan.

What Was Recommended

To improve agency performance in the key functional management area of strategic planning, we recommended that NTSB develop a revised strategic plan that follows performance-based practices.

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation. NTSB issued a revised strategic plan in February 2007 for fiscal years 2007 through 2012. The revised plan more closely follows GPRA's performance-based requirements than did the previous plan, but it still does not fully follow several important requirements. (See table 1.)

Table 1: Extent to Which NTSB's Previous and Revised Strategic Plans Follow GPRA Elements

| GPRA elements | Follows GPRA elements? | |
|--|------------------------|--------------|
| | Previous plan | Current plan |
| Mission statement | Yes | Yes |
| General goals and objectives | No | Partially |
| Approaches or strategies to achieve goals and objectives | No | Yes |
| Relationship between general goals and annual goals | No | Yes |
| External factors | Yes | Yes |
| Program evaluations | No | Yes |
| 5-year time frame | Yes | Yes |
| Stakeholder involvement | No | Partially |

¹P.L. 103-62.

The revised plan improves upon the previous plan by

- expressing most goals with sufficient specificity to enable a future assessment of whether they were achieved;
- including strategies for achieving 15 of 17 goals and objectives (NTSB describes strategies for achieving the other two goals in its annual operating plans), indicating that agency offices will establish annual performance goals designed to measure progress in achieving general goals of the revised plan;
- detailing the use of program evaluations to establish or revise goals and objectives;
- incorporating input that NTSB solicited from internal stakeholders (agency management and employees);
- indicating that agency offices will establish annual performance goals designed to measure progress in achieving general goals of the revised plan;
- detailing the use of program evaluations to establish or revise goals and objectives; and
- incorporating input that NTSB solicited from internal stakeholders (agency management and employees).

The revised plan does not fully follow two other GPRA requirements:

- The plan does not incorporate two of the five agency mission areas in its goals and objectives.² NTSB officials told us that it chose to cover these two mission areas in the annual operating plans of the responsible offices because the areas are not the primary activity of the agency. Nevertheless, GPRA requires strategic plans to cover all mission areas.
- Although NTSB officials told us that the agency addressed concerns from Congress in its revised plan, the agency did not obtain comments on a draft of the plan from Congress. Nor did NTSB consult with other external stakeholders, such as the federal and state transportation agencies to which it addresses many of its recommendations. NTSB officials told us that they do not believe it would be appropriate to consult with these agencies, which sometimes prefer not to implement NTSB's recommendations. Nevertheless, GPRA requires agencies, when developing a strategic plan, to "solicit and consider the views and suggestions of those entities potentially affected by or interested in the plan."

²The two mission areas are (1) the performance of fair and objective airman and mariner certification appeals and (2) the assistance of victims of transportation accidents and their families.

Information Technology

What Was Found

In 2006, we found that NTSB was minimally following leading information technology (IT) management practices. NTSB did not have a strategic plan for IT, and it had not developed an enterprise architecture for modernizing its IT systems. It also lacked an investment management process to control and evaluate the agency's IT investment portfolio. NTSB did not have acquisition policies for IT, such as project planning, budgeting and scheduling, requirements management, and risk management. These shortcomings suggested that NTSB was not ensuring that its management of information technology was aligned to fully and effectively support its mission.

What Was Recommended

To improve agency performance in IT management, we recommended that NTSB develop plans or policies for IT. The IT plan should include a strategy to guide IT acquisitions.

Our Assessment of NTSB's Progress

NTSB has made progress in implementing this recommendation. In August 2007, NTSB issued an IT strategic plan that takes the following steps to address the concerns that led to the recommendation:

- It establishes goals and milestones for developing an enterprise architecture by 2012. (In November 2007, NTSB hired an enterprise architect to lead this effort.)
- It includes a draft investment management process.
- It establishes goals for implementing key aspects of the investment management process by 2008 and the full process by 2012.
- It establishes the goal of reaching Capability Maturity Model Integration³ level 2 (the level at which IT acquisitions and development can be said to be "managed" rather than "chaotic") by 2012.

To fully implement our recommendation, NTSB needs to improve one important aspect of its IT strategic plan. Although other GAO work and NTSB's IT strategic plan stress the importance of aligning IT with agency strategic goals, the IT strategic plan is not well aligned with the agency's strategic plan. Specifically, the IT plan does not address NTSB's two top strategic priorities, namely (1) accomplishing objective investigations of transportation accidents to identify issues and actions that improve transportation safety and (2) increasing the agency's impact on the safety of the transportation system. NTSB officials told us that the agency is improving its IT in ways that support these goals. For example, they said that efforts to develop a project tracking system and upgrade its investigation docket system support the first goal, and that the agency is redesigning its Web site and improving its Freedom of Information Act information system in support of the second goal.

³Carnegie Mellon University's Software Engineering Institute, recognized for its expertise in software and system processes, has developed the Capability Maturity Model® Integration (CMMIsm) and a CMMI appraisal methodology to evaluate, improve, and manage system and software development processes. The CMMI model and appraisal methodology provide a logical framework for measuring and improving key processes needed for achieving quality software and systems.

Knowledge Management

What Was Found

In 2006, we found that NTSB was minimally following leading knowledge management practices. NTSB did not have a knowledge management initiative or program and lacked a chief information officer to implement policies and procedures on information sharing.

What Was Recommended

To improve agency performance in knowledge management, we recommended that NTSB develop plans or policies for knowledge management.

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation. NTSB has taken the following steps to improve its knowledge management:

- It has issued an agency strategic plan and an IT strategic plan as well as other plans and policies that include knowledge management activities.
- It has made the deputy managing director responsible for knowledge management activities within the agency.
- It has hired a chief information officer to implement policies and procedures on IT and information sharing.

NTSB still needs to take the following steps to improve its knowledge management:

- It needs to revise its strategic plan and IT strategic plan to clearly identify which agency plans, activities, and goals pertain to management of agency knowledge.
- It needs to develop its strategic training plan, which NTSB officials told us will include a knowledge management component. Until NTSB develops this plan and revises the other two plans, its knowledge management activities pertaining to training will be unclear.

Organizational Structure

What Was Found

In 2006, we found that NTSB developed a draft agencywide staffing plan in December 2005 that followed several leading practices in workforce planning but lacked other leading practices such as a workforce deployment strategy that considers the organizational structure and its balance of supervisory and nonsupervisory positions.⁴ In addition, while managers were involved in the workforce planning process, employees were not. Employee input provides greater assurance that new policies are accepted and implemented because employees have a stake in their development.

What Was Recommended

To avoid excess organizational layers and to properly balance supervisory and nonsupervisory positions, we recommended that NTSB align its organizational structure to implement its strategic plan. In addition, we recommended that NTSB eliminate any unnecessary management layers.

Our Assessment of NTSB's Progress

NTSB has fully implemented our recommendation to align its organizational structure to implement NTSB's revised strategic plan. NTSB's office operating plans describe how each office serves the NTSB's mission as defined in its mission statement. Further, the plans align their offices' respective performance objectives, and actions addressing such objectives, to strategic goals in NTSB's revised strategic plan.

NTSB has made significant progress in implementing our recommendation to eliminate unnecessary management layers. For example, to streamline the management structure in the Office of Aviation Safety, NTSB realigned the operations at 10 regional offices into four regions. This action simplified its reporting structure and made available a larger pool of accident investigators per region. NTSB union officials told us that the union has been involved in planning this consolidation. NTSB officials told us that the agency is not likely to consolidate any of its other modal offices because doing so would not allow the agency to eliminate supervisory positions since the supervisors in these offices spend a large portion of their time performing investigative duties.

⁴In workforce deployment, it is important to have human capital strategies to avoid excessive organizational layers and to properly balance supervisory and nonsupervisory positions.

Human Capital Management

What Was Found

In 2006, we found that NTSB partially followed leading human capital practices in workforce planning; performance management; and recruiting, hiring, and retention and minimally followed leading practices in training and diversity management. In December 2005, NTSB developed a draft agencywide staffing plan that followed several leading practices but lacked a workforce deployment strategy that considered the agency's organizational structure, its balance of supervisory and non-supervisory positions,⁵ and succession plans to anticipate upcoming employee retirement and workforce shifts. NTSB had issued performance plans for its senior managers and overall workforce. However, the goals in NTSB's strategic plan were not sufficiently specific for staff to know whether their performance was contributing to meeting those goals. NTSB had implemented several flexibilities to assist with recruiting and retention; however, NTSB had neither a strategic recruitment and retention policy nor any succession plans. Further, NTSB did not follow the leading practices of integrating diversity management into its strategic plan and having a formal mentoring program and advisory groups to foster employee involvement in diversity management.

What Was Recommended

To ensure that NTSB's human capital management is aligned to fully and effectively support its mission, we recommended that the agency develop a strategic human capital plan that is linked to its overall strategic plan. The human capital plan should include strategies on staffing, recruitment and retention, training, and diversity management.

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation. In April 2008, NTSB provided us its draft human capital plan, which includes strategies for addressing eight human capital objectives included in NTSB's revised strategic plan. However, these strategies do not always have clear linkages to the strategic plan. For example, the draft human capital plan objective and strategies for attracting well-qualified applicants to critical occupations clearly aligns with the revised strategic plan objective of maintaining a competent and effective investigative workforce. However, the draft human capital plan objective and strategies for monitoring execution of human capital strategic objectives does not align with the revised strategic plan objective of project planning; while the strategies lay out the provision of annual updates regarding the human capital plan, they do not specifically address the development of a project plan or its evaluation.

The draft human capital plan incorporates several strategies on enhancing the recruitment process for critical occupations, and addresses succession management through several courses of action, such as implementing operations plans on executive leadership and management development. While the plan cites recruiting and retaining a diverse workforce, its strategies address recruitment but not other leading practices of diversity management that could contribute to retaining a diverse workforce, such as mentoring, employee involvement in diversity management, or succession planning. For example, one strategy involves the use of the NTSB diversity resource guide,

⁵These principles were discussed in: GAO, *Executive Agency Management Diagnostic Survey (draft)*.

which narrowly focuses on the recruitment of underrepresented groups, and does not address other leading practices of diversity management. Another strategy mentioned related to diversity involves the incorporation of diversity objectives into NTSB's office operating plans, which also focus on recruitment.

NTSB officials told us that the agency's diversity management efforts focus on recruiting because NTSB needs to attract a more diverse workforce. The officials also told us that because the agency has a low attrition rate, it does not put as much emphasis on retention of a diverse workforce. We agree that it is important to attract a diverse workforce, however, a low attrition rate does not assure a work environment that retains and promotes a diverse workforce.

Training

What Was Found

In 2006, we found that NTSB was minimally following leading practices in training, which is a key area of human capital management.⁶ In particular, NTSB had neither developed a strategic training plan, nor had it identified the core competencies needed to support its mission and a curriculum to develop those competencies. Although NTSB staff annually identified what training they needed to improve their individual performance, as a result of not having a core curriculum that was linked to core competencies and the agency's mission, NTSB lacked assurance that the courses taken by agency staff provided the necessary technical knowledge and skills.

What Was Recommended

To improve agency performance in the key functional management areas of strategic and human capital planning, we recommended that NTSB develop a strategic training plan that is aligned with the revised strategic plan, identifies skill gaps that pose obstacles to meeting the agency's strategic goals, and establishes curriculum that would eliminate those gaps. In addition, we recommended that NTSB develop core investigator curriculum for each mode.⁷

Our Assessment of NTSB's Progress

NTSB has made limited progress in implementing our first recommendation. NTSB officials told us that later in 2008, the agency intends to complete a strategic training plan that is linked to the agency's strategic goals. To help develop the plan, NTSB plans to survey staff about their skill gaps and to develop a curriculum to eliminate those gaps. In fiscal year 2008, NTSB began requiring all staff to complete individual development plans aimed at improving their capabilities in support of organizational needs.⁸ NTSB also plans to use information gleaned from these plans in developing its strategic training plan. Once NTSB has completed the training plan and the curriculum, we will be able to assess the extent to which they address our recommendation.

NTSB has also made limited progress in implementing our second recommendation. Although NTSB has developed a list of core competencies and associated courses for investigators, the agency has not described the knowledge, skills, and abilities for each competency. We have previously reported that well-designed training and development

⁶Work on human capital management has shown the importance for agencies to develop a strategic approach to training their workforce, which involves establishing training priorities and leveraging investments in training to achieve agency results; identifying specific training initiatives that improve individual and agency performance; ensuring the effective and efficient delivery of training opportunities in an environment that supports learning and change; and demonstrating how training efforts contribute to improved performance and results.

⁷We further recommended that NTSB maximize the delivery of its investigator core curriculum at the training center, which is discussed later in this testimony.

⁸An individual development plan is a written plan, cooperatively prepared by the employee and his or her supervisor that outlines the steps the employee will take to develop knowledge, skills, and abilities in building on strengths and addressing weaknesses as he or she seeks to improve job performance and pursue career goals.

programs are linked to, among other things, the individual competencies staff need for the agency to perform effectively.⁹ Without such descriptions, NTSB does not have assurance that its core curriculum supports its mission. In addition, NTSB has not described the specialized competencies for its investigators in its various modes. However, the marine office plans to develop specialized core competencies and curriculum for its investigators in 2008, and NTSB's other modal offices plan to do so at some later date after evaluating their investigators' individual development plans. Because these curricula are important to help NTSB effectively meet its mission, we believe that NTSB's senior managers and training managers should participate in the development and review of the curricula and the underlying competencies.

To its credit, NTSB has taken or plans the following additional steps to improve its training:

- In April 2007, the agency hired a training officer, who is responsible for helping to identify training needs, developing related curriculum, and evaluating training courses.
- In fiscal year 2007, it began to encourage senior investigators to increase their participation in non-traditional training opportunities, such as spending time aboard oil tankers and in flight simulators to learn about marine and aviation operations, respectively.
- In fiscal year 2008, it began requiring all staff to complete at least 24 hours of training per year.
- In fiscal year 2008, it plans to evaluate the extent to which individual training courses resulted in desired changes in on-the-job behaviors for each of the 27 courses it plans to offer at the training center.

⁹GAO, *Human Capital: A Guide for Assessing Strategic Training and Development Efforts in the Federal Government*, [GAO-04-546G](#) (Washington, D.C.: Mar. 2004).

Financial Management—Violations of the Anti-Deficiency Act

What Was Found

In 2006, we found that NTSB had violated the Anti-Deficiency Act because it did not obtain budget authority for the net present value of the entire 20-year lease for its training center lease obligation at the time the lease agreement was signed in 2001. This violation occurred as a result of NTSB classifying the lease as an operating lease rather than a capital lease. NTSB realized the error in 2003 and reported its noncompliance to Congress and the President. NTSB had proposed in the President's fiscal year 2007 budget to remedy this violation by inserting an amendment in its fiscal year 2007 appropriation that would allow NTSB to fund this obligation from its salaries and expense account through fiscal year 2020. However, this proposal was removed once the budget went to the House and Senate Appropriations Committees, leaving the violation uncorrected.

In 2007, NTSB believed it had violated the Anti-Deficiency Act on a separate matter, namely the improper use of its appropriated funds to purchase accident insurance for its employees on official travel, and it asked GAO for an opinion on the matter. We determined that this was a violation because NTSB did not have an appropriation specifically available for such a purpose, and the payments could not be justified as a necessary expense.¹⁰

What Was Recommended

We recommended that NTSB should identify and implement actions to correct its violation of the Anti-Deficiency Act related to its lease of the training center. These actions could include obtaining a deficiency appropriation for the full costs of the lease, renegotiating or terminating the training center lease so that it complies with the Anti-Deficiency Act, or obtaining authority to obligate lease payments using annual funds over the term of the lease.

We did not make a recommendation regarding NTSB's other violation of the act because we reported that violation in a Comptroller General's decision and such decisions do not include recommendations. Nevertheless, a Comptroller General's decision that an agency has violated the Anti-Deficiency Act, in and of itself, suggests that the agency should correct the deficiency.

Our Assessment of NTSB's Progress

NTSB has made significant progress in addressing its violation of the Anti-Deficiency Act related to lease payments of its training center. NTSB officials told us that because congressional appropriators do not want to appropriate funds for the remaining lease payments in a single appropriation law, NTSB worked with Congress to obtain authority to use its appropriations for fiscal years 2007 and 2008 to make its lease payments during those periods. To avoid future violations, NTSB will need to continue to work with Congress to obtain similar authority in its future annual appropriations. In addition, NTSB officials told us that the agency has asked Congress to ratify the lease payments it made from 2001 through 2006.

¹⁰GAO, Decision of the Comptroller General of the United States, B-309715, September 25, 2007, National Transportation Safety Board—Insurance for Employees Traveling on Official Business.

NTSB has fully addressed its violation related to purchasing accident insurance for employees on official travel. In September 2007, NTSB reported the violation to Congress and the President, as required by the act. NTSB also successfully worked with Congress to remedy the violation through a fiscal year 2008 appropriation. NTSB cancelled the insurance policy, and NTSB officials told us that the agency has worked with Congress to obtain authority for future purchases of accident insurance. A bill to reauthorize the Federal Aviation Administration would provide NTSB with such authority.¹¹

Financial Management—Cost Accounting

What Was Found

In 2006, we found that NTSB had made significant progress in improving its financial management by hiring a Chief Financial Officer and putting controls on its purchasing activities. As a result of actions taken by NTSB, the agency received an unqualified or “clean” opinion from independent auditors on its financial statements for the fiscal years ending September 30 for the years 2003, 2004, and 2005. The audit report concluded that NTSB’s financial statements presented fairly, in all material respects, the financial position, net cost, changes in net position, budgetary resources, and financing in conformity with generally accepted accounting principles for the three years. However, without a full cost accounting system capable of tracking hours that staff spent on individual investigations, in training, or at conferences, NTSB lacked sufficient information to plan the allocation of staff time or to effectively manage staff workloads.

What Was Recommended

To improve agency performance in the key functional management area of financial management, we recommended that NTSB develop a full cost accounting system that would track the amount of time employees spend on each investigation and in training.

Our Assessment of NTSB’s Progress

NTSB has made limited progress in implementing this recommendation. Although NTSB routinely assigns a project code to many non payroll costs, its time and attendance system still does not allow the agency to routinely and reliably track the time that employees spend on each investigation or other activities, such as training. However, NTSB officials told us that the agency wants to add the ability to charge costs to projects (i.e., activities) and that it has discussed this addition with the provider of most of NTSB’s financial system needs—the Department of Interior’s (DOI) National Business Center. According to NTSB officials, this modification would enable direct recording by activity of hours worked and of corresponding payroll costs. NTSB officials also said that because the agency has not had sufficient funding to make this modification, it intends to request specific funding for this effort as part of its budget appropriation for fiscal year 2010. NTSB said that in the meantime, it will continue discussions with DOI and that it has begun to benchmark the planned modification to systems of agencies of comparable size. It anticipates that, once underway, DOI would work with NTSB to manage the implementation.

¹¹H.R. 2881.

Recommendations Related to NTSB's Accident Investigation Mission and Safety Studies

Accident Selection

What Was Found

In 2006, we found that for some transportation modes, NTSB had detailed, risk-based criteria for selecting which accidents to investigate, while for others it did not. For example, NTSB had criteria to select highway accidents for investigation based on the severity of the accident and amount of property damage. In contrast, NTSB did not have a documented policy with criteria for selecting rail, pipeline, and hazardous materials accidents. Instead, the decisions to investigate accidents were made by the office directors based on their judgment. As a result, for these modes, the agency lacked assurance and transparency that it was managing resources in a manner that ensured a maximum safety benefit. Such criteria were also important because NTSB did not have enough resources to investigate all accidents.

What Was Recommended

To make the most effective use of its investigation resources and increase transparency, we recommended that NTSB develop orders for all transportation modes that articulate risk-based criteria for determining which accidents would provide the greatest safety benefit to investigate or, in the case of aviation accidents, explain which accidents are investigated at the scene, or remotely, in a limited manner.¹²

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation. NTSB developed a transparent policy containing risk-based criteria for selecting which rail, pipeline, and hazardous materials accidents to investigate. This policy assigns priority to investigating accidents based on whether the accident involved a collision or derailment and whether it involved fatalities or injuries, among other factors. For marine accidents, NTSB has a memorandum of understanding with the U.S. Coast Guard that includes criteria for selecting which accidents to investigate. To enhance the memorandum of understanding, NTSB plans to consult with stakeholders and develop an internal policy on selecting marine accidents in 2008 once certain legal issues are resolved. In addition, NTSB has developed a transparent, risk-based policy explaining which aviation accidents are investigated at the scene, or remotely, in a limited manner, depending on whether they involve a fatality and the type of aircraft.

¹²NTSB conducts all of its marine, rail, pipeline, hazardous material, and highway accident investigations at the scene of the accident. In contrast, for aviation accidents, NTSB conducts on-scene investigations of major accidents and more limited investigations of accidents not designated as major. NTSB defines a major accident as one that involves an issue related to a current safety study or special investigation, impacts public confidence or transportation safety in a significant way, or is catastrophic.

Recommendation Close-Out

What Was Found

In 2006, we found that NTSB's process for changing the status of recommendations was paper-based and used sequential reviews, which slowed the process and prevented expedient delivery of information about recommendation status to affected agencies.

What Was Recommended

We recommended that NTSB improve the efficiency of its process for changing the status of recommendations by computerizing the documentation and implementing concurrent reviews.

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation. NTSB recently completed a pilot program that involved electronic distribution of documents related to recommendation status. The results of that test are helping to guide development of an information system intended to help the agency manage its process for changing the status of recommendations. NTSB aims to fully implement the system by the end of fiscal year 2008. NTSB said that the system is being developed to support concurrent reviews. When fully implemented, this system should serve to close our recommendation.

Report Development

What Was Found

NTSB faced challenges to efficiently develop its reports; partly as a result, its investigations of major accidents routinely took longer than 2 years to complete. These challenges included multiple revisions of draft investigation reports at different levels in the organization, excessive workloads for writer/editors, and too few final layout and typesetting staff. NTSB had taken several actions aimed at shortening report development time, such as reemphasizing its policy on holding report development meetings to obtain early buy-in on report messages and holding modal directors accountable for specific issuance dates. We also identified practices in certain offices, such as the use of a project manager or deputy investigator-in-charge to handle report production, which had the potential to improve the efficiency of the agency's report development process if used by all modal offices.

What Was Recommended

To enhance the efficiency of its report development process, we recommended that NTSB identify better practices in the agency and apply them to all modes. NTSB should consider such things as using project managers or deputy investigators-in-charge in all modes, using incentives to encourage performance in report development, and examining the layers of review to find ways to streamline the process, such as eliminating some levels of review and using concurrent reviews as appropriate.

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation. NTSB examined and made several improvements to its report development process. For example, NTSB directed its office of safety recommendations and advocacy to provide comments on draft reports at the same time as other offices, instead of beforehand. NTSB estimates that this has reduced the time it takes to develop a report by 2 weeks. NTSB officials also told us that the agency established and filled a permanent position with a primary responsibility of quality assurance in the report development process. In addition, NTSB officials told us that the agency held a comprehensive training program in February 2008 for investigators in charge to learn about and share best practices across NTSB's modal offices related to investigations and report development. NTSB also took or is taking the following steps to improve the efficiency with which Board members are able to review and approve draft reports:

- It is relying more on electronic rather than paper distribution of draft reports.
- It reduced the time allotted to Board members to concur or non-concur with staff responses to a Board member's proposed revisions from up to 20 days to up to 10 days.
- It is developing an information system to manage the process, which it aims to fully implement by the end of fiscal year 2008.

Aside from its highway office which was already doing so, NTSB's modal offices decided not to use project managers or deputy investigators-in-charge to lead report development because the offices did not believe that doing so would appropriately address their report development issues; NTSB did not provide any further explanation of the basis for this decision. NTSB officials told us that its office of marine safety has improved the efficiency and effectiveness of its report development process by shifting responsibility for writing reports from three writer/editors to investigators-in-charge; the office's one remaining writer/editor now focuses on editing. Finally, in December 2007, NTSB's office of railroad, pipeline, and hazardous materials safety hired a deputy chief in the railroad division who will be responsible for streamlining the division's report development process.

Safety Studies

What Was Found

In 2006, we found that in addition to its accident investigations, NTSB conducts studies on issues that may be relevant to more than one accident. These safety studies, which usually result in recommendations, are intended to improve transportation safety by effecting changes to policies, programs, and activities of agencies that regulate transportation safety. From 2000 to 2005, NTSB completed only four safety studies; NTSB officials told us that the number of safety studies it conducts is resource-driven. Industry stakeholders stated they would like NTSB to conduct more safety studies because the studies address NTSB's mission in a proactive way, allowing for trend analysis and preventative actions. NTSB officials recognized the importance of safety studies, and they said that they would like to find ways to reduce the time and resources required to complete the studies. We concluded that NTSB's limited use of safety studies to proactively examine and highlight safety issues may limit the effectiveness of its efforts to improve transportation safety.

What Was Recommended

To be more proactive in identifying and correcting safety problems before accidents occur, we recommended that NTSB increase its utilization of safety studies.

Our Assessment of NTSB's Progress

NTSB has made limited progress in implementing this recommendation. NTSB has not completed any safety studies since we made our recommendation and has only one study in progress. Although it has established a goal of developing and submitting to NTSB's Board for approval two safety study proposals per year, it does not have a goal related to completing safety studies. NTSB officials told us that the agency still does not have enough staff to increase its output of safety studies on its own. NTSB told us that it has therefore begun to place more emphasis on a number of alternative products to safety studies which address important safety issues but are not as resource intensive. In addition, NTSB is examining the potential of using contractors to perform certain aspects of safety studies, such as data collection, and conducting some studies in collaboration with other entities, such as the National Aeronautics and Space Administration, the Federal Aviation Administration, a national laboratory, and foreign accident investigation organizations.

Recommendations Related to Training Center Utilization

Core Investigator Curriculum

What Was Found

In 2006, we found that the training center was underutilized, with less than 10 percent of the available classroom capacity being used during fiscal years 2005 and 2006. This contributed to the training center not being cost-effective, as the combination of the training center's revenues and external training costs avoided by NTSB staff's use of the facility did not cover the center's costs.

What Was Recommended

We recommended that NTSB maximize the delivery of core investigator curriculum at its training center.

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation by scheduling 14 core investigator courses at its training center in fiscal year 2008. In addition, NTSB started a new workforce development curriculum intended to address competencies not directly related to investigate activity, such as information security and written communications. NTSB officials told us that since it began this curriculum, the frequency and attendance of classes has increased significantly, but we could not verify this statement.

Utilization of the Training Center

What Was Found

In 2006, we found that NTSB's training center was not cost-effective, as the combination of the training center's revenues and external training costs avoided by NTSB staff's use of the facility did not cover the center's costs. As a result, those portions of the training center's costs that were not covered by the revenues from tuition and other sources—approximately \$6.3 million in fiscal year 2004 and \$3.9 million in fiscal year 2005—were offset by general appropriations to the agency. While NTSB was generating revenues from other sources, such as renting training center space for conferences and securing contracts that allowed federal agencies to use training center space for continuity of operations in emergency situations, the training center was underutilized, with less than 10 percent of the available classroom capacity being used during fiscal years 2005 and 2006. NTSB lacked a comprehensive strategy for addressing this issue.

What Was Recommended

We recommended that NTSB develop a business plan and a marketing plan to increase utilization of the training center or vacate its training center. NTSB should determine the costs and feasibility of alternative actions such as adding more courses for NTSB staff, moving headquarters staff to the center, subleasing space to other entities, or buying out the lease.

Our Assessment of NTSB's Progress

NTSB has made significant progress in implementing this recommendation. For example, according to NTSB, it assessed the advantages and disadvantages of moving headquarters staff and functions to the training center but determined it was not cost effective. NTSB also told us that it determined that buying out the training center lease was not an available option. NTSB completed a draft business plan in March 2007 and a revised business plan in March 2008.¹³ We reviewed the 2007 draft plan and concluded that the overall strategy presented in the business plan to hire a vendor to manage and operate the training center was reasonable, but the plan provided too little rationale for its marketing and financial assumptions for us to assess the validity of this strategy. In July 2007, NTSB abandoned the strategy laid out in its business plan because it could not find a suitable vendor.

While certain aspects of the revised business plan have been improved over the previous plan, overall, the revised plan lacks key financial and marketing information that is essential to a business plan. For example, NTSB's revised business plan does not contain historical financial information or forecast financial information beyond fiscal year 2008¹⁴. Further, the plan does not describe assumptions included in the plan, such as the inclusion of imputed fees for NTSB students in NTSB's tuition revenues. In addition, although the revised business plan contains some goals, such as subleasing space to other federal entities and obtaining an

¹³On December 21, 2006, Congress passed Public Law 109-443, requiring NTSB to prepare a utilization plan for the training center and submit the plan to us for review and comment within 90 days of passage of the act.

¹⁴In our 2007 review of NTSB's draft business plan, we recommended that NTSB revise its business plan to include detailed statements of net costs, balance sheets, and cash flow statements for 3 historical and 5 forecast years.

additional continuity of operations agreement, the plan does not contain strategies for achieving these goals¹⁵ Further, while NTSB's revised business plan indicates that the training center is cost-effective if cost savings—such as avoided costs of renting outside space for one regional office and storage of the reconstructed wreckage of TWA flight 800—are accounted for. However, the plan does not provide enough information to support this conclusion. While we believe that NTSB is justified in offsetting expenses that the agency would incur in the absence of the training center, the plan does not explain how NTSB estimated the values of these offsets. The plan does not include a rationale for assuming that NTSB would have to maintain all 30,000 square feet of warehouse space in the absence of the training center, or that space for both its regional aviation investigation office and the warehouse would cost NTSB \$35 per square foot if rented elsewhere. In addition, it is not clear why certain items, such as the warehouse space rental, is included as an offset, while other items, such as savings for necessary accident investigation and family assistance training space needs, are not included as an offset. Finally, the plan lacks discussion of cost-saving alternatives, such as using space already available at NTSB headquarters for certain offset activities, such as select training courses. When asked about these shortfalls in the business plan, agency officials indicated that there was no flexibility in changing the configuration of the warehouse space, requiring the warehouse space to be considered an offset. In contrast, office and training space is included in the financial analysis due to its flexibility for expanded utilization. The agency did not comment on our other comments about the business plan.

NTSB has taken steps to increase utilization of the training center and to decrease the center's overall deficit, including the following:

- NTSB subleased all available office space at its training center to the Federal Air Marshal program at an annual amount of \$479,000.
- NTSB increased utilization of the training center's classroom space and the associated revenues from course fees and renting classroom and conference space. From fiscal year 2006 to fiscal year 2007, NTSB increased utilization of classroom space from 10 to 13 percent, and increased revenues by over \$160,000. NTSB officials expressed concerns with our calculation of utilization rates because they assumed that holiday weeks and other scheduling difficulties were not considered in the calculation. However, our analysis excluded holidays and Christmas week from the calculation.
- NTSB is finalizing a sublease agreement with the Department of Homeland Security (DHS), which is expected to rent approximately one-third of the classroom space beginning July 1, 2008. We estimate that this would help increase utilization of classroom space in fiscal year 2008 to 24 percent.
- NTSB is undertaking efforts to increase utilization of the training center's large area that houses wreckage used for instructional purposes, including the reconstructed wreckage of TWA flight 800, by seeking to acquire additional wreckage for instructional purposes.
- NTSB considered moving certain staff from headquarters to the training center, but halted these considerations upon subleasing all of the training center's available office space.
- NTSB decreased personnel expenses related to the training center, from about \$980,000 in fiscal year 2005 to \$470,000 in fiscal year 2007 by reducing the center's full-time equivalents from 8.5 to 3 over the same period.

As a result of these efforts, from fiscal year 2005 to 2007, training center revenues increased 29 percent while the center's overall deficit decreased by 41 percent. (Table

¹⁵ Rider 1 of NTSB's lease with George Washington University limits subleases and assignments to other agencies of the federal government. NTSB's General Counsel believes the lessor interprets the lease as limiting building use to (1) a government purpose that is transportation-related, educational, or a government administrative function, or (2) a use that is affiliated with the lessor.

2 shows direct expenses and revenues for the training center in fiscal years 2004 through 2007.) In fiscal year 2007, training center revenues nearly covered the center's operating expenses, not including lease costs. However, the salaries and other personnel-related expenses associated with NTSB investigators and managers teaching at the training center, which would be appropriate to include in training center costs, are not included. NTSB officials told us that they believe the investigators and managers teaching at the training center would be teaching at another location even if the training center did not exist. In 2006, we recommended that NTSB develop a full cost accounting system that would allow them to calculate these expenses.

Table 2: Direct Expenses and Revenues for the NTSB Training Center, Fiscal Years 2004 through 2007 (unaudited)

| | Fiscal year 2004 | Fiscal year 2005 | Fiscal year 2006 | Fiscal year 2007 |
|---|---------------------|---------------------|---------------------|---------------------|
| Expenses | | | | |
| Personnel related | \$1,011,717 | \$978,591 | \$688,716 | \$466,582 |
| Travel | \$24,428 | \$56,912 | \$31,009 | \$22,284 |
| Space rental ^a | \$2,521,440 | \$2,500,896 | \$2,221,430 | \$2,286,660 |
| Maintenance/repair of buildings ^b | \$706,279 | \$238,203 | \$23,151 | (\$4,215) |
| Contract services | \$2,204,880 | \$558,540 | \$287,873 | \$330,491 |
| Miscellaneous expenses ^c | \$42,258 | \$182,136 | \$57,099 | \$19,720 |
| Total expenses | \$6,511,003 | \$4,515,279 | \$3,309,277 | \$3,121,521 |
| Total earned revenue^d | \$258,760 | \$634,800 | \$651,191 | \$817,555 |
| Overall deficit | -\$6,252,243 | -\$3,880,479 | -\$2,658,086 | -\$2,303,966 |
| Deficit when space rental expense is excluded | -\$3,730,803 | -\$1,379,583 | -\$436,656 | -\$17,306 |

Source: GAO analysis of information from NTSB.

^aNTSB leases the training center from George Washington University under a 20-year lease that will expire in 2021.

^bThe amount reported in the maintenance and repair category during fiscal year 2007 includes a refund of \$28,377 to NTSB because of the reconciliation of the utility costs, as required by the lease.

^cMiscellaneous expenses such as telephone, mail, photography services, printing, office supplies and equipment.

^dEarned revenue includes imputed fees for NTSB students

However, even at the 24-percent utilization rate for fiscal year 2008 that we estimate would result from the DHS sublease, the training center classroom space would still be underutilized. If NTSB does not finalize this agreement, we estimate that only 15 percent of classroom space would be utilized during the fiscal year. While we do not expect any classroom space ever to be 100 percent utilized, we believe a 60 percent utilization rate for training center classrooms would be reasonable, based on our knowledge of similar facilities. Without a functional business plan, NTSB lacks a comprehensive strategy to address these challenges.

Recommendations Related to Information Security

Compliance with the Federal Information Security Management Act (FISMA)

What an Independent Auditor Found

In June 2007, NTSB reported that its information security program was a prior year material weakness¹⁶ that had not yet been corrected.¹⁷ An independent FISMA evaluation completed in September 2007 assessed NTSB's actions to address recommendations in prior year FISMA reports.¹⁸ The independent auditors reported that while NTSB continues to be in material non-compliance with FISMA, it had taken substantive corrective actions to address the material information security weaknesses identified in prior FISMA reports issued by the Department of Transportation, Office of Inspector General. Overall, the independent auditor reported that the corrective actions it observed, those underway or planned, if implemented timely and effectively, would further strengthen NTSB's information security program.

The assessment completed in September 2007 found that NTSB met two requirements of FISMA: 1) having in place policies and procedures to reduce risks to an acceptable level and 2) ensuring that the agency has adequately trained its personnel in IT security practices. However, NTSB partially met or did not meet FISMA and NIST requirements in the following six areas: 1) providing periodic assessments of risk, 2) documenting policies and procedures based on risk assessments, 3) developing and maintaining an IT security program, 4) periodically testing security controls, 5) carrying out remedial actions, and 6) having in place plans and procedures for continuity of operations.

What an Independent Auditor Recommended

Assure that the Chief Information Officer monitors all key corrective actions and provides necessary funding and human resources to accomplish these actions so that no further delays occur.

Our Assessment of NTSB's Progress

The agency has made progress in implementing this recommendation. For example, the Chief Information Officer has documented prior recommendations and newly identified vulnerabilities in a plan of action and milestones and is monitoring corrective actions to implement the recommendations and mitigate the vulnerabilities. Nevertheless, NTSB needs to take further actions to meet FISMA, OMB, and NIST guidance in the following four areas to help ensure an effective information security program:

- **Risk assessments:** Agencies are required to periodically assess the harm that could result if their information and information systems suffered unauthorized access, use, disclosure, disruption, modification, or destruction. NTSB has completed a risk

¹⁶U.S. Department of Transportation, Office of Inspector General, *Information Security Program: National Transportation Safety Board*, Report No. FI-2006-001 (Washington, D.C.; Oct. 7, 2005); and *Information Security Program: National Transportation Safety Board*, Report No. FI-2007-001 (Washington, D.C.; Oct. 13, 2006). See also Leon Snead & Company, P.C., *National Transportation Safety Board: Fiscal Year 2007*.

¹⁷National Transportation Safety Board, *Correspondence to President Bush*, June 30, 2007.

¹⁸Leon Snead & Company, P.C., *National Transportation Safety Board: Fiscal Year 2007*.

assessment of its general support system in February 2008. The general support system is an interconnected set of information resources, and it supports the agency's two major applications. In addition, a contract has been awarded to complete the risk assessments for the two major applications—the Accident Investigation System and the Lab Environment System, both of which the agency plans to complete by the end of September 2008. Until it assesses the risks associated with these two applications, NTSB cannot determine that the controls it has implemented for these two applications cost-effectively reduce risk to an acceptable level.

- Information security planning: To ensure effective security protection of information resources, agencies must develop plans describing how they will provide security for their systems, networks, and facilities. According to NIST, the security plan is to provide, among other things, an overview of the security requirements of the system and describe the controls that are in place or planned for meeting those requirements. NTSB has completed the security plan for the general support system, but development of security plans for its two major applications are not scheduled to be developed until after April 2008. Until these plans are completed, NTSB will not have in place a documented, structured process for adequate, cost-effective security protection for these systems.
- Periodic testing: Information security policies, procedures, practices, and controls should be tested periodically to ensure their effectiveness. These tests and evaluations should be conducted at least annually and include testing of the management, operational, and technical controls of every system identified in the systems inventory. In 2007, NTSB hired a contractor to perform a security test and evaluation of its general support system. The contractor identified 113 information security vulnerabilities, which collectively increased the risk of unauthorized disclosure and modification of agency information. NTSB has documented these vulnerabilities in a plan of action and milestones. According to NTSB officials, they have resolved many of the vulnerabilities, and are currently addressing the remaining ones. Because NTSB has not finished addressing the vulnerabilities identified in the security test and evaluation of its general support system, the agency cannot ensure that the controls it has in place are commensurate with an acceptable level of risk.
- Continuity of operations plan: To ensure that, in the event of an emergency, interim measures are available to restore critical systems, including arrangements for alternative processing facilities in case the usual facilities are significantly damaged or cannot be accessed, agencies must develop, document, and test contingency plans and procedures. Testing the continuity plan is essential to determining whether plans will function as intended in an emergency. A contingency plan for the general support system is under review by agency officials; and, according to these officials, this contingency plan also supports its two major applications and is part of the overall agency continuity of operations plan. However, the plan has not yet been approved or tested. Without an approved plan that has been tested, NTSB has limited assurance that it will be able to protect its information and information systems and resume operations promptly when unexpected events or unplanned interruptions occur.

Access controls—Access Authorities

What an Independent Auditor Found

The independent auditor identified several weaknesses in NTSB's access controls. Specifically, NTSB did not promptly remove system access privileges for 28 individuals who had left the agency, was unable to provide documentation to support the original access granted to employees in most instances, did not have a process to determine the specific access authorities assigned to users for the general support system, had not performed the required annual review of users' access authorities for the general support system, and did not implement a control to require the system to automatically disable inactive accounts after a period of non-use. The independent auditor noted that as a result of these weaknesses, the agency did not effectively implement the control processes required in its policies and in NIST guidance.

What an Independent Auditor Recommended

The independent auditor made five recommendations to improve access controls at NTSB.

1. Take immediate action to remove the access authorities from all NTSB systems for the 28 personnel who are no longer employed by or work for NTSB. Strengthen procedures for removing users' access for interns, contractors, and executive training personnel who leave the agency.
2. Maintain documentation supporting the initial access granted to a user.
3. Develop a process to identify the specific systems, and within these systems, the specific access authorities granted to each general support system user, to enable user's supervisors and system owners to properly analyze and complete the annual recertification of users' access authorities.
4. Develop a more detailed operational procedure to guide system security officers and system owners in the process of recertification of users. This should include: (1) specific dates for the review, (2) requirements that documentation be retained to show the recertification by the users' supervisors, and (3) actions that system security officers should take to remove or modify a user's access to the system, based on the review.
5. Implement a control to automatically suspend an account after a period of nonuse, as required.

Our Assessment of NTSB's Progress

The NTSB has taken important steps to improve the controls that safeguard access to its systems, but has not completed actions on all related recommendations. Specifically, NTSB removed the accounts of 28 personnel who left the agency. The agency has procured and in some cases begun to implement automated software tools to help implement recommendations related to granting, removing, and recertifying users' access permissions. However, agency officials expect that these tools will be fully implemented in fiscal year 2008. Furthermore, NTSB has not yet completed identifying, for each system, the specific access permissions for each user and has not yet completed implementing a control to automatically suspend an account after a period of nonuse.

Privacy Act—Privacy Act Compliance

What an Independent Auditor Found

The independent auditor determined that NTSB did not comply with OMB requirements for implementing provisions of the Privacy Act. OMB Memorandum M-03-22 requires an agency to conduct privacy impact assessments for electronic information systems and collections and to make these assessments available to the public. The review found that NTSB had not issued sufficient written guidance in this area and had not conducted a privacy impact assessment of its information systems. In addition, the agency is required to report annually to OMB on compliance with sections 207 and 208 of the E-government Act. NTSB did not have available any guidance in this area, and had not issued the required annual reports. Furthermore, NTSB did not conduct an OMB-required review of its privacy policies and processes to ensure it has adequate controls to prevent the intentional or negligent misuse of or unauthorized access to personally identifiable information.

What an Independent Auditor Recommended

Assure actions are taken to meet the requirements of the Privacy Act and the requirements contained in related OMB memoranda and to update the plan of action and milestones to reflect the current status of NTSB actions in these areas.

Our Assessment of NTSB's Progress

The agency has updated its plan of action and milestones to reflect the status of its corrective actions to implement the requirements of the Privacy Act. In addition, agency officials have recently taken action to develop a formal privacy program; however, work remains before it is fully compliant with the requirements of the Privacy Act. For example, NTSB completed privacy impact assessments on two of its public facing applications and stated that it plans to complete assessments for other applications and systems such as the accident investigation system. Furthermore, the agency is currently drafting a Systems of Records Notice, as required by OMB, which will, among other things, inform the public of the existence of records containing personal information and give individuals access to those records. The agency expects to have the Systems of Records Notice finalized in June 2008. Moreover, NTSB recently awarded a contract to a vendor to develop specific training to its employees on Privacy Act requirements. The agency expects this training to be available in June 2008.

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