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Subcommittee on Aviation
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Aviation Safety – Observations on FAA's Oversight and Changes in the Airline Industry

Statement of
The Honorable Kenneth M. Mead
Inspector General
U.S. Department of Transportation

Mr. Chairman and Members of the Subcommittee,

We appreciate the opportunity to testify on the safety of the U.S. aviation system—the safest aviation system in the world. Our statement today is based on a number of previous reports and investigations as well as ongoing work. Overall, our work shows there is a sea change occurring in the industry that has important implications for the Federal Aviation Administration's (FAA) safety oversight. A common thread needed to improve the effectiveness of FAA's safety oversight programs is better collection and use of safety data. Today, I would like to discuss four areas that are important to enhance the margin of safety and make a safe system even safer:

- Advancing risk-based systems for safety oversight to identify potential safety risks at air carriers experiencing major change, such as financial distress or growth;

- Following through on commitments to improve oversight of domestic and foreign repair stations by identifying trends and effectively targeting FAA's surveillance resources;

- Reducing collision risks and improving operational error reporting systems to ensure the Agency has accurate data on the number and causes of these incidents; and

- Addressing emerging issues, such as preparing for the introduction of microjets and ensuring that staffing levels for aviation safety inspectors are adequate.

At the outset, it is important to recognize that FAA and the aviation industry continue to maintain the safest aviation system in the world. We have not experienced a large commercial air carrier fatal accident in 4 years. The last fatal accident was the January 2003 crash of an aircraft operated by a small passenger air carrier, Air Midwest. General aviation accidents are also a concern. Although the number of general aviation accidents has declined slightly over the last few years, the number is still too high—in 2004 there were 1,614 general aviation accidents that resulted in 556 fatalities.[1]

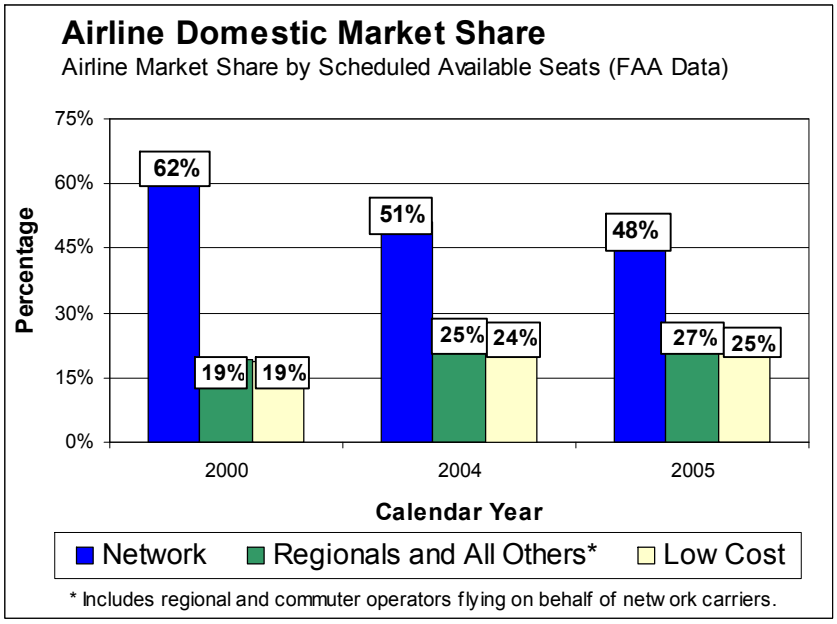
Internationally, there has been a series of aircraft accidents—since August there have been 6 accidents in other countries that resulted in 586 fatalities. FAA is to be commended for its efforts on the international front. Safety is a global issue

[1] Based on National Transportation Safety Board data.

and FAA recently held its second annual International Aviation Safety Conference to focus on the increasingly global nature of the aviation industry.

The safety record of U.S. commercial air carriers is remarkable given all the changes that have occurred in the industry, including financial uncertainty, competition from low-cost carriers, and rebounding air traffic. Both enplanements and operations are close to or exceeding their high-water mark of 2000 levels. Enplanements in 2004 were 698.7 million, roughly 250,000 short of 2000 enplanements. Flight operations for the first 10 months of 2005 exceeded flight operations during the same period of 2000 by 3 percent.

Along with the growth in operations, passenger demand for lower air fares have resulted in a shift in market share. Network air carriers, who once dominated the market, have lost almost $40 billion since 2001. As the following chart shows, these carriers have seen their market share substantially reduced.



We now have a very different and still evolving aviation environment. Currently, eight commercial air carriers are in bankruptcy—35 percent of available capacity. Network carriers are working aggressively to move away from high-cost structures by reducing in-house staff, renegotiating labor agreements, and increasing the use of outside repair facilities.

Despite these changes, the aviation system has remained safe—we all want to keep it that way. There are several possible reasons for this safety record, and they include newer aircraft with better technology, improved procedures, redundant systems, and better flight monitoring processes, such as flight operational quality assurance systems. Without question, credit must also be

given to FAA's oversight efforts, as well as internal controls air carriers have put in place over the years. Nevertheless, our work has shown that FAA needs to take additional steps to improve its risk-based systems and keep pace with current and anticipated changes in the industry.

Now, let me turn to the four key areas I would like to discuss this morning.

Advancing Risk-Based Systems for Safety Oversight

In 1998, FAA introduced the Air Transportation Oversight System (ATOS). We have always supported ATOS—the essential design of the system is sound. ATOS requires FAA inspectors to use data analysis to focus their inspections on areas that pose the greatest safety risk and to shift the focus of those inspections in response to changing conditions within air carriers' operations. If used properly, ATOS should allow FAA to be nimble in deploying its resources to the areas of greatest risk. This is key because there will never be enough inspectors to inspect every aircraft.

ATOS was a major cultural change for inspectors who were not accustomed to relying on data analysis to find safety problems. The former oversight system did not promote effective use of resources—inspectors were required to perform a specified number of inspections rather than identifying and focusing limited resources on the most critical risks.

Today, FAA uses ATOS for oversight of 17 air carriers. The remaining 110 air carriers are under a system that is designed to be a bridge between the old and new oversight systems until ATOS is used for all air carriers. This interim system combines FAA's old system with some of the data and risk analysis elements of ATOS.

In April 2002, we reported[2] that ATOS was conceptually sound, but improvements were needed to ensure the system was fully implemented. FAA agreed and took steps to complete the last two parts of ATOS: the processes for analyzing inspections and following up on problems inspectors identified. FAA also provided training to its inspectors on how to better evaluate air carriers' systems using ATOS.

Earlier this year, we reported[3] that the magnitude of changes air carriers are making and the rapid pace at which they are occurring presented challenges for FAA's oversight systems. FAA has come a long way in its new oversight approaches, but the systems are not at an end state. Inspectors had difficulties

[2] Report Number AV-2002-088, "Air Transportation Oversight System," April 8, 2002.
[3] Report Number AV-2005-062, "Safety Oversight of an Air Carrier Industry in Transition," June 3, 2005.

using FAA's risk-based oversight systems to respond to the changes network carriers were making to reduce costs. For example, FAA inspectors did not complete 26 percent of their planned inspections when air carriers were at the height of streamlining operations and reducing costs. This is neither an adequate response to these changes nor reflective of a more agile approach, given that more than half of the inspections that were not completed were in areas where inspectors had identified risks.

For example, FAA inspectors for a network air carrier that had filed bankruptcy and laid off a number of its mechanics determined that there might be a risk in the qualifications of remaining maintenance personnel. Despite this determination, inspectors did not finish inspections that had been planned as a result of the risks they had previously identified. Ten months later, they found out that mechanics at two of the air carriers' maintenance facilities had been making repairs on parts that they were not qualified to perform.

Recent events during the mechanics strike at Northwest Airlines underscore the need for FAA to strengthen the flexibility and comprehensiveness of its oversight system. FAA inspectors abandoned ATOS in favor of another checklist they believed could be used to quickly gather the information needed to identify risks associated with the strike. The FAA office manager told us the ATOS inspection checklists were not specific enough to capture the data they needed. In addition, he believed parts of the ATOS process, such as evaluating data quality, would be too time-consuming. This suggests to us that FAA needs to further refine its oversight system, so that inspectors gain confidence in using ATOS when responding to major air carrier changes.

FAA's practice of shifting resources for increased surveillance at bankrupt carriers may not be a viable option, given the number of carriers now in bankruptcy. The current state of the industry makes it imperative that FAA improve its risk-based oversight system so inspectors focus their efforts on areas of greatest risk. FAA recognizes this and, in response to our June 2005 report, committed to take the following actions during FY 2006:

- Strengthen the role of its national ATOS program office, provide data analysis assistance to field offices, and improve field office managers' oversight of risk assessment and inspection planning processes;

- Develop procedures to ensure inspectors are continually monitoring the effects of industry changes, such as financial distress and air carrier growth; and

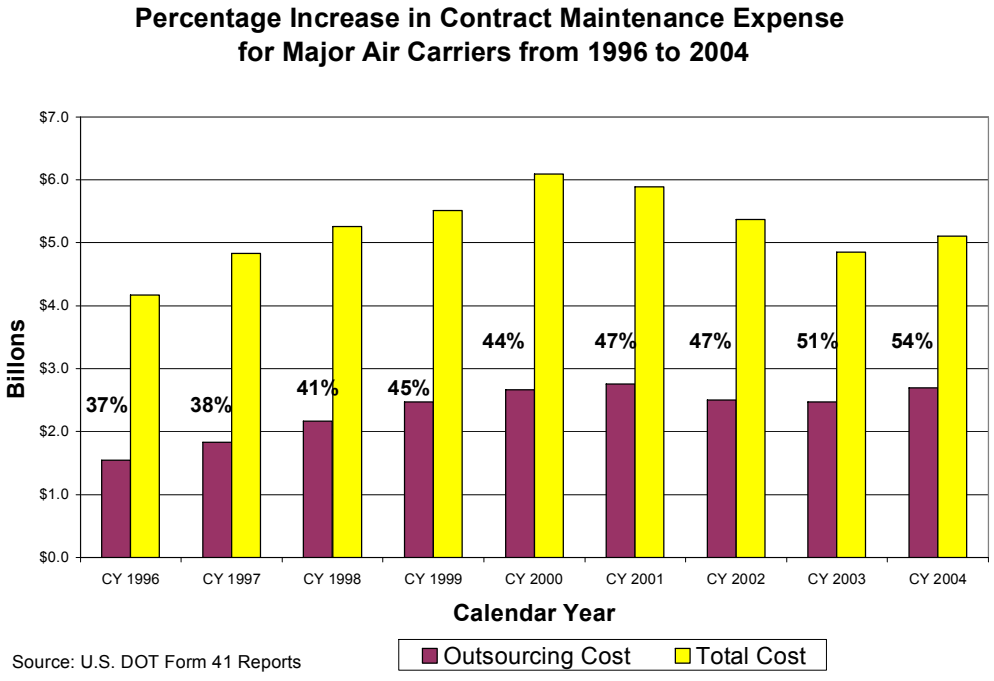
- Ensure that inspections are prioritized so high-risk areas are inspected before lower-risk areas and that inspectors are able to effectively change inspection plans when new risks are identified.

We also encouraged FAA to establish a schedule for transitioning the remaining carriers to ATOS. FAA plans to complete this process by the end of FY 2007.

Following Through on Commitments to Improve Oversight of Repair Stations

Mr. Chairman, FAA also needs to follow through on its commitment to improve its oversight of the use of contract maintenance facilities.

Increasing the use of contract maintenance facilities (i.e., repair stations) to complete aircraft maintenance has been a prominent aspect of air carrier efforts to restructure their operations and reduce costs. The transition to increased use of outside repair facilities is not the issue—it is that maintenance, wherever it is done, requires oversight. The following chart illustrates that air carriers have lowered their maintenance costs, most likely as a result of their focus on controlling costs. It also shows the upward trend in the percentage of use of outside repair facilities.



In July 2003, we reported[4] that FAA's oversight had not shifted to where the maintenance was actually performed—rather it remained focused on air carriers'

[4] Report Number AV-2003-047, "Air Carriers' Use of Aircraft Repair Stations", July 8, 2003.

in-house maintenance procedures. For example, inspectors for 1 air carrier completed 400 inspections of in-house maintenance operations 1 year while only completing 7 inspections of repair stations—but this air carrier contracted out nearly half of its maintenance that year.

We also found that two different groups of inspectors performed repair station oversight, but neither group performed comprehensive repair station inspections. One group was responsible for oversight of major air carriers' operations and maintenance activities. These inspectors conducted reviews of repair stations used by their assigned air carrier; however, the number of repair station inspections was limited and the visits infrequent. In addition, this group of inspectors only reviewed the work the repair station completed for their air carrier—they did not assess the entire repair station operation.

FAA has a second group of inspectors that is responsible for oversight of various types of aviation operators located within their region—including repair stations. Although they have primary responsibility for repair station oversight, they are only required to perform one inspection per year. Due to their workload, we found that these inspectors spent a limited amount of time on repair station surveillance. For example,

- One inspector was responsible for oversight of 21 repair stations, 21 agricultural operators, 12 service-for-hire operators, 3 general aviation operators, 2 helicopter operations, and 1 maintenance school.

- Another inspector was responsible for oversight of 32 agricultural operators, 19 repair stations, 7 on-demand operators, 2 helicopter operators, and 1 maintenance school.

When the two groups of inspectors did perform surveillance at the same repair station, they frequently did not share the inspection results with each other. This was due in part to the fact that these inspectors were located in separate offices and used two separate inspection data bases.

In addition, we found that 138 FAA-certificated repair stations in France, Germany, and Ireland were not inspected by FAA at all because the civil aviation authorities in these countries reviewed these facilities for FAA. Yet, FAA had not developed an adequate system to monitor this surveillance to ensure FAA-certificated foreign repair stations continued to meet FAA standards. For example, foreign inspectors did not provide FAA with enough information to understand the results of their inspections—14 of the 16 inspection files we reviewed were incomplete or incomprehensible (many were written in a foreign language).

In July 2003, we recommended several improvements to FAA's oversight of repair stations, such as: (1) identifying repair stations used for critical maintenance; (2) targeting surveillance based on risk assessments; (3) implementing data-sharing mechanisms for FAA inspectors; (4) developing a more standardized, comprehensive approach to oversight; and (5) implementing new procedures for monitoring the oversight conducted by foreign authorities on FAA's behalf. FAA agreed to develop a new risk-based oversight process for repair stations that would make their inspections more consistent and comprehensive. FAA also agreed to develop procedures to improve its oversight of repair station inspections performed by other aviation authorities. FAA committed to implement these actions in FY 2005.

However, in July 2005,[5] when we checked the status of FAA's efforts in implementing these recommendations, we found that FAA's progress had been slow. Specifically, we found that FAA's planned implementation dates have now slipped to FY 2007.

A key part of the work that remains is the completion of its new risk-based oversight system for repair stations. FAA has developed the framework for this system—which is a good first step—but still needs to train its inspectors and develop new software for data analysis capabilities. FAA needs to expedite improvements to its process for oversight of repair stations, especially given the continued trend in air carriers shifting maintenance to outside repair facilities.

A portion of the maintenance that is being contracted out is being performed by repair facilities that have not been certificated by FAA, meaning FAA has not verified that they have the staff, facilities, or equipment to perform the work. At the request of the Ranking Member, Committee on Transportation and Infrastructure, we are conducting a review of air carriers' use of non-certificated repair facilities. We plan to issue a report on this matter later this year.

FAA must follow through on the commitments it made in response to our reports and advance its risk-based oversight systems for air carriers and repair stations, particularly in light of the magnitude of changes in the aviation industry and the pace at which they are occurring. Aircraft maintenance, no matter where it is performed, requires oversight. FAA must ensure it is shifting its resources toward the organizations actually performing the maintenance.

Now, I would like to shift gears and talk about two other safety indicators with respect to the air traffic control system.

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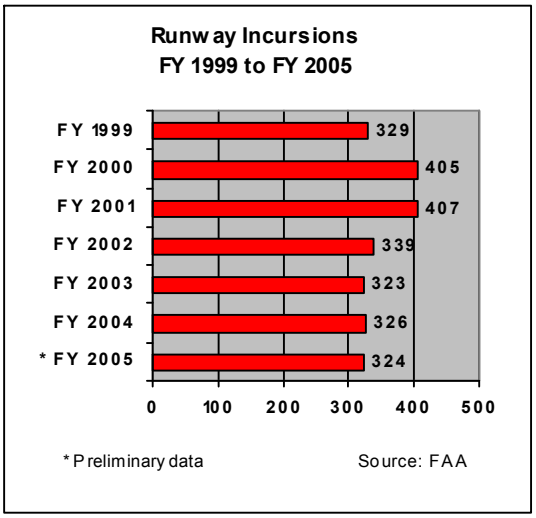
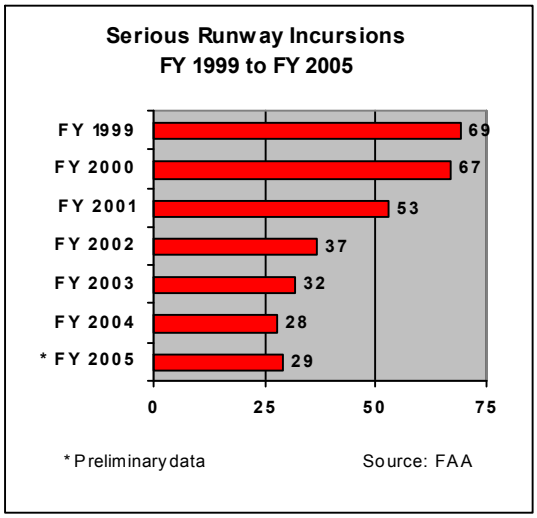
[5] Letter to Ranking Member, Committee on Transportation and Infrastructure, on the status of repair station recommendations, Control Correspondence Number 2005-035, July 27, 2005.

Reducing Collision Risks and Improving Operational Error Reporting Systems

Two primary indicators of system safety are runway incursions (potential collisions on the ground) and operational errors (potential collisions in the air). Reducing these incidents are key performance goals for FAA that require heightened attention at all levels of the Agency.

With the rebound in traffic comes the increased potential for collision errors. From 1998 to 2001, we reported that runway incursions were increasing at alarming levels. To its credit, FAA took decisive action—it established regional runway safety offices, conducted numerous safety evaluations at problem airports, initiated aggressive educational programs for pilots, and implemented technologies at major airports that alert controllers of potential runway accidents. As shown in the charts below, the total number of runway incursions decreased from a high of 407 in FY 2001 to 324 in FY 2005, and the most serious incidents have decreased from a high of 69 in FY 1999 to 29 in FY 2005.





However, serious runway incursions still occur today. Recent runway incidents at several large airports have highlighted the potential safety risks associated with runway incursions. For example, in July 2005 at John F. Kennedy International Airport (JFK), two aircraft missed one another by less than 100 feet when a commercial airliner mistakenly crossed a runway as a cargo jet was departing the same runway.

FAA has a system, known as the Airport Movement Area Safety System (AMASS),[6] that provides audible alerts to controllers of potential runway

[6] AMASS is installed at the 34 busiest airports in the U.S.

collisions. However, during heavy rain storms, AMASS can produce false alerts. When the serious runway incursion occurred at JFK, heavy rain storms were occurring at the airport and AMASS' alert function was not operational.

FAA has recognized the shortcomings of AMASS and is installing new equipment called the Airport Surface Detection Equipment – Model X (ASDE-X). ASDE-X will upgrade the existing software of AMASS and should address the false alerts currently experienced by AMASS. We have just begun a review of FAA's ASDE-X deployment strategy and will report on this issue next year.

However, ASDE-X and AMASS do not provide alerts to pilots of potential ground collisions. For this reason, the National Transportation Safety Board considers FAA's actions to reduce runway incursions insufficient because over 50 percent of runway incursions are caused by pilot errors.

While FAA has reduced the number of runway incursions and met its goal in this area, FAA has not had the same success with operational errors—where aircraft come too close together in the air. Not only are these incidents continuing to increase, but shortcomings in FAA's reporting system for operational errors have indicated that the true number of these incidents is not yet known.

- This past year, there were 1,489 operational errors (up from 1,150 in FY 2004), which is the highest number of errors reported in the past 6 years.

- Seventy-three of those errors were classified as serious incidents (those rated as "high" severity), compared to 40 serious incidents reported in FY 2004.

The increase in the number of reported operational errors is a significant concern that FAA will need to address. However, we urge caution in drawing conclusions about the increase because prior-year numbers are most likely considerably understated. Therefore, it is important to recognize that the number of errors reported in prior-years may not be an accurate benchmark to measure FAA's current level of performance.

In September 2004, we reported[7] that only 20 of FAA's 524 air traffic control facilities have an automated system that identifies when operational errors occur. At its towers and terminal radar approach control (TRACON) facilities, FAA depends on an unreliable system of self-reporting operational errors.

[7] Report Number AV-2004-085, "FAA Controls Over the Reporting of Operational Errors", September 20, 2004.

Recent investigations by our office and FAA at two locations found multiple instances of unreported operational errors. Specifically, at the Dallas/Fort Worth TRACON, we found operational errors were systematically ignored as a result of management policy. We identified multiple operational errors that had not been reported. Prior to our investigation, the facility reported just two operational errors during the 6-month period from January 1 to June 24, 2004. During our investigation, we identified five unreported operational errors that occurred during May and June alone.

After instituting appropriate use of playback tools[8] in June 2004, the facility reported 36 operational errors during the next 6 months. Facility managers also took actions to improve operations by training all personnel on proper procedures for reporting and investigating operational errors, redesigning facility-specific air traffic procedures, and conducting refresher training to improve controller performance.

At the New York TRACON, FAA initiated an internal investigation in response to a rash of allegations that operational errors were increasing. That review identified 147 unreported operational errors during a 2-month period. The number of reported operational errors for the New York TRACON increased from 24 in FY 2004 to 233 in FY 2005. Again, it is important to note that prior to FY 2005, the number of operational errors are most likely understated.

A number of these errors were serious and indicated the need for immediate corrective action. Managers at the facility responded by re-training all personnel and redesigning certain facility-specific air traffic procedures.

This past year, FAA has also taken steps to improve operational error reporting.

- FAA recently implemented procedures that require towers and TRACONs to conduct random audits of radar data to identify operational errors.

- FAA Headquarters is also conducting random audits at selected facilities and is evaluating its severity rating system in an effort to more accurately capture the collision risk that operational errors pose.

Clearly, these actions are steps in the right direction, but FAA will need to remain committed to following through on those efforts—the number of unreported errors

[8] Playback tools are software programs and other electronic instruments for recreating air traffic incidents by replaying recorded radar and voice data.

identified just at New York TRACON underscores the need for top management attention to this issue.

Mr. Chairman, we see two key steps FAA needs to take to reduce the collision risk of operational errors. First, FAA needs to identify an accurate baseline of the number of operational errors that are actually occurring. That is, FAA must ensure that operational errors are accurately reported and ascertain the cause of each.

Second, FAA must address the issue of staffing at each facility. The controllers have repeatedly stated that staffing is a primary cause of operational errors. FAA needs reliable and accurate staffing standards for each of its air traffic facilities (over 300 nationwide). This is particularly important in light of the fact that FAA expects over 70 percent of its controllers to retire in the next 10 years. During FY 2005, FAA began an evaluation of its air traffic facility staffing standards. However, until the Agency completes its evaluation at all facilities, particularly at TRACONs and terminals, questions will persist about the appropriate level of staffing at each location and the effect current staffing levels have on facility operations.

Addressing Emerging Issues

Mr. Chairman, now I would like to turn to a number of issues that may well have significant safety implications in the future. Some air carriers are emerging from bankruptcy, while others are already bankrupt or are on the verge of bankruptcy. Just last week, Independence Air declared bankruptcy. The cost structures of network air carriers are converging with those of discount air carriers. We would not be surprised if there were more consolidations like the recent merger of U.S. Airways and America West. These changes could have a profound impact on the industry, as well as FAA. Some of the other issues we see include:

Microjets. One of the new challenges we are likely to encounter within the next year is operations of a new class of aircraft called microjets. These are small "affordable" aircraft that will carry up to six passengers. Priced as low as $1 million per aircraft, microjets may be more attractive to the business market than the currently available comparable aircraft priced at about $6 million.

Microjet manufacturers anticipate that these aircraft will find a niche among a variety of corporate and private owners and as on-demand air taxi services. According to FAA's annual 12-year forecast, 4,500 microjets will be vying for airspace by 2016—these aircraft will be flying in the same airspace as passenger aircraft. Microjets could lead to the influx of a new class of pilots, which could lead to human factors issues, and there could also be maintenance issues. In

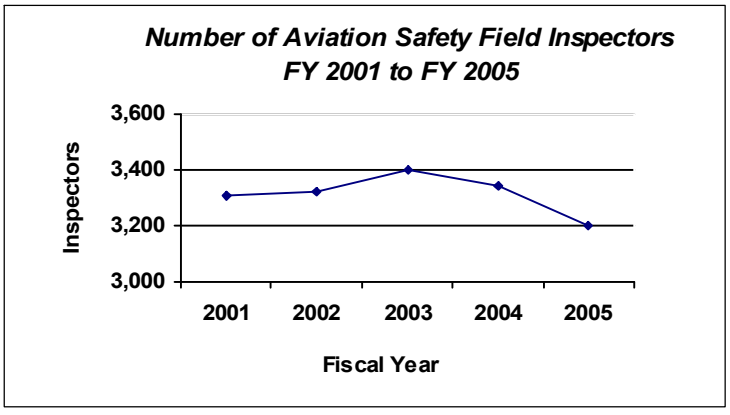
addition, microjets could have an impact on the workload of air traffic controllers and FAA's aviation safety workforce.

Fractional ownership. According to FAA, aircraft that have multiple owners and operators, referred to as fractional ownership, are growing at a rapid rate. From 1999 to 2003, the number of fractional ownership shares grew by 138 percent, from 2,607 to 6,217. FAA requires aircraft owners and operators to be responsible for the maintenance of their aircraft. FAA will have to make some decisions on how they will hold multiple owners responsible for safety and maintenance of aircraft purchased in this fashion.

Foreign manufactured aircraft parts. In the 1960s, when Boeing manufactured its 727 aircraft, 98 percent of the parts were built in the United States. Only 35 percent of the parts on Boeing's new 787 aircraft will be built by U.S. suppliers. Aircraft manufacturing has become a global operation. Large sections of aircraft are now built by industry partners and shipped to the aircraft manufacturer for assembly. FAA and the industry will have to ensure that the suppliers' quality assurance systems are effective and that parts the suppliers produce meet industry specifications.

FAA inspector staffing. FAA currently has 3,200 aviation safety inspectors in its field offices. Approximately 1,100 of these inspectors provide oversight of commercial air carriers. The remaining 2,100 oversee aircraft repair facilities, general aviation operators, mechanics, pilots, and training facilities.

Like many of the airlines, FAA is facing its own budgetary challenges. In FY 2005, FAA lost 144 aviation safety inspectors from its Flight Standards field offices.



Much attention has been paid to controller staffing—FAA plans to hire 12,500 controllers in the next 10 years. While that is a critical issue for the Agency, it is also important to maintain a safety inspector workforce that is

sufficient to achieve its mission of safety oversight. The Senate and House have recommended an increase in FAA's inspector staffing in the Agency's FY 2006 budget. It is important that FAA not lose sight of the need to adequately staff its inspection workforce.

The magnitude of the changes that have already occurred underscores the importance of FAA having a system that is nimble enough to help it confront these changes. The collection and analysis of safety data is critical—it is the only way to identify safety precursors and leverage limited resources.

Mr. Chairman, this concludes my statement.[9] I would be pleased to address any questions you or other members of the subcommittee might have.

[9] This testimony was conducted in accordance with Generally Accepted Governmental Auditing Standards prescribed by the Comptroller General of the United States. The work supporting this testimony was based on prior and ongoing audits conducted by the Office of Inspector General.