AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 109–434

# AVIATION SAFETY

## HEARING

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

NOVEMBER 17, 2005

Printed for the use of the Committee on Commerce, Science, and Transportation

U.S. GOVERNMENT PRINTING OFFICE

27–672 PDF WASHINGTON : 2006

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

## SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

TED STEVENS, Alaska, *Chairman*

JOHN McCAIN, Arizona
CONRAD BURNS, Montana
TRENT LOTT, Mississippi
KAY BAILEY HUTCHISON, Texas
OLYMPIA J. SNOWE, Maine
GORDON H. SMITH, Oregon
JOHN ENSIGN, Nevada
GEORGE ALLEN, Virginia
JOHN E. SUNUNU, New Hampshire
JIM DeMINT, South Carolina
DAVID VITTER, Louisiana

DANIEL K. INOUYE, Hawaii, *Co-Chairman*
JOHN D. ROCKEFELLER IV, West Virginia
JOHN F. KERRY, Massachusetts
BYRON L. DORGAN, North Dakota
BARBARA BOXER, California
BILL NELSON, Florida
MARIA CANTWELL, Washington
FRANK R. LAUTENBERG, New Jersey
E. BENJAMIN NELSON, Nebraska
MARK PRYOR, Arkansas

LISA J. SUTHERLAND, *Republican Staff Director*
CHRISTINE DRAGER KURTH, *Republican Deputy Staff Director*
DAVID RUSSELL, *Republican Chief Counsel*
MARGARET L. CUMMISKY, *Democratic Staff Director and Chief Counsel*
SAMUEL E. WHITEHORN, *Democratic Deputy Staff Director and General Counsel*
LILA HARPER HELMS, *Democratic Policy Director*

---

## SUBCOMMITTEE ON AVIATION

CONRAD BURNS, Montana, *Chairman*

TED STEVENS, Alaska
JOHN McCAIN, Arizona
TRENT LOTT, Mississippi
KAY BAILEY HUTCHISON, Texas
OLYMPIA J. SNOWE, Maine
GORDON H. SMITH, Oregon
JOHN ENSIGN, Nevada
GEORGE ALLEN, Virginia
JOHN E. SUNUNU, New Hampshire
JIM DeMINT, South Carolina

JOHN D. ROCKEFELLER IV, West Virginia, *Ranking*
DANIEL K. INOUYE, Hawaii
BYRON L. DORGAN, North Dakota
BARBARA BOXER, California
MARIA CANTWELL, Washington
FRANK R. LAUTENBERG, New Jersey
BILL NELSON, Florida
E. BENJAMIN NELSON, Nebraska
MARK PRYOR, Arkansas

# CONTENTS


| | Page |
|---|---|
| Hearing held on November 17, 2005 | 1 |
| Statement of Senator Burns | 1 |
| Statement of Senator Lautenberg | 2 |
| Statement of Senator Lott | 3 |
| Statement of Senator Rockefeller | 4 |
| Prepared statement | 4 |

WITNESSES

| | |
|---|---|
| Barimo, Basil J., Vice President, Operations and Safety, Air Transport Association of America, Inc. | 43 |
| Prepared statement | 45 |
| Blakey, Hon. Marion C., Administrator, Federal Aviation Administration | 5 |
| Prepared statement | 7 |
| Carr, John S., President, National Air Traffic Controllers Association | 37 |
| Prepared statement | 39 |
| Klein, Christian A., Legislative Counsel, Aeronautical Repair Station Association | 52 |
| Prepared statement | 54 |
| Mead, Hon. Kenneth M., Inspector General, Department of Transportation | 11 |
| Prepared statement | 16 |
| Roach, Jr., Robert, General Vice President, Transportation Department, International Association of Machinists and Aerospace Workers | 49 |
| Prepared statement | 50 |

APPENDIX

| | |
|---|---|
| Airline Pilots Association, prepared statement | 84 |
| Dillingham, Gerald L., Ph.D., Director, Physical Infrastructure Issues, United States Government Accountability Office, prepared statement | 67 |
| Response to written questions submitted to Hon. Marion C. Blakey by: | |
| Hon. Daniel K. Inouye | 86 |
| Hon. Frank R. Lautenberg | 90 |
| Hon. John D. Rockefeller IV | 88 |
| Hon. Gordon H. Smith | 85 |

# AVIATION SAFETY

---

**THURSDAY, NOVEMBER 17, 2005**

U.S. SENATE,
SUBCOMMITTEE ON AVIATION,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
*Washington, DC.*

The Subcommittee met, pursuant to notice, at 10 a.m. in room SD–562, Dirksen Senate Office Building, Hon. Conrad Burns, Chairman of the Subcommittee, presiding.

## OPENING STATEMENT OF HON. CONRAD BURNS, U.S. SENATOR FROM MONTANA

Senator BURNS. We will call the Committee into session this morning. The hour is here, and I know we have other Members coming. The Ranking Member, Senator Rockefeller, will be here pretty shortly, I would imagine. And I appreciate Senator Lautenberg being here. And I think we can start with some of the opening statements and get on with the business at hand.

It's needless to say, to this group of people, who have been around Washington for a while, that when you come to the end of a session, it becomes a bear. That's b-e-a-r. And so, I know we all have other places to be and other business to perform. And so, I appreciate your being here this morning.

I'd like to thank the panel, also, everybody that will testify here today. We're conducting this oversight hearing to examine the most important mission of this Subcommittee and of the FAA, and, of course, that's aviation safety. We all, most of us here, fly almost daily, it seems like. When you live in Montana and work here, you feel like that you wear out airplanes and the seat of your britches. It's not like living here among the East-Coasters, where they don't have anywhere to go. But——

[Laughter.]

Senator LAUTENBERG. We do it quickly.

Senator BURNS. Yes, you do it quickly, that's right.

Currently, the U.S. commercial aviation industry is experiencing the safest period in the history of aviation. For the past 3 years, the U.S. commercial aviation industry has had less than one fatal accident per five million flights. That's almost unbelievable. This is a staggering stat that I commend the Administrator that's here today and Administrator Blakey and her role and leadership in—at the FAA in past years. Every time you talk to the Administrator, I will tell you that safety is the number-one mission, and she's taken that very, very seriously.

The safety workforce should also be commended for their hard work in making our skies safe. The FAA system is one of the layers, but it could not be effective without the coordination of many that are in the industry, including air traffic controllers, inspectors, manufacturers, repair stations, pilots, and many others.

The industry, as a whole, takes great pride in its safety record, along with the products and services that it provides. Everyone involved knows the stakes, and the loss of even one life is too many.

This is one area where there is always room for improvement, however. We learn by experience, and we try to apply those methods and new technologies to make sure that we stay where we are today.

The public policy and economic necessity of public trust is—in flying—is essential to maintain the U.S. and global economy. Aviation is estimated to be a $1.4 trillion business globally. Here in the U.S. alone, more than 700 million people flew in 2004, with the number of passengers expected to reach one billion by the year of 2015.

However, increased passenger levels, rapidly growing capacity demand, workforce challenges, aging air traffic control infrastructure and financial turmoil in the commercial airline industry will prove to be a challenge to the FAA and, of course, us here, as policymakers. We need to continue effective utilization of the safety workforce and the resources as we move forward.

As in most any other industry, technology will play a key role in modernization of safety systems, but it is the institutional knowledge that many people bring to the table that is probably our best resource. Through improved runway detection systems to onboard avionics and satellite air-traffic systems, we expect our skies to become more efficient, and we expect them to be safer.

So, I thank everyone for coming this morning. I welcome our witnesses, and I look forward to their testimony.

Senator Lautenberg, thank you for coming this morning. And if you have a statement, we'd sure like to hear it.

**STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM NEW JERSEY**

Senator LAUTENBERG. Thanks, Mr. Chairman. And I commend you for this timely review.

One just needs to travel by air—and even though New Jersey is fairly close to Washington, we do try to fly. The problem is that very often we spend more time on the ground than we do in the air. And that's the kind of anomaly that tells us that we're very crowded in the skies. And, as the Administrator knows only too well, we've had to find new ways to accommodate the traffic. The sky is not infinite in terms of airspace, and it gets crowded, and we see all kinds of glitches when an airplane can land in a particular airport and find out that the gate's not available, or that you can't take off from one destination to go to another because it's already too crowded. So, these things describe the airspace capacity problem that we have to deal with.

The deregulation of the industry back in 1978 set in motion the enormous changes that affect every air traveler. Airlines had been told what routes they could fly, and they were suddenly free to

compete for passengers. Now, this competition led to a distinct advantage for travelers: lower prices. But as the airlines looked for new ways to be competitive and cut costs, every expense came under scrutiny, including maintenance and safety measures. And that was a mixed blessing for travelers.

Many people are happy to forego the frills if it means saving money when they fly, but safety isn't a frill. And while it's OK to cut corners on meals and movies, it is not acceptable to skimp on aircraft maintenance. Things are well done, generally, in the industry, with few serious glitches, as our Chairman has noted, but we shouldn't count on luck.

The National Transportation Safety Board reports that there were at least 325 near collisions last year, as they define them. That doesn't mean that they were wing to wing, but it does mean that the space was used almost too efficiently, in terms of the risk involved.

Some of the Nation's busiest airports have recently reported an increased number of runway incursions; and the numbers on operational errors, 30 percent higher than last year. The question is, are these simply due to new reporting standards? The incidents have raised concerns about the FAA's air traffic control staffing levels and the proper deployment of technology. The FAA currently has a thousand fewer air traffic controllers than it did 2 years ago. And over the next decade, a wave of retirements is expected to significantly burden the air traffic controller workforce. So, I hope we'll be able to get an update today from FAA on the status of the new controller contract, to learn how that's going.

Last, I'd like to know how so many airports can fail to meet the FAA standards for runway safety areas. I'm concerned that there are hundreds of major airports in our country without these adequate safety areas. Mr. Chairman, we all appreciate the competitive pressures in the airline industry, but the first obligation of a common carrier is to ensure safe flight. The duty must never be compromised on behalf of monetary gains. And we rely on the FAA to prevent such compromises.

And so, I look forward to hearing from our witnesses. Welcome, the Administrator and Inspector General Mead, who we've seen many places on many subjects related to transportation. We look forward to hearing from you.

Thanks, Mr. Chairman.

Senator BURNS. Thank you, Senator Lautenberg.

And now, the former Chairman of this Subcommittee, Senator Lott.

## STATEMENT OF HON. TRENT LOTT, U.S. SENATOR FROM MISSISSIPPI

Senator LOTT. Thank you, Mr. Chairman. Thank you and the Ranking Member, for having this hearing.

Obviously, aviation safety is very important, something we're all very much concerned about. I'm pleased that the record over the last 3 years has been pretty impressive, but I want to make sure it stays that way in the future.

We've got two very good witnesses here in this first panel, and I'm looking forward to hearing from them again. Thank you for being here.

Senator BURNS. Thank you.

And now the Ranking Member and good friend from West Virginia, Senator Rockefeller.

## STATEMENT OF HON. JOHN D. ROCKEFELLER IV, U.S. SENATOR FROM WEST VIRGINIA

Senator ROCKEFELLER. I would echo what others have said, and we can proceed.

And good morning, to our witnesses.

[The prepared statement of Sen. Rockefeller follows:]

PREPARED STATEMENT OF HON. JOHN D. ROCKEFELLER IV, U.S. SENATOR FROM WEST VIRGINIA

I want to thank Chairman Burns for agreeing to hold this hearing this morning. Although my request was originally scheduled for last month, I think it is even more timely as we approach the busy holiday travel season and when millions of Americans will take the to air, our skies will be filled with planes, and the entire aviation system comes under extraordinary stress.

As always. it is a pleasure to have Administrator Blakey before the Committee. I would like to thank our other witnesses for coming today as well. Mr. Chairman, I will be brief and I ask that my formal statement be submitted for the record.

First, I want to state that I firmly believe that the United States has the safest and best air system in the world. I do not want to give anyone the impression that I believe it is unsafe to fly.

However, given the increasing number of news stories about near misses on runways, inadequate radar facilities at major airports, and the public's general concern about the safety of bankrupt carriers, this hearing will provide an opportunity for our witnesses today to reassure people that we still have the safest aviation system in the world, but also outline our challenges for maintaining the highest level of safety possible.

I am concerned that the quickly changing nature of the commercial aviation industry coupled with the FAA's declining level of resources threatens the agency's ability to maintain the necessary level of oversight of air carriers, foreign repair stations, and upgrade the existing safety infrastructure at our airports.

Over the last several months, the aviation industry worldwide has had a number of fatal accidents. Although none of the tragic accidents have involved U.S. carriers or have occurred in the U.S., our aviation system has experienced a disturbing number of significant safety lapses. We have been able to avoid a tragic accident thus far, but if this trend continues. I believe that we may not be so fortunate in the future.

As the Administrator will testify, the FAA is reporting a dramatic spike in the number of reported operational errors. We need to find out the reason for this increase and determine what steps must be taken to reduce these errors before a major accident occurs.

I know that our witnesses may have very different explanations for this spike and who is to blame for it. but I hope our witnesses will offer constructive solutions rather than assigning blame. Our aviation system is fragile enough at the moment that we all need to be working together to make sure we maintain the world's finest aviation system rather than tearing one another apart.

I am also very concerned regarding the aviation industry's trend of outsourcing major maintenance work to foreign countries where governmental oversight from both the home nation and FAA is weak or non-existent. I strongly believe that the Committee must review the evolving nature of the airline business to make sure decisions based on finances do not adversely affect safety.

Compounding the industry's trend to outsource much of its significant maintenance work is the inability of the FAA to certify and closely monitor an ever increasing number of foreign repair stations. This is due mainly to a lack of resources. I am deeply concerned that the FAA is losing a number of its most senior safety inspectors and does not have the ability to replace them. This Committee. as it begins evaluating the future of the FAA, should be spending a considerable amount of its

time making sure that the agency is able to meet its foremost mission—the safety of the traveling public.

Thank you. I look forward to hearing from our panelists.

Senator BURNS. Well, we thank you. That's the shortest statement I think I've ever heard you put forth. Here it is 10 minutes after the starting time, and we're ready for our witnesses. That has to be a record.

[Laughter.]

Senator BURNS. We welcome, this morning, the Administrator of the FAA, the Honorable Marion Blakey. And I know the work that she's done. We talk in spaces, almost—in cyberspace, but—and we were supposed to have a little meeting, and I want to apologize to her for not making it. But, just like I said, this is—when you try to close down a session, it's easier said than done. And we appreciate you coming this morning and sharing your views on this oversight hearing.

Thank you for coming. Look forward to your statement.

## STATEMENT OF HON. MARION C. BLAKEY, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION

Ms. BLAKEY. Good morning. Thank you for having me——

Senator BURNS. Pull your microphone up.

Ms. BLAKEY. Hit the button? Did that do it? There we are.

Well, good morning, Chairman Burns, Senator Rockefeller, Senator Lautenberg. I'm delighted to be here before you and other Members of this Subcommittee to address some of the most important challenges we have in aviation. And those are on the safety front.

Safety always, with the FAA, comes first. There is no Plan B. We strive to achieve the highest levels of safety for the traveling public, working in tandem with our stakeholders and the industry. And we now find ourselves in the safest period in the history of aviation. It's truly remarkable. The fatal-accident rate for commercial aircraft is .017. Plain terms, that's one fatality for every 15 million flights. It's absolutely extraordinary.

The challenge, however—the challenge is still before us. Over the years, most of the low-hanging fruit, from a forensics approach to accidents, is gone. We're now having to focus on what literally amounts to heading accidents off at the pass, anticipating what hasn't happened, and preventing it.

It's a program called the Air Transportation Oversight System, ATOS, and it's paying real dividends. And we created ATOS back in 1998. And it goes beyond simply ensuring regulatory compliance. Instead, ATOS fosters a higher level of air-carrier safety using a systematic risk-management process to identify safety trends and prevent accidents. ATOS identifies and helps manage risks before they cause problems. With ATOS, carriers have safety standards that are built into their operating systems.

Now, why does it work? Because the carrier's own oversight leverages the FAA's inspector workforce by reducing the likelihood of repeating inspections of the same aircraft, repeating inspections of the same function. Of course, inspectors step up whenever we see deficiencies that they've identified in previous inspections.

The bottom line is that our inspectors develop safety surveillance plans for each carrier based on data analysis. They subsequently adjust these plans on a periodic basis, based on the risks that are identified.

This is especially effective for financial difficulty. When air carriers find themselves in financial difficulty, that's when we really bore in.

As the chart that I have just put here will illustrate, we are looking at our work, in this chart, on one of our airlines in which you can see that long before the triggering event of a bankruptcy occurred—and that's marked down there at the very end of the chart on those bar curves—but you're looking at inspections quarter by quarter, and you can see that the FAA, when certain kinds of triggers having to do with financial difficulty—whether it was changes in management, mergers, or takeovers, closing facilities; sometime we're looking at the question of lowering staff—when we see those triggers, we immediately step in and start ratcheting up the inspections. And you see it very clearly in this instance. I have another chart that shows another carrier, if you're interested in seeing this in more detail.

But I think the main thing is to illustrate that we do focus our work where we believe the most risk is due to financial difficulty. And we look specifically at things we think are most important under those circumstances: training, quality assurance, quality control processes. These are all very critical.

This approach has received high marks, I'm pleased to say, from not only the airlines themselves but the Department of Transportation's inspector general. Our new approach to oversight is a better way to make the best use of agency resources, as well as to improve safety.

We agree that, by focusing on risk, the FAA can determine how well an airline is managing its processes and whether or not these processes are performing as designed to meet safety standards. In short, it's a better way to operate, it enhances safety, and the numbers prove it.

You'll also be pleased to know that we're making similar advances with runway incursions. Now, let me state up front that these events are relatively rare. Our pilots, controllers, airport personnel do a wonderful job, and they're highly trained. But our goal, as always is to take what is statistically very safe and make it much safer still.

As you know, our system handles 173,000 takeoffs and landings every day. From 2001 to 2004, there were 257 million takeoffs and landings. During that time, we had 1,395 runway incursions, a little more than five per million operations. Over that same period, the most serious type of runway incursions—we classify those as category A and B incursions—they dropped from more than about—around 50 to less than 30 per year. That's a reduction of about 40 percent in the most serious incursions.

You'll also be pleased to know that we are deploying advanced technology. A newer warning system, called ASDE–X, the Airport Surface Detection Equipment Model X, uses state-of-the-art oral and visual alarms to notify controllers of the potential for collision.

It's already in place at four airports. We have plans to place it at another 31.

We've also made significant strides in implementing a safety management system. Enhanced oversight of our own facilities led to an increase in the identification of operational errors. In 2005, we had 1,489 operational errors, compared to 1,149 in 2004. So, they were up. The most serious types of operational errors, category A and B, have also increased from 638, the previous year, to 680 in 2005.

Now, the review and level of oversight we have applied is unprecedented, in terms of operational errors. We've issued a general notice instructing all air traffic control facilities to implement a incident audit process. We're conducting reviews of radar and voice data using playback tools to capture operational errors. To automate this review process, we are evaluating a software prototype that monitors radar data to determine whether aircraft separation standards are maintained. This detection technology will help to further ensure that operational errors are identified.

Mr. Chairman, the bottom line is that better data will improve the way we manage safety.

Beyond each of these steps, we're working diligently to increase the staffing in our controller and inspector workforces. We have 3,456 safety inspectors, which is about 150 fewer than the previous year. This year, we plan to hire an additional 80 inspectors. And I'm pleased to say that action by the Senate and House Appropriations Committees indicates that we may be able to do better than that.

On the air-traffic front, we've got 1,000—I'm sorry, we've got 14,540 controllers. Our plan this year is to hire an additional 1,249. Because of impending retirements, the goal of our long-range plan is to hire 12,500 controllers between 2004 and 2014, a 10-year period. And I can tell you right now, it will be very important to hit those hiring targets.

So, in closing, let me simply emphasize, we've been able to establish the safest aviation system in the history of the world. I'm confident we're going to continue to meet the challenges of increasing that safety.

Thank you.

[The prepared statement of Ms. Blakey follows:]

PREPARED STATEMENT OF HON. MARION C. BLAKEY, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION

Chairman Burns, Senator Rockefeller, Members of the Subcommittee:

I am pleased to appear before you today to discuss some of the Federal Aviation Administration's (FAA) many important safety initiatives and how they contribute to extending this unprecedented aviation safety record. In the United States, the three year average commercial accident rate is .017 accidents per 100,000 departures. To put that in more understandable terms, that accident rate is the equivalent of one fatal accident for every 15 million passenger carrying flights. This means that we are living in the safest period in aviation history. All of us who work for and with aviation safety professionals take pride in the results of our collective efforts, especially given the economic turbulence being experienced by U.S. carriers. But even as we recognize how safe it is to travel in commercial air transportation, we must look beyond to face the challenge of how to make the system safer. How can we continue to improve aviation safety as demand and complexity increase? We are facing record setting passenger numbers, new light jets, UAVs, . . . even space travel is not as far away as it once was. We cannot afford to rest on our laurels.

Since it would be impossible for me to cover in any significant detail the extremely broad range of FAA safety initiatives, I will focus my remarks on two areas that I know are of interest to this Subcommittee, our oversight of aircraft maintenance and our efforts to reduce runway incursions. I think you will find our efforts in these areas to be innovative and effective.

Over the last several years, FAA has changed the way we oversee aircraft maintenance. In the past, FAA's inspectors were required to complete a prescribed number of oversight activities focused on compliance with FAA regulations. In 1998, FAA began overseeing the ten largest airlines using the Air Transportation Oversight System (ATOS) model which goes beyond simply ensuring regulatory compliance. The goal of the oversight model is to foster a higher level of air carrier safety using a systematic, risk-management-based process to identify safety trends and prevent accidents. ATOS has improved safety because it identifies and helps manage risks before they cause problems by ensuring that carriers have safety standards built into their operating systems.

This oversight approach leverages FAA's inspector workforce by reducing the likelihood of repeating inspections of the same aircraft or function, unless deficiencies were found in prior inspections of the aircraft or function. Our inspectors develop safety surveillance plans for each air carrier based on data analysis, and adjust plans periodically based on identified risks. For example, with so many of our legacy carriers in financial distress, FAA inspectors can adapt their surveillance plan to increase their focus on areas that might be at risk due to financial cut-backs, such as training, quality assurance and quality control processes, and to ensure that discrepancies reported by pilots are properly addressed. I know it is important to the Inspector General (IG) that our inspectors have the tools and information necessary to be flexible in our oversight of carriers as their financial and operational situation changes.

I also know that the IG agrees with us that our new approach to oversight is a better way to make the best use of agency resources as well as to improve safety. We are currently moving all air carriers to this oversight system. In the interim, we created the Surveillance and Evaluation Program (SEP) to bridge between the old system—where inspectors went out and "kicked the tires"—and this new oversight approach. SEP inspectors use data and risk analysis in targeting their inspections to areas within the air carrier's operation that pose a greater safety risk. Both inspection approaches use the Safety Performance Analysis System (SPAS), a computer based system that analyzes inspection and air carrier data to help inspectors identify safety problems. The IG would like to see us move more carriers more quickly from the interim inspection approach to the new approach, and we are working within our existing resources to do that.

This change in oversight recognizes that FAA cannot be expected to provide quality control for every airline or effectively police millions of flights. The laws you passed and the regulations we implement all place the responsibility for safety on the airlines. FAA's role is an important one, and we see this new approach as making better use of our resources. By focusing on risk we can determine how well the airline is managing its processes and whether or not the processes are performing as designed to meet the safety standards. Our inspection tools are designed to collect data for these purposes. Our oversight systems engage air carriers in the management of their safety issues.

I am very aware of your concern with U.S. carriers having more of their maintenance performed by repair stations, both foreign and domestic. Oversight of repair stations is a good example of why our current focus on risk management is preferable to compliance based oversight. We know FAA inspectors cannot oversee all maintenance performed on U.S. aircraft, but if some maintenance component is identified as a risk, our oversight focus would be triggered, regardless of who or where the maintenance is performed.

That having been said, we continue to work to improve our process for targeting inspector resources for oversight of repair stations based on risk assessment or analysis of data collected on air carrier outsourcing practices. We are also working on improving our automated data basis to more thoroughly document repair station inspections in order to provide the most helpful guidance to our Flight Standards Field Office inspectors. I know our efforts in these areas have been identified by the IG as being very important. The intent of our current policy is to standardize repair station inspections to provide better consistency and thorough oversight. As we consider different models of repair station oversight, we are mindful that our goal is to obtain data that is useful in our ongoing risk analysis.

I know there has been particular sensitivity to U.S. carriers' use of repair stations outside the U.S. The concern has been that such practices, done solely to reduce maintenance costs, could have unintended safety consequences. The reality is that

FAA only certificates repair stations abroad if U.S. carriers want to use the repair station and if the station meets our certification standards. FAA performs periodic inspections of these foreign repair stations. In addition, many of them hold certificates from their own countries who also perform audits and inspections. In several countries where we have Bilateral Aviation Safety Agreements (BASA), we have outlined maintenance information procedures (MIP) to ensure that foreign inspectors are placing appropriate emphasis on the Federal Aviation Regulations when conducting reviews of work done on U.S. aircraft. In these countries, we rely on the oversight of the aviation authority in addition to our periodic inspections. We are also working to ensure that these foreign aviation authorities inform and seek FAA approval of changes to repair stations operations if they directly impact FAA requirements.

It is also worth noting that a recent regulatory change has increased the accountability of all repair stations for maintenance that they contract out to third party providers. The repair station is required to be directly in charge of the work performed by third party providers and FAA now has the authority to inspect contract work performed for repair stations.

I am confident that the changes we have made in our oversight philosophy and the work we continue to do with input and assistance from the aviation community, Congress, and the international community has contributed to this historically safe period of commercial aviation safety. Our safety oversight must keep pace with the industry as it changes and I think we are well positioned to accept that challenge.

Turning to another of the FAA's top priorities, I would like to discuss agency efforts to reduce the number and risk of runway incursions. As outlined in the *FAA Flight Plan 2006–2010*, the FAA is developing a range of initiatives from airport design concepts to surface movement procedures. Related efforts address the errors committed by pilots, air traffic controllers, and airport-authorized vehicle operators and pedestrians. We have set performance targets and we are holding ourselves accountable for meeting those targets. We are working hard and making progress, but we are not there yet.

Let me start with where we are today. The United States National Airspace System (NAS) has nearly 500 FAA and contract tower staffed airports that handle more than 176,000 aircraft operations—takeoffs and landings—a day, averaging approximately 64 million airport operations per year. Of the approximately 257 million aircraft operations at U.S. towered airports from FY 2001–2004, there were 1,395 reported runway incursions. This translates into approximately 5.4 runway incursions for every one million operations and less than one serious runway incursion for every one million operations. There were five collisions during this period, none of which resulted in a fatality. So when viewed in the context of the total number of operations, the number of incursions is low which means that further reducing the rate is quite a challenge, but a challenge we are undertaking.

Because we are taking it seriously, the FAA reconstructs each runway incursion using the available information and plots the approximate location of each event on airport diagrams. During this exercise, we systematically categorize each runway incursion in terms of its severity. Severity Categories A through D (A being the most serious, D the least) consider factors such as the speed and performance characteristics of the aircraft involved, the proximity of one aircraft to another aircraft or vehicle, and the type and extent of any evasive action by those involved in the event. Aircraft involved in runway incursions are grouped into either commercial or general aviation operations. Incidents are further categorized into three error types: pilot deviations, operational errors/deviations, and vehicle/pedestrian deviations. It is important to remember that runway incursions do not occur in a vacuum. The actions of pilots, air traffic controllers and vehicle drivers are intermingled and can significantly impact one another.

We have made important progress over the last few years, especially in reducing serious Category A and B runway incursions by more than 40 percent since FY 2001. In FY 2005, we had a total of 324 runway incursions. Twenty-nine of those were Category A and B incursions, which is less than 10 percent of the total. In terms of error types, there were 167 pilot deviations, 105 operational errors/deviations, and 52 vehicle/pedestrian deviations. While pilot deviations are the most common type of runway incursion, they accounted for only 31 percent of serious incursions in the past fiscal year. Operational errors/deviations, on the other hand, accounted for only 32 percent of total deviations, but 55 percent of serious deviations which represents a notable change in the distribution of runway incursion types with respect to severity. Unfortunately, in the last fiscal year we had three Category A runway incursions between two commercial jets, an event that had not occurred for the previous three years. These are the types of statistics our runway

incursion safety team continuously analyzes in order to understand where our efforts will have the greatest impact in reducing risk.

During their most wanted meeting, the National Transportation Safety Board (NTSB) highlighted the Category A incursion that took place at Boston Logan International Airport in which two commercial aircraft almost collided. We certainly share the NTSB's concern about this incident, so I would like to describe what we have done in response. We have imposed temporary procedural restrictions until such time as controllers receive additional training to result in improved coordination within the tower. Increased runway incursions at Logan are also attributable to construction on the airfield that has caused some pilots to inadvertently cross over a runway hold short line instead of stopping. We are improving taxiway centerline markings and surface-painted holding position signs to better define hold short locations for pilots. We expect completion of this paint enhancement by mid-year 2006. Further, in October we put together a "Tiger Team" to develop other short- mid- and long-term initiatives to further reduce risk on the airport surface. Additionally, we have developed a software enhancement to the Airport Movement Area Safety System (AMASS) that adds alert capability for intersecting runways. Installation at Logan was completed last week.

FAA is also working closely with other airport sponsors to address runway incursions. Just last week, I met with the City of Los Angeles and discussed the chronic runway incursion problem at Los Angeles International Airport (LAX). Roughly 80 percent of runway incursions at LAX occur on the south side of the airport. It is important to note the current airfield layout was designed to accommodate jetliners that were in service over 40-years ago. The City's recently completed Master Plan for LAX identifies changes in the airfield layout to resolve this problem.

On May 20, 2005, FAA issued its Record of Decision for the City's Master Plan. In August FAA issued a grant to the City for approximately $38.8 million for the relocation of the southern most runway and the addition of a new parallel taxiway at LAX. This project is expected to significantly reduce runway incursions at LAX. The City has an aggressive schedule to begin the project in January 2006 and complete it in about 26 months. We also stressed the importance of addressing runway incursions on the north side of LAX. The City plans to reconfigure the north airfield with a parallel taxiway as well to reduce runway incursions on that side of the airport. This project is currently scheduled to begin in six to eight years.

Overall, we are taking a proactive approach to address operational vulnerabilities through awareness, education, procedures, airport infrastructure, and surface technology initiatives. The FAA has worked with external organizations, airport officials, and safety experts to increase surface safety awareness on a national level. We have developed and promoted runway safety training material in conjunction with organizations such as the Aircraft Owners and Pilots Association (AOPA) Air Safety Foundation. Efforts have included the creation of an interactive Web-based program to inform pilots about preventing runway incursions. The program, accessible from both the FAA and AOPA websites, provides an introduction to runway incursion risk, information about airfield signs and markings, and strategies for enhanced position awareness and improved cockpit management. Throughout the program, various quizzes, tasks, and information visualization tools offer an interactive learning experience. Since its inception, an average of 1,800 pilots a month have completed the training program.

We have also created a brochure, *Runway Safety—A Pilot's Guide to Safe Surface Operations* which highlights the importance of pre-taxi planning and properly identifying aircraft signs and markings. Over 500,000 brochures have been distributed to pilots through the AOPA magazine, *AOPA Pilot* and in a direct mailing to certified flight instructors and designated pilot examiners to supplement their training materials. Additionally, we collaborated with famed aerobatic pilot Patty Wagstaff and influential aviator Dick Rutan to produce educational DVDs. These DVDs review the fundamentals of airport operations through a series of common sense rules and standard communication procedures. Since the first DVD, *Heads Up, Hold Short, Fly Right* was released last year, flight instructors and pilots alike have consistently praised it. We believe the second film, *Listen Up, Read Back, Fly Right,* will merit the same response. Producing effective resource materials is a vital part of our continued outreach.

In addition to the work we are doing with Boston Logan and LAX, we have identified what we refer to as the Focus-35 airports, those airports that reported the most runway incursions from FY 2001 to 2004. For example, of those 35 airports, 30 airports reported more than 10 runway incursions during the four-year period. During that period, the Focus-35 airports handled 20 percent of all NAS operations yet accounted for 41 percent of all runway incursions (565). Through airport infrastructure and safety management programs, some of these airports have successfully re-

duced the number of runway incursions in the last year or two. The Focus-35 airports accounted for 39 percent of the Category A and B runway incursions. However, the number of such incursions decreased by 71 percent, from 24 to seven, from FY 2001 to 2004. Continued implementation of risk mitigation strategies at the Focus-35 airports offers the most immediate opportunity to continue to reduce the severity, number, and rate of runway incursions in the NAS.

As presented in the *FAA Flight Plan 2006–2010*, the FAA's performance target is to reduce the number of Category A and B runway incursions to an annual rate of no more than 0.450 per million operations by FY 2010. Analysis of the trend of runway incursions from 2001 through 2004, shows that the rate of reduction flattened, suggesting that the runway safety management strategies that have been implemented early in that period had achieved their maximum effect. Therefore, in order to achieve our stated targets, the FAA must identify new strategies and reprioritize their application.

That is why we are currently deploying a newer warning system called Airport Surface Detection Equipment-Model X (ASDE–X) to further enhance safety and improve "error tolerance"—as human error is inevitable. ASDE–X capabilities will be added to some of the sites that already have AMASS, as well as being deployed to additional busy airports. The FAA is also evaluating Runway Status Lights, an automatic system designed to improve the situational awareness of pilots and vehicle drivers through visual alerts. Red in-pavement runway entrance lights are illuminated if the runway is unsafe for entry or crossing, and red in-pavement takeoff hold lights are illuminated if the runway is unsafe for departure. The operational evaluation of runway entrance lights using ASDE–X surface surveillance occurred at Dallas/Ft. Worth International Airport and the system showed promising initial results. The lights were compatible with the tempo and style of operations at a busy airport, there was no increase in air traffic controller workload, and the lights proved useful to pilots. In the future, Runway Status Lights could help mitigate runway incursions like the one at Boston Logan to which I referred. Unfortunately, this program is still in the research and development stage and will not be ready for fielding for several years. Another effort worth mentioning is a change to the airfield paint markings standard for taxiway centerlines at 72 large airports, based on enplanements. We are requiring the new markings as another proactive way to alert pilots when they are approaching hold short lines so they do not inadvertently enter a runway without authorization. We will continue to pioneer work that offers the greatest opportunity for improving NAS-wide runway safety.

Mr. Chairman, the FAA's commitment to improving safety and extending the excellent safety record we are currently experiencing is our number one priority. I hope some of what I have shared with you today exemplifies that commitment. Of course, as I stated at the outset, FAA is involved in hundreds of important safety initiatives and what I have highlighted represents only a small fraction of what we are doing and what has contributed to today's impressive safety record. So, while this concludes my prepared statement, I will be happy to answer your questions on any of our important safety initiatives.

Senator BURNS. Thank you.

And we'll now hear from the Honorable Kenneth Mead, Inspector General, United States Department of Transportation. Thank you for coming today.

## STATEMENT OF HON. KENNETH M. MEAD, INSPECTOR GENERAL, DEPARTMENT OF TRANSPORTATION

Mr. MEAD. Thank you, Mr. Chairman, Administrator Blakey.

I'm glad you're having this hearing today. It's been a while since we've had a hearing anywhere in the Congress on aviation safety. So, I think the Committee is to be commended.

Everything I say today is against a backdrop of the recognition that we have the safest aviation system in the world. We all want to keep it that way.

It's been 4 years since we've had a large commercial fatal accident in this country. The same can't be said internationally. There actually have been six foreign air-carrier-hull losses since August, 586 fatalities there.

General aviation is an area—domestic general aviation is an area where I'd like to see the numbers come down. It's about 600 fatalities a year, give or take. And just as a frame of reference, in grade-crossing accidents in this country, the fatalities are way down, 368 a year. And not too many years ago, they were up in the 600 neighborhood.

So, why the safety record? Why the good safety record in the commercial area? I think newer aircraft, better technology, overlapping safety systems, improved procedures all play a role in what I think is a remarkable record. Also, without question, FAA's oversight and air-carrier internal controls that they've put in place have been factors. But I think everybody knows there's a sea change occurring in this industry. Actually, it's already occurred, and there are more changes afoot.

Some of the metrics: network carriers have reduced their in-house maintenance staff, renegotiated or vacated labor agreements, and increased use of outside repair facilities. This is occurring at a time where both operations and enplanements are back to, or exceeding year 2000 levels. I mention the year 2000; that's commonly known as the year of gridlock. That was the highwater mark.

There are four safety areas I'd like to speak to. One, Administrator Blakey, I thought, did a good job, describing these—advancing risk-based systems for inspecting air carriers. Two, strengthening oversight of repair stations. Three, reducing collision risks in the air and on the ground. And, four, I'd like to highlight a couple of emerging issues that I believe you should be aware of.

First, advancing risk-based systems. The fact is, you're never going to have enough FAA inspectors to inspect every airline, inspect every aircraft, as often as you would like. So, beginning in about 1998, that timeframe, FAA introduced the Air Transportation Oversight System. The acronym for that is ATOS. The design of this system is very, very sound. ATOS essentially requires the inspectors to use computers and data analysis to focus their inspections on the highest-risk areas. And that should help in targeting resources to the areas of risk.

These inspectors, I think, are spread thin. FAA has come a very long way in this new oversight approach. The system, though, is not yet at an end state. In June of this year, we reported that inspectors had some difficulties in using the new system to respond to the changes network carriers were making.

Some examples: inspectors didn't complete 26 percent of their planned inspections; half of those inspections were in areas that the inspectors themselves had designated as areas of high risk.

In another instance, the third-largest carrier in the world cut its staff by about 14,000 employees, and the inspectors didn't know in which departments or locations those cuts occurred.

So, I don't take any issue with this chart. I just mention these examples to show that we have a ways to go before we're going to be anything approaching an end state.

ATOS is really a cultural change for inspectors. They weren't accustomed to using computers, entering their findings in a computer database, or using data analysis to find safety problems. So, that was a pretty big change for them.

We got involved along with FAA in a review of Northwest Airlines, and I think that situation showed that FAA does have a ways to go in implementing ATOS. During the strike, the FAA inspectors stopped using ATOS, essentially. They had several ATOS protocols of about ten pages each. Those were put aside in favor of a one-page checklist by the certificate office manager there. And he said he did that because he thought it would be faster and it would capture the data more specifically. And I think that suggests that there are further refinements needed to ATOS. FAA more than recognizes this. They've committed to making a number of improvements this year. And they're to be commended for that. The key is going to be follow-through.

Second, repair stations. A lot of attention is focused on this issue. I think you know air carriers have significantly increased the use of outside repair stations to reduce their costs. You have a handout, the one with yellow and red bars. It's on page 5 of my prepared statement. And if you look at this chart, what it shows is that air carriers have lowered their overall maintenance costs fairly substantially. But it also shows an upward trend in the percentage of outsourced maintenance expense from about 37 percent, 10 years ago, to about 54 percent in 2004. And I think you can expect that trend to continue for a while.

That increased use, though, is not really the issue. I think the issue is that maintenance, wherever it's done—whether it's done in-house or whether it's done at a repair station or a third-party repair facility—it still requires oversight. In July of 2003, we reported that FAA's oversight hadn't shifted to where the maintenance was actually being done. Instead, inspectors continued to focus on in-house maintenance.

For example, inspectors completed about 400 inspections of in-house maintenance at one air carrier, but only seven inspections of repair stations. And that occurred, even though that airline had contracted out nearly half of its maintenance during that year.

Also, there are two different groups that do repair-station oversight. One group does oversight of the major air carriers, but their reviews of the repair stations' activity with respect to their carrier were infrequent. They didn't visit the repair station that often. And when they did visit the repair station, their work was limited, of course, to the work that was done on their particular carrier's aircraft.

There's a second group that is directly responsible for oversight of various types of aviation operators located within their region. And that includes repair stations. But their workload is, to understate things, extensive. For example, one inspector was responsible for oversight of 21 repair stations, 21 agricultural operators, 12 service-for-hire operators, three general aviation operators, two helicopter operations, and one maintenance school.

We also found that 138 FAA-certificated repair stations in France, Germany, and Ireland weren't inspected at all by FAA. In those cases, FAA was relying on the civil aviation authority in those countries to do the inspections. We looked at the inspection files of the repair stations in these countries, in a lot of cases, we couldn't make hide nor hair of them. Part of the reason for that was, they were in a foreign language.

In July of 2003, we recommended improvements to FAA's oversight of repair stations, including identifying repair stations used for critical maintenance and targeting surveillance based on risk assessment. FAA is working on these. It's going to take a while. Initially, the FAA thought they could complete the recommendations by 2005, by the end of this year. And they've slipped that to 2007. So, there's a lot of work to do there.

The third area I'd like to cover is reducing collision risks in the air and on the ground. Two primary indicators of system safety are runway incursions—those that present potential collision risks on the ground; and operational errors, which present potential collision risks in the air. From 1998 to 2001, runway incursions were increasing at alarming levels. I testified numerous times before this Committee about that. It was getting very, very scary.

To its credit, FAA took some decisive action in this area, and runway incursions are now down significantly, from a high of 407 in 2001, to 324 in 2005. Still too high, but there's been quite a bit of progress there.

In July of this year, at JFK, two aircraft missed one another by less than 100 feet. I saw a video of a computer replication of this yesterday. This is truly pretty scary. One commercial airliner mistakenly crossed a runway as a cargo jet was just taking off on that same runway, and they came within 100 feet of each other.

The Administrator spoke about FAA's plans for implementing ASDE–X at major airports. ASDE–X should help controllers identify potential collisions. Essentially, what it does is, it not only has a display of the runway, so you can visually see where the different objects are that could pose a potential collision risk on the runway, but it also will provide audible alerts to the controllers that they can rely on. One reason FAA is fielding ASDE–X is because the existing system is most problematic in bad weather. They give out false alarms to the controllers, and sometimes the controllers find it necessary to turn off that feature of it. Well, ASDE–X should take care of that.

It's still important to point out—you'll hear something from NTSB on this issue—that the technology that's being fielded will not alert the pilot. It will alert the controller. NTSB feels that the pilot should be notified, as well, automatically. And that's because a lot of these runway incursions are pilot deviations.

FAA has reduced the runway incursions. It hasn't had the same success with operational errors. This past year, there were almost 1,500 operational errors. That was up from 1,150 in 2004, and that is the highest number of reported—and I underscore "reported"—errors in the last 6 years.

FAA gradates these errors into different categories, running from one that does not produce significant risk to one that is very serious. There are 73 of these errors that were classified as serious incidents this past year, compared to only 40 last year.

Now, these operational errors, especially the serious ones, are cause for concern. But I have to urge all of you to exercise caution before drawing year-over-year comparisons. I used the word "reported." And I used it on purpose—our office has done a number of audits and investigations and we've seen evidence that a lot of these prior-year numbers were subject to gross under-reporting

and, in some cases, systematically and intentionally ignored. Recent investigations by our office, as well as FAA, found multiple instances of unreported operational errors.

Example: At Dallas/Fort Worth TRACON, we found operational errors were systematically ignored—some might go as far as to say "covered up"—as a result of local management policy.

Prior to our investigation, for example, the facility reported just two operational errors during the six-month period running from January 1st to the end of June of 2004. After instituting appropriate use of playback tools, like radar, the facility reported 36 operational errors during the next six months.

At the New York TRACON—you've heard a lot about that—FAA undertook an investigation in response to a rash of hotline allegations that identified 147 unreported operational errors during a two-month period alone. The number of reported operational errors for the New York TRACON increased from 24 reported ones in Fiscal Year 2004, to 233 in 2005.

We're of the view that—again, I caution year-over-year comparisons—I think FAA is taking corrective action. They now require towers and TRACONs to conduct random audits, as Administrator Blakey pointed out. And we know that at Dallas/Fort Worth and the New York facility, those actions are having a real effect.

Once FAA is sure the operational errors are being accurately reported at all of its facilities, they'll have a good baseline with which to compare. But there's one additional major step that FAA is going to have to take. FAA needs accurate, reliable staffing numbers for each of its air-traffic facilities. They've got over 300 of them. We need a number for each one of those facilities as to what will constitute, in FAA's judgment, adequate staffing. We don't just need a system-wide number. Why is that? I think you know that there's a very substantial issue between the controllers and FAA. The controllers feel they're understaffed. They point to the New York TRACON facility, for example. They said, "Well, one reason these operational errors are going up is because we don't have enough staff." This isn't the right forum to discuss the staffing at the New York TRACON, but FAA does need to come up with a number that it's prepared to stand behind as to the number of staff that it feels are needed there.

I'd like to close by mentioning a couple of emerging issues that you'll hear more about, I think, as early as mid next year.

First are microjets. Microjets are small, "affordable," aircraft with a price tag of about $1–1.2 million apiece. The next comparable model up on the market is about $6 million. FAA is forecasting that there could well be 4,500 microjets in the air in less than 10 years. Frame of reference? Today, there are 13,000 jets in operation. That's a fairly substantial increase. These things are very small. They're going to be sharing the air—same airspace as commercial jetliners.

The second one is fractional aircraft ownership. This is where a number of people, sometimes as many as eight/ten people, own the plane. I think there are some questions as to how you hold eight to ten people accountable for safety problems.

Finally, Administrator Blakey alluded to FAA's inspector staffing. I'd just like to say that we see, on national TV, there's a lot

of attention paid to hiring the controller workforce, preparing for all this attrition. But there's the inspector workforce out there, too. And I have attached a chart. The second chart in your package there shows that we've gone from 3,400 field inspectors in 2003 to 3,200 in 2005. Administrator Blakey pointed it out, and both the House and Senate marks are restoring funding to increase that number by 80 or 90, maybe a bit more. But let's not lose sight of the need to adequately staff the inspector workforce, as well.

Thank you.

[The prepared statement of Mr. Mead follows:]

PREPARED STATEMENT OF HON. KENNETH M. MEAD, INSPECTOR GENERAL, 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.

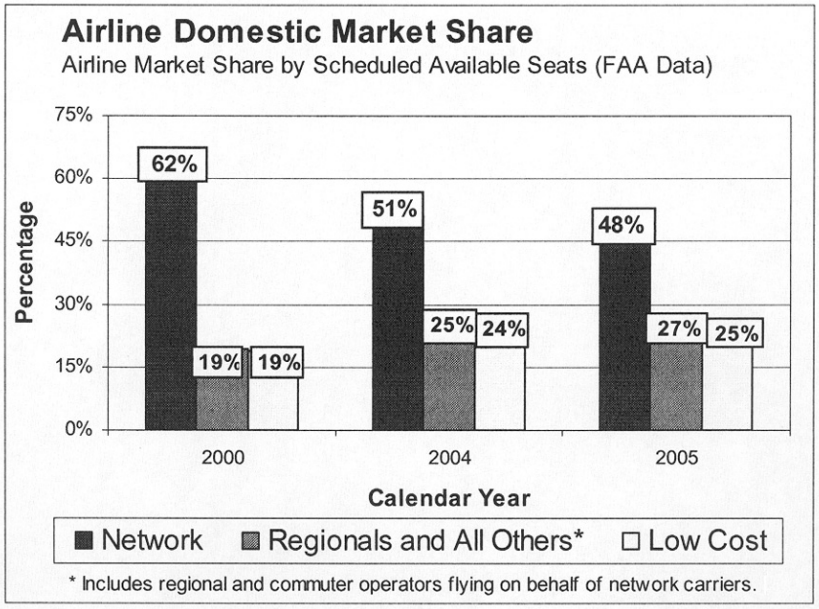
At the outset, it is important to recognize that FAA and the aviation industry continue to maintain the safest aviation system in the world. We have not experienced a large commercial air carrier fatal accident in 4 years. The last fatal accident was the January 2003 crash of an aircraft operated by 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 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.

[1] Based on National Transportation Safety Board data.




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 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.

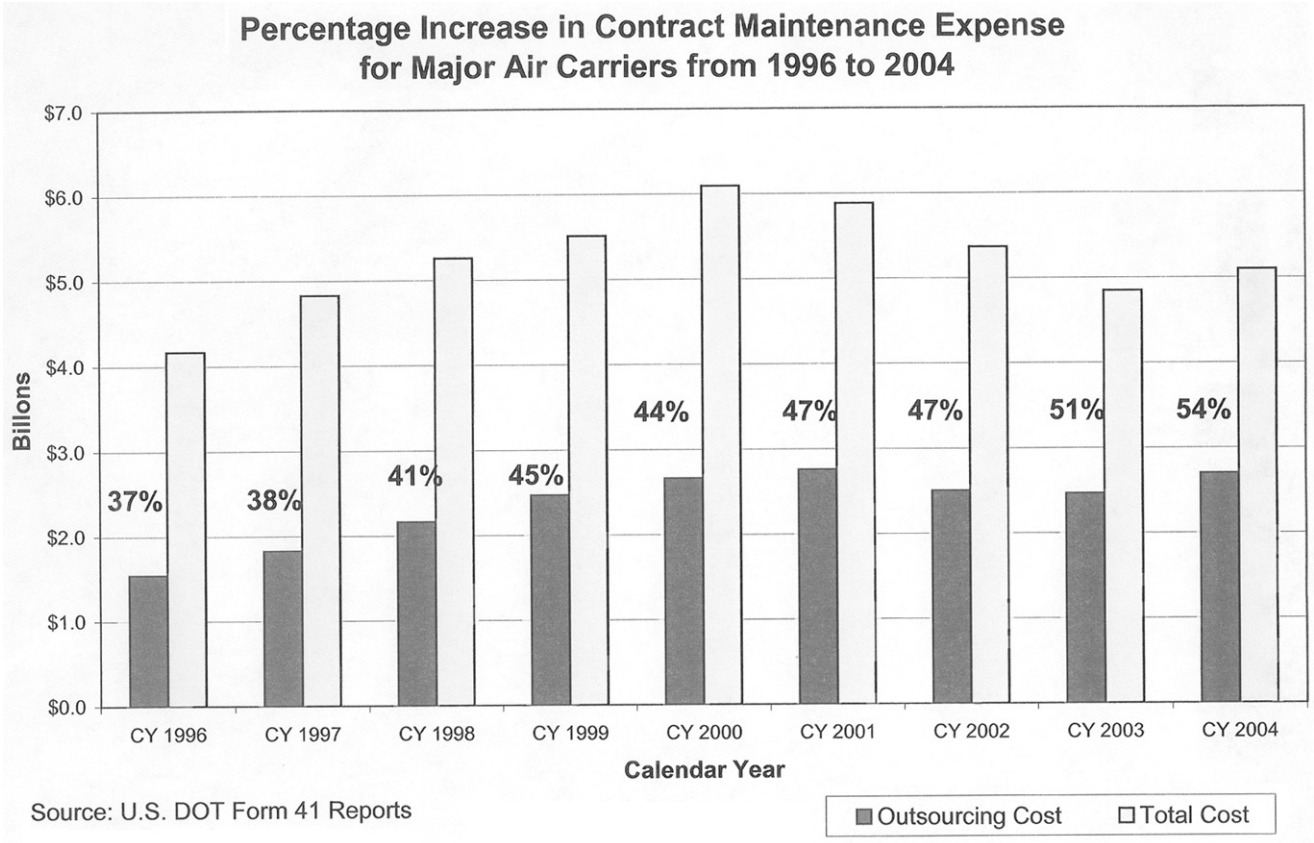
**Following Through on Commitments To Improve Oversight of Repair Stations**

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.

[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.




Source: U.S. DOT Form 41 Reports

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' 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 Infrastruc-

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

[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.

ture, 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.

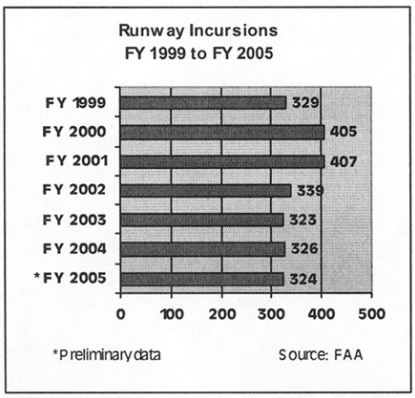
FAA must follow through on the commitments it made in response to our reports and advance its risk-based oversight systems for air carriers and repair stations, particularly in light of the magnitude of changes in the aviation industry and the pace at which they are occurring. Aircraft maintenance, no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

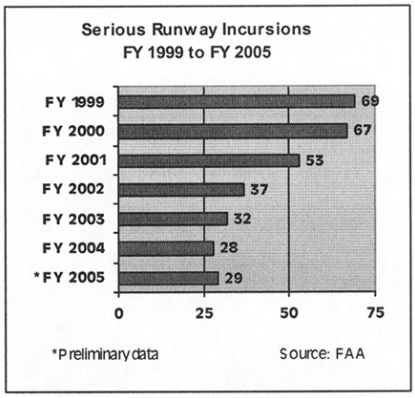
Now, I would like to shift gears and talk about two other safety indicators with respect to the air traffic control system.

**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 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.

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

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.

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 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

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

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

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 US 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.

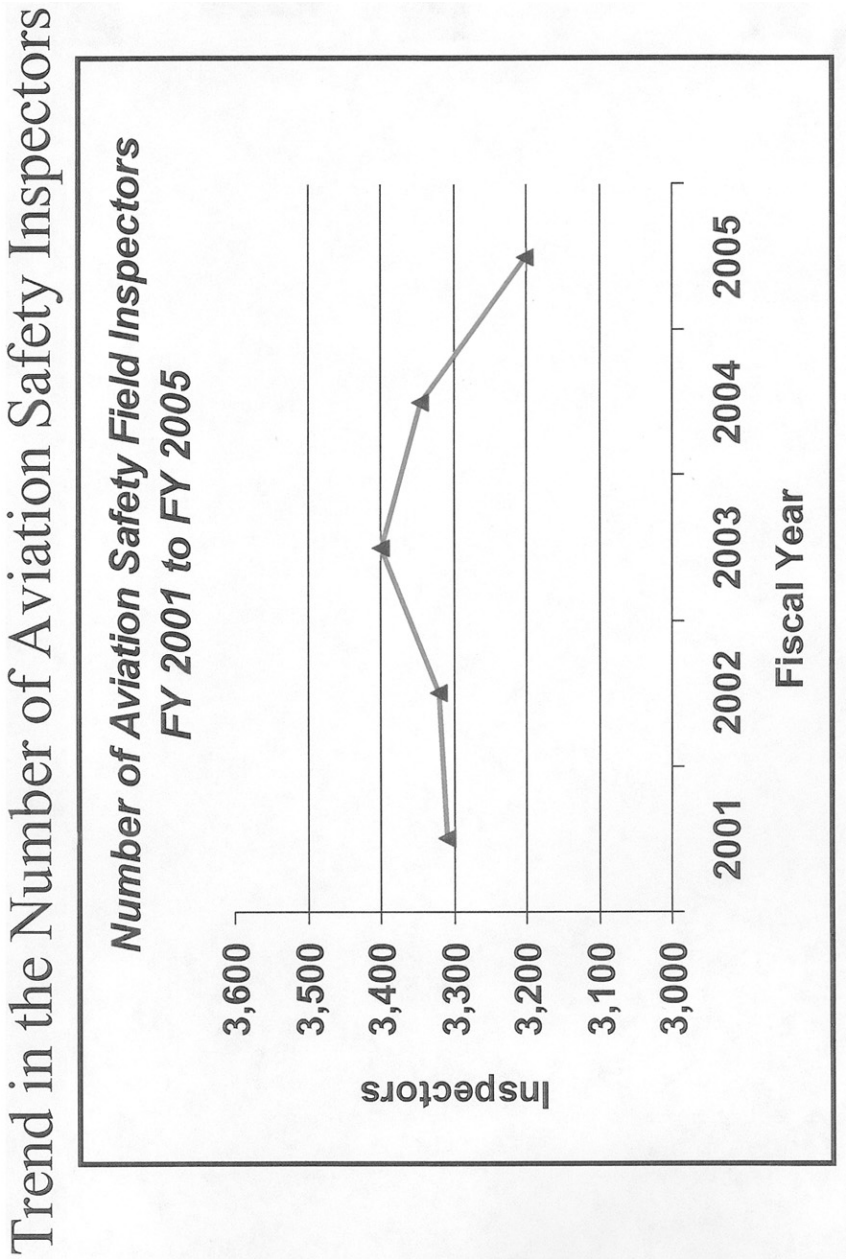
Microjet manufacturers anticipate that these aircraft will find a niche among a variety of corporate and private owners and as on-demand air taxi services. According to FAA's annual 12-year forecast, 4,500 microjets will be vying for airspace by 2016—these aircraft will be flying in the same airspace 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. I would be pleased to address any questions you or other Members of the Subcommittee might have.

Senator BURNS. Thank you.

I have one question. And I thank you for your testimony this morning. Some of them very enlightening, and some of them, we've—it looks like we've got a hole or two to fill. But I think a good portion of today's hearing will probably revolve around contract maintenance. More and more carriers are taking advantage of outside services, which were covered in your report. And I have a couple of questions.

Does the report call into question the safety of contract maintenance, or just oversight of that maintenance? And either one of you can take a shot at that. Then I have a follow-up question to that.

Mr. MEAD. Well, it's our report. And the answer is, it does not call into question the quality or adequacy of contract maintenance. It does suggest that the oversight of the repair stations needs to be beefed up. And the reason for that is because so much of the maintenance has gravitated from in-house to outside repair facilities.

Senator BURNS. Well, when I go down and get on an airplane, and I think I've bought a flight, a seat on Delta, let's say, from here to Salt Lake City, and then when I get to Salt Lake City, I've still got a Delta flight number, but it's operated by another company that's owned by a holding company. And I'm wondering, do we have enough people or a way to audit and to track who is responsible for the maintenance and how it's done?

Ms. BLAKEY. Well, certainly we know the contractual arrangements that all of the carriers have for their maintenance. These are arrangements that are well established. They have quality-control systems built into them. And since the time of the report that the inspector general was referencing, many, many things have changed. That report came out in the spring of 2003. It was based on interviews and information that went back a year. So, we're talking about roughly 3 years ago, at this point, in terms of the situation. So much has changed since then. We have substantially shifted the kind of oversight that the FAA has provided our carriers to take into account these relationships; and, therefore, have inspector workforces that are working with the repair stations in the same way we work with the in-house maintenance facilities that the carriers maintain.

Remember that there is also a number of circumstances having to do with contract maintenance, which really do go to a very safe system, because, to address your central point, Mr. Chairman, we do not have any data that would suggest that contracted-out maintenance is any less safe than maintenance that is done in-house. Remember, much of it is done by the original equipment manufacturers. Who better to do maintenance on an engine that's a Pratt & Whitney engine than Pratt & Whitney, regardless of whether it's on a Delta or United aircraft?

Much of it is done by specialized repair stations. Again, with high skills, in terms of the computerized systems that are now onboard with avionics, et cetera. So, those circumstances really have shifted as airplanes have become more sophisticated.

But it's also the case that the FAA now maintains an inspector workforce that looks at repair stations in the same way we look at carriers. And, at the same time, remember that a repair station is often used by multiple carriers. When that is the case, each one of those carriers is also responsible for auditing the work of that repair station, coming in on a spot basis and checking the work of that repair station. And, in fact, that is done on a regular basis.

One of the interesting ones that we might look at, for example, is a repair station that's used by JetBlue and five other carriers in El Salvador. We spend a tremendous amount of time down there overseeing that repair station, but so do those five other carriers. And when you look at the number of audits and the number of inspections and the number of days onsite, I would challenge anyone to say that that's inadequate oversight. And the safety track record would also substantiate that.

Senator BURNS. Do you have the manpower to monitor foreign contract services?

Ms. BLAKEY. Well, one might look at it this way. There are, right now, 675 foreign repair stations that we have certificated. And, remember, they come up every 2 years, at a minimum, to have that certificate reviewed. Which means we go in on a very intensive basis and audit those repair stations. But they also have to be certified by the country in which they're housed. So, there are two countries overseeing these. And then you have the carriers, again, that use them, that are required, themselves, through their own quality control and audit processes, to go in and check.

But the question of manpower, for those 675 foreign repair stations, I have 988 domestic FAA inspectors who go out and are specifically assigned to those repair stations to oversee them.

Senator BURNS. Senator Lautenberg?

Senator LAUTENBERG. Thanks, Mr. Chairman. You've just talked about the numbers of inspectors that you have, 988. Was that the number you——

Ms. BLAKEY. 988. I might add to that, that they performed, that year, 2,604 inspections, so it's a lot of——

Senator LAUTENBERG. I see. But when we listened to Ken Mead's presentation, he described a variety of functions that are supervised, or at least reviewed, by some of these inspectors, that go way beyond just looking at this particular repair or maintenance facility. Is that not then extending the responsibility, or the assignments, for these inspectors way beyond their capacities to keep up with the work? Now, for instance, you lose about 300 safety inspectors this year. Is that right?

Ms. BLAKEY. Over 2 years, we lost 231.

Senator LAUTENBERG. But you were only requesting 97 in the budget. Is that correct?

Ms. BLAKEY. But now our budget has a additional—I think your figure may be close to right—we do believe that there will be money that will also augment that. So, I would expect that, in 2006, we'll actually have more than that.

Senator LAUTENBERG. Well, there is some inconsistency here since this is a growing, I won't call it a phenomenon, but routine in the aviation business, don't we have to make certain that we are able to keep up to date? I think you said that it's up to the carriers themselves to review the work. But you're not content to just wipe your hands free of responsibility there and say, "Well, the carriers should be doing that." You make sure in an audit process, you have to make sure that the people who are doing the work do it effectively and not walk away from the situation and say, "OK, well, they'll review it."

Ms. BLAKEY. Absolutely. That's why I detailed all of those inspections that FAA personnel are doing. No one would suggest that we are walking away. What we are saying is that there are multiple layers of oversight, which is what I'm sure you would want. You would want to have that kind of oversight at several levels.

Senator LAUTENBERG. But the buck stops someplace, and it's up to FAA, as I see it, to make certain that every one of these aircraft is properly maintained. And, when you said the air carriers themselves are responsible for the evaluation—yes. But that doesn't necessarily mean that it's done well. We used to have the air carriers in charge of their own security—or, rather, employing screeners for passengers and baggage and so forth. And we found out that this reliance on the airlines resolved itself into a case of less cost for less work. And the situation to me sounds like, "Well, we're covering it, but we don't cover it all."

Ms. BLAKEY. I think probably you're not understanding what I'm trying to say.

Senator LAUTENBERG. Perhaps that's true.

Ms. BLAKEY. There are multiple layers of inspection.

Senator LAUTENBERG. Perhaps what you're saying just is not consistent, but go ahead.

Ms. BLAKEY. No, what I'm saying—let me be very clear—there's nothing that says there's exclusive responsibility, it's an either or. That is not the case. The FAA has responsibility for ensuring a safe system. We have responsibility for setting in place requirements for the manufacturers, for the carriers, for the repair stations, all of which we do. We go out and inspect on all of those levels—FAA personnel doing those kinds of inspections. But what I believe everyone should draw real encouragement from is, it is not solely the responsibility of the FAA. It is also the responsibility of the carriers who employ repair stations. They are required to do their own oversight, to do their own audits, as well.

Senator LAUTENBERG. Well, as I said, the buck's got to stop someplace, and I don't hear that.

What's the status in the negotiation over the air traffic controller contract?

Ms. BLAKEY. The air traffic controller contract is under negotiation right now. In fact, I think we have a team, it's out—I believe it's in Albuquerque right now, in another round of discussions. It's going slowly. I'd love to see it go much more quickly, but they are at the table. And we are seeking a voluntary agreement.

Senator LAUTENBERG. When might that be concluded? Do you have any idea?

Ms. BLAKEY. I wish I did. We do believe this is going far too slowly. We've been at it since the summer. There are a number of articles that are on the table under discussion. Candidly, the parties are significantly apart when it comes to some of the significant articles.

Senator LAUTENBERG. A couple of years ago—2 years ago—you told the NTSB that by 2007 all major airports would meet the FAA runway safety area standards. Do I understand you now to say that it's more like 2015?

Ms. BLAKEY. I'll have to look at that year specifically for you, Senator. What I would say about runway safety standards is this, that we have been working to establish those, and establish the areas, which is, I think, specifically what we're talking about, that are required for runways around the country. These are difficult in the case of some airports, because there is simply not the geography. There isn't the space. There are environmental issues. There are a variety of obstructions in those areas that have to be removed. These are things that cost a lot of money for the airport. There are technologies. There's one in particular that I suspect you may be familiar with, because it's been employed in the New York area, called EMAS, which is a substance a little like concrete, but it's porous, that you can pour at the end of a runway and have that absorb the impact of an overrun.

And it works.

Senator LAUTENBERG. Forgive me, but we do know there are techniques. This letter that you sent to the NTSB—it was August 7, 2003—said that the FAA has established the goal to upgrade RSAs at all 14 CFR Part 139 Federally-obligated airports to meet the standards, or some alternative, by 2007. Now, it was projected out there in a fairly routine—or fairly organized fashion. But as you described the technologies and the techniques for stopping it, that, then, says that, "Well, there are ways to do it, but we can't do it before 2015," which is a marked difference from the August 2003 prediction.

Ms. BLAKEY. I'll get you a better figure on how long it will take.

I will tell you this, these are very complex things to do. They do have contentious situations for some of the airports. It is not entirely in our control. I can give you one example. For example, Juneau has a very difficult situation, because they have a runway that does not have a runway safety area right now. The FAA would like to see them move ahead using EMAS. The airport authority does not want to do that. They want to go into the wetlands area, which will involve a very elaborate and contentious environmental process. Now, we do not have control over that. And I do not think it's appropriate for us to force them to take a solution that would be within a timeframe that it could be done, but that is not the choice of the local community.

So, you have many situations like that in which we're working with airports around the country, because I think that's the appropriate way to go. And, in the meantime, we're looking to make sure that there are other mitigating factors for these runways.

Senator LAUTENBERG. Mr. Chairman, thanks very much. I just take it that in 2003 we were unaware of the things that we now see, which is a surprise to me. Thank you, Mr. Chairman.

Senator BURNS. That's the reason we have oversight hearings, Senator.

Senator ROCKEFELLER. Good morning to both of you. And it strikes me as, kind of, an overwhelming problem that you have, Ms. Blakey, in the sense that your overall budget is about the same as it was last year, which means it's decreased by whatever the factor of inflation is. And I just want to say this for the record. Things like that—you know, not just safety, but things that have to be done, the removal, as you said, of impediments, planes flying into airports, the whole O'Hare question, which I want to discuss in a moment. All of these things depend upon your having the proper budget, as well as the inspection and the safety and all the rest of it.

I'm on the Finance Committee, as is Trent Lott. And I just voted against a reconciliation bill yesterday—I think I was one of the—or 2 days ago—one of about four or five people to do it—on the basis that it just does not make sense to be doing $70 billion more worth of tax cuts, some of which I think are very good—tuition tax credits, et cetera, R&D tax credits. It doesn't make sense to be doing those when somewhere down the food chain it's you that's going to pay. Now, it's very popular for people not to like Government, but they depend upon Government far more than they think they do, and they depend upon Government almost wholly when it comes to flying.

So, this would be my thought. What is the process that you go through when you're drawing up the budget within which you have to live? You have no choice. Once OMB has handed it down, it's there. You have to pretend that you love it, and all the rest. But what is the process, the actual process, by which you take a budget which is decreased, in real terms, by about 3 percent or whatever and pick out priorities? How do you do that?

Ms. BLAKEY. Well, you go from a variety of factors. FAA, every year, has a major effort, in terms of forecasting traffic and volume and what we know is coming at us. We also look at the pipeline of planes that need to be certified and all sorts of factors. Then we sit down, in the spring, and we try to take all those metrics and say, "All right, how does that stack up against our responsibilities, our workforce, our resources, to be able to put in new technology, et cetera?" And then you put together the list of things that you really do believe address those adequately to well. At that point, you also look to see whether the things that you have been doing—whether it's technologies or sometimes processes and procedures—they're paying off or not. What are we seeing? How well is it working? Does it make sense to continue to deploy some things? And some things get moved to the bottom of the list, or off the list, at that point. So, there really is a fairly intensive period we go through in the spring and early summer, where we're reviewing all those things in great depth, and then come up with a budget that supports those. All of that is, of course, detailed through the review process, through the Office of the Secretary and our budget office at DOT, and then it goes to OMB, where they have to look at it relative to other priorities in Government. And we defend the choices that we've made. And I will also say that when choices still have to be made, we will work to say, "All right, if this is the total-

ity of our budget, we still have a priority over here we'd like to maintain and shift this."

But, Senator, sometimes things also happen that I think are unintended. I believe the cut in our inspector workforce was unintended, because what happened was, we came up to the Hill with a budget that was going to allow us to maintain, and, to a small degree, augment, our inspector workforce. And what occurred, of course, were the unfunded pay increases, which—all of this is about our operating budget, plus earmarks that had to be supported. And, at the end of the day, there simply was not the money to do it.

Now, I don't think anyone targeted the inspector workforce or thought that's—but when we look at the fact that the money isn't there, there really aren't choices. So, there are all of those dynamics that go into making hard choices up front, and then the kind of cuts that occur because, obviously, the Congress has competing priorities, as well.

Senator ROCKEFELLER. What's interesting to me about that is this—it's sort of double or triple jeopardy for you. In other words, you submit a budget which would presumably not be bloated. It would just simply reflect what you felt you needed. It does not fit into the overall OMB idea of what you can spend. They then take your final budget and then they fine tune it. And then there's no court of appeals. I mean, is it possible, let's say, with the inspectors, can you go back to them? I remember, I did this once, when Al Gore was Vice President, on a veterans matter, and I just kept chewing on him until he yielded. Well—though that was based upon a personal relationship and all the rest of it, but I don't think—I don't know what personal relationships are with the OMB, but I don't imagine that they're particularly warming. Have you had chances, sometimes, to get them to change their minds because you feel strongly about something? Because they have, presumably, experts. But they're experts that spend their time on other things, too. Have you been able to get them to change on priorities?

Ms. BLAKEY. You know, without telling tales out of school, I think it's fair to say that the passback process, which we are expecting our passback on 2007 right after the new year—I mean, Thanksgiving holiday—that will give us our numbers for the 2007 budget. We will look at those. And I think it is safe to say that if we do not feel we can live within the numbers we're given, we will appeal. And you make as strong and as compelling a case as you possibly can. Again, I think this is a closed process, as you well know, but I will also tell you that last year I felt that OMB was very responsive, in the sense that we said to them, "Look, you've given us the overall numbers. We will stay within those overall numbers, with some modifications"—I won't say we'd actually be within the number, but, the point being, "Let us, though, have control over what categories we put the money in, because from our very expert point of view, some things are more important than others."

Senator ROCKEFELLER. And that—unless Conrad cuts me off, which he has every right to do—I think, is the point, that if OMB has overall administrative responsibility in the Administration for

setting the amount of money that you get, it makes sense to me—I think you're a superb administrator—and so does Conrad; we just talked about that a second ago—but that you ought to, then, get a lump sum. That doesn't compromise the Administration's budget in any way, but it does put to you—now, maybe that makes problems difficult with respect to negotiations or outsourcing contracts or to other things you need to do. Would you prefer to have that happen? If you say yes, it won't be held against you, because it never will happen.

[Laughter.]

Ms. BLAKEY. I think it's fair to say that almost any good manager prefers to have flexibility.

Senator ROCKEFELLER. Yes.

Ms. BLAKEY. And, I will also give credit where credit is due. Last year, we got that flexibility. I can't read the tea leaves as things go forward. But I will also tell you that we have made a very strong case all along, including backing it with a very detailed controller staffing plan, for the importance of meeting the controller hiring numbers that we've put forward, because we do see a wave of retirements coming at us that we have to address. And we have done the same thing on the inspector numbers.

Senator ROCKEFELLER. Thank you.

Senator BURNS. This morning, along those lines, Administrator and Mr. Mead, there was—there's been a growing concern about the transition of the air traffic control telecommunications systems from the old LINCS system to the new FTI system. Can you give us some idea on how that transition is going? And are you running into any concerns as you progress?

Ms. BLAKEY. The process of converting to FTI is underway. And this is a very different contract from the one we had before. I think it's important to mention the fact that, of course, this is the legacy—what we have now is a legacy telecommunications system for all of the FAA that is—has grown like Topsy. I mean, it has as many companies, telephone companies/providers, involved with it as probably exist in the United States in one form or another, and it grew up over decades so that it is complex, it is old, and it is difficult, therefore, to take all of that and integrate it into a smooth single system that works with the service levels that we're looking for.

The FTI contract is set up to do that, and it is set up to do that essentially on a service level. In other words, you have to meet certain performance characteristics. That's what we're looking for. We're not looking to have specific hardware, specific things designated, so much as we need to have redundancy in the system, high reliability, service levels provided. All of that, saying that it is moving forward. It hit a snag back this year, earlier in the spring, where things slowed down. We were not able to deploy and to commission as many of our systems as we expected. These things have hundreds in a month that we're supposed to be hitting as we move this thing on. And, of course, it won't surprise you to know that we tackle some of the most difficult ones first. In other words, most complex, et cetera, or where it began.

With that said, it slowed down. We weren't hitting our numbers. We put in place a recovery plan. And it's something that, along

with the Deputy Administrator, I monitor on a monthly basis now to see what those numbers look like, and we're back up, and we're beginning to hit the numbers again. So, can I assure you that it is exactly on schedule? No. Do we have a recovery plan, and is the trend in the right direction? Yes.

Mr. MEAD. There have been, I guess I'd say, significant schedule slippages. There have been cost increases. It's a very complex undertaking. FAA, this past year, did direct the preparation of what they call a "cure plan," recovery plan. We have a report underway, and we will be issuing that in the next couple of months. And that's all I would be prepared to say at this time, sir.

Senator BURNS. We have——

Ms. BLAKEY. Let me mention one other thing——

Senator BURNS. Yes.

Ms. BLAKEY.—if I might, Mr. Chairman, on this. I didn't touch on cost. And we are certainly looking to the Inspector General's report, and I'm sure there will be recommendations that will be helpful and instructive there. But on cost, we had not embedded security into the system to the degree that, after 9/11, it had to be. No one knew. We did not look at it that way. And so, there was significant cost added into this as a result of having to go back and place requirements that simply weren't there before that. So, bear that in mind when you look at the cost figures, because certainly that's a substantial cost.

Mr. MEAD. You know what? This is an interesting acquisition. My staff dropped me a note. I should say one other point on it. You can picture a system with 400–500 facilities. All of them are connected with telecommunications. There's intraconnect—there are connections between each facility, and there are connections inside each facility. Add to the 500 all kinds of peripheral equipment, like radars, beacons, that are hooked up to those facilities. There are telecommunication lines between them. I think that there was a higher level of confidence, both on FAA's part and the contractor's part, that they knew the schematic for the entire United States as to where all these circuits were. And they didn't. And that was one of the bumps in the road.

Senator BURNS. But we——

Ms. BLAKEY. It's little things, like, they want to have an exact address—right now the telecom laws require, because of 9–1–1, for you to have a very precise, exact address. Well, guess what? A lot of our radar and things don't have an address. They're sitting on a field somewhere. Exactly how do you assign that? And so, there were requirements that from the FAA standpoint over many, many years, we didn't need. Our technician—you had to go out and find it. But precisely for a new company, how you pinpoint that on a grid and how you assign the address, they're making it up. So, we're working through it, but it has not been simple. I will say that.

Senator BURNS. Well, I would imagine, when you start to change a system as large as that one is, and the redundancy that you have that's required to run a system would be quite a challenge.

Just to wrap up. This is my last question. Give me an idea of what you think the really big challenges that you're going to have

in this coming year, and what Congress should be paying closest attention to.

Ms. BLAKEY. Well——

Senator BURNS. In other words, I'm asking for your Christmas list, I guess, here, before we have Turkey Day.

Ms. BLAKEY. Well, certainly, from the standpoint of safety—but that's a primary focus of this hearing—I think we all have to keep a very sharp eye on the industry and the shifts in the status of our carriers, because with the bankruptcies that are going on and the changes in service, and, frankly, the changes in traffic, all of this poses a dynamic that just requires very close and extensive monitoring. And we have to be very nimble in the way we're assigning our resources to it. That's one.

I do want us to move ahead in addressing both the runway-incursion issue and the operational error issue. I think we are going to be doing that. We have some significant advantage in terms of automation, in terms of new technology. But, again, that's where I would certainly keep my eye.

And I think the Inspector General is correct, the new microjets that he referred to, the first of those will be certified sometime after the first of the year. The first company to be certified has more than 2,500 orders for these. Now, they are flying computers. They are remarkable machines, but the issue is how do you train pilots and how you integrate them in the system.

UAVs. I will tell you that UAVs are coming at us faster than anyone projected. I have requests, right now, for the use of UAVs in the civil aviation system. That poses some very real challenges. And yet, I think we need to step up on those, because some of them are in the security arena, and I think we would all like to see us move forward faster than anyone anticipated we would need to do it.

So, those are safety challenges. From the broader standpoint, I will tell you that the three big challenges for us at the FAA, we need to move forward into the next-generation air-transportation system, which is a transformation. We cannot continue to scale the system we have. It is all about, as I know you all have discussed with us at times, a system that's significantly satellite-based, highly automated, will allow for a lot more traffic than we have right now. To be able to do that, of course, we need to have a financing system that works. Our trust fund is up. The taxes and fees, as they're structured right now, do not make sense as we move forward for a new system like that and how you finance it, and being tied to the price of a declining ticket price is really not the way to finance this, by any standards.

The final thing is, we've got to run the FAA like a business, because you all are going to expect from us the kind of productivity that will justify the investments that we're talking about here.

Mr. MEAD. Can I give my list?

Senator BURNS. Yes. You bet.

Mr. MEAD. The number-one issue that—you've touched on this, Senator Rockefeller has, and certainly the Administrator—the financing issue for FAA. A very central issue in this whole debate is going to be how much the users should be contributing to the

FAA budget, and how much the general fund, which is where the income taxes go—how much that should be picking up.

If you look at FAA's budget, the budget mark for FAA is pretty close to how much money is coming in from aviation taxes. And at a time of Federal deficits, the budgeteers do not like to touch the general fund, unless they absolutely have to. That is a tension that you all are going to have to deal with as you approve reauthorization.

Number two, I want to see the certificate management offices for each of the carriers paying a lot more attention than they do now at the repair stations, particularly as the maintenance gravitates there.

Number three, I want to see a lot more credibility in operational errors. I know Administrator Blakey does, too, and they're moving in that direction. That's important.

And Number four would be controller staffing numbers by facility.

Number five would be your inspector staffing levels. They're just not as high profile as the controllers. And so, we have to keep our hand on the pulse there, too.

Senator BURNS. Thank you very much.

Do you have any more questions for this panel?

Senator LAUTENBERG. I just have a couple, if I may, Mr. Chairman.

And I share Senator Rockefeller's view, Administrator Blakey, that you've got to keep a lot of balls in the air to keep everything going. And it's rare that we look at the supply side, if we can call it that—supply of the money—show us the money to make this thing happen. But I do offer my congratulations, as well, for your efforts and for your skill in trying to get everything done. It's well acknowledged.

But I do want to say, Mr. Chairman, that I—it's the best argument that I have heard for investing in Amtrak today, and that is to make sure that we have alternative methods of travel for passengers. Because when we look at 4,500 microjets about to come on the scene, and general aviation—as airports free up more access to general aviation—that this thing gets to be a real problem of just too many aircraft and not enough infrastructure to accommodate it. So, go aviation. Go Amtrak.

Thank you very much, Mr. Chairman.

[Laughter.]

Senator BURNS. Senator Rockefeller?

Senator ROCKEFELLER. Actually, the microjets thing scares me. And it's one of those things where free enterprise—the free-enterprise system produces something which consumers may want, but never think about what the repercussions may be with respect to you all. And—now, my understanding is they're going to fly at much lower levels. And therefore—and tell me if I'm wrong—and not, therefore, cause the problems in altitude spacing, et cetera. I'm wrong? Tell me.

Mr. MEAD. Well, both of us probably should take this question. Do you remember, a few years ago, in 2000, in the summer—after the summer of 2000, there was this huge growth in regional jets, and there was a lot of discussion then, "Well, let's make them fly

at lower altitudes. So, that's the way to fix the gridlock problem in the air." Well, that's not really happening. One of the reasons is because you fly at lower altitudes, it gets rough. It's rougher, more turbulence. And it's my information that they're planning to fly at roughly the same altitudes as commercial jets.

Ms. BLAKEY. Yes, they're capable of flying up at 29,000–37,000 feet. And any long-haul flying they do, of course, that's also much more fuel efficient. So, what we see is this possibility. There is, at least theoretically, the view that they will fly to less populated airports. There's also a fair likelihood that they'll be doing shorter hops. Obviously, short hops, you don't tend to be up as high for as long. So, there is that phenomenon. If they're going to less populated airports, it obviously will not put as much work, at least on our terminal facilities, on our controllers and the TRACONs and the towers. But we will see. Because there's no pattern there yet. The customer base hasn't declared exactly where they're going to run. And, frankly, some of these look like they are going to be used by what are called "air taxis." There's a company out of Florida called DayJets. The likelihood is that they're going to run up and down the East Coast. And, as you well know, that is a highly populated airspace right now. So, we'll see. I mean, we certainly can't govern where people choose to fly, but we're going to have to anticipate this, and it could be pretty challenging.

Senator ROCKEFELLER. Mr. Chairman, in hearing this discussion, it—I really think it would be worth it to have a hearing on that matter alone, because when you consider if it's one fatal accident for every 15 million passengers—passenger-carrying flights, that's a superb record. That could get messed up in a hurry. Now, I had thought what I had heard was correct. It was incorrect. And I—as I think about it now, they might very well say, "Well, we'll start there." And so, we get our foot under the door, so to speak, and then, of course, they just keep increasing their altitude. The East Coast thing, the—just going from rural area to rural area, I'm not so sure that that's what they'll want to do, because that's not where the money is. I think it's worth a hearing, because I think it's a profoundly disturbing problem, in terms of safety, of untrained pilots, and many, many other things. I think it's a scary situation.

Thank you.

Mr. MEAD. You know, you take fractional ownership issues, and you overlay them on an aircraft that, with three owners, would require a mortgage of $300,000 a person, you could leverage that right into purchase of an aircraft. That could be three new pilots.

Senator LAUTENBERG. Are these single-pilot airplanes?

Ms. BLAKEY. No, they're two pilots for the ones that are coming on right now. I also will say this. For example, the first manufacturer to be certificated will be using a training program that is modeled on the program that United Airlines has had great success with over many years. It's a very, very rigorous pilot training program. So, I would not want us to assume that because they are small, somehow they are substandard in either their approach to safety or all of the kinds of built-in redundancies, from a safety standpoint, that are in the manufacturing of the aircraft. They're really quite remarkable. But it is a new phenomenon. And I think

that, in itself, means that we're going to have to take account of things that perhaps we have not been coping with to this point. And down the road, one of the issues on training, of course, will not be the original equipment manufacturer's requirements and the training there, but as these aircraft, over time, are passed on to other pilots and people come into the system who really aren't professional pilots; they want to do this as a exciting hobby, we have to pay attention to all of those things.

Senator BURNS. If you can give me a ballpark figure just to let folks in this country know, how many airplanes in this country are in the air right now?

Ms. BLAKEY. In the air right now?

Senator BURNS. Anybody know back there?

Mr. CARR. Six thousand.

Senator BURNS. Six thousand?

Senator LAUTENBERG. Commercial?

Senator BURNS. No, I didn't—I didn't say. I mean, just traffic.

Ms. BLAKEY. Midday on a Thursday, it would be about 6,000. Well, I'll tell you, John Carr, who is the head of our controllers union, probably has got as good a beat on that as anybody. I'd have to turn around—anybody else want to take a stab——

Senator BURNS. That was a trick question, see. I'm—want to throw that trick question out there.

Senator Pryor, do you have questions for this panel?

Ms. BLAKEY. Our crowd is making this point, over here, because this is——

Senator BURNS. Well——

Ms. BLAKEY.—Bruce Johnson, with air traffic, that probably in terms of those who are under active control—we've got a lot of GA out there, too, though, so—you know, bump it up maybe——

Senator BURNS. There's just a lot more than a lot of people think. And I just wanted to make that point.

So, thank you very much, and thank you for your testimony, and we look forward in working with you, and we'll go to the second panel. Thank you very much.

We have, on this next panel, Mr. John Carr, President of the National Air Traffic Controllers Association; Mr. Basil Barimo, Vice President, Operations and Safety, Air Transport Association; Mr. Robert Roach, General Vice President, the International Association of Machinists and Aerospace Workers; Mr. Christian Klein, Legislative Counsel, Aeronautical Repair Station Association.

So, we want to welcome these four. They're a very important part of the—OK, let's make the transition here as quickly as possible. I've got a lunch to go to. I've never missed any meals, and I don't plan on missing one now. I think we've got an 11:45 vote, too. So, how fast can you auctioneers talk down there? Usually, for the information of those that are coming to the table now, I have a habit of flopping them, so that you give your testimony, so the director hears it and gets it firsthand, and then I hear from her. But I didn't do that this time, but she's staying, anyway, and that's wonderful.

Mr. John Carr, thank you for coming this morning. He's President of the Air Traffic Controllers Association. Look forward to your testimony. Thank you very much.

**STATEMENT OF JOHN S. CARR, PRESIDENT, NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION**

Mr. CARR. Good morning, Mr. Chairman and Members of the Aviation Subcommittee.

I want to thank you for the opportunity to testify today on aviation safety. The people I represent feel that it is their sacred trust to ensure the smooth and efficient performance of our Nation's air-traffic controllers.

Senator BURNS. Pull that mike just a little closer, because you've got a nice soft voice.

Mr. CARR. Oh, I can speak up.

[Laughter.]

Mr. CARR. Thank you, sir.

We are very pleased and grateful to have this opportunity to discuss aviation safety. We share the Inspector General's concern on the need to hire more aviation safety inspectors. We remain concerned with the expansion of the FAA's designee program, which allows for the outsourcing of airworthiness, certification and inspection functions. However, today I'd like to concentrate, in my spoken testimony, on the immediate threat of runway incursions.

There have been 358 runway incursions since October of last year, and we have learned from the NTSB that there is a high-risk runway incursion occurring somewhere in the United States every 9 days. There have been 16 incursions at Boston Logan this year, and, in the past 6 months, we've seen instances at JFK, Newark, Tampa, and other airports. In each of these cases, disaster was avoided thanks to the skill of the pilots, the timely action of air traffic controllers, and, frankly, simply good luck. It goes without saying that we cannot, and must not, ever rely on good luck when it comes to protecting the lives of hundreds of thousands of passengers.

Unfortunately, we see that this is precisely what is happening. We believe there are two main reasons for this. First and foremost, we believe that the FAA has failed to move quickly enough, or decisively enough, to install the most modern equipment at our Nation's airports, and, second of all, as you all are, I'm sure, aware, we are facing a staffing shortage of fewer and fewer controllers guiding more and more airplanes, both in the air and on the ground.

The current technology in use at America's airports suffers from serious deficiencies. The most recently deployed technology, the Airport Movement Area Safety System, or AMASS, is limited by its inability to operate effectively in inclement weather.

Let me just pause right there for a moment to let that sink in. The most recently deployed runway incursion-prevention tool must be turned off in bad weather when controllers need it most.

In order to address this troubling gap in technology, NATCA has spent the last several years advocating vigorously for the rapid deployment of the next generation of surface detection, the Airport Surface Detection Equipment Model X, or ASDE–X system. This system functions in good weather and in bad, and goes a long way toward both reducing runway incursions and making airports safer. Unfortunately, ASDE–X cannot do us much good when the deployment plan remains on the drawing board.

Details of how this deployment and this critical new system have been delayed are included in my written testimony, so I don't want to belabor that point here. But the results of that delay are this. The ASDE–X system that was supposed to be in 25 airports by 2007 will now be in 15 airports by 2011, and the project is currently $85 million over budget.

We believe the FAA's recent announcement of its intention to have 15 of these airports covered by that system by 2011 is too little and too late. We do not believe that we can wait 6 years for this technology to be deployed when we've seen a series of dangerous incursions in just the last 6 months.

Another contributing factor to runway incursion problems is the now chronic understaffing of air traffic control facilities. There are 1,000 fewer controllers today than there were just 2 years ago. And while the FAA has published a plan to hire thousands of new controllers, it takes time to get them certified, there was a high rate of failure, and it is becoming clear to us that steps are too little and too late.

In order to just give you a sense of the actual impact of the issue, let me relate two near misses recently in Tampa, a facility that was understaffed at the time of both of these incidents, and facing a wave of retirements of their own.

On August 23rd of this year, a jet taxied onto a runway that had been cleared for landing by another, causing a near crisis that was averted only when the controller in charge sent the incoming plane back out. Two weeks later, at the very same intersection, a second, and similar scenario played out. Again, a quick-thinking controller averted what could have been a very serious accident.

These incidents in Tampa highlight two things. One, short staffing is directly contributing to an increase in runway incursions. And, second, given the fact that Tampa is not included on the FAA's list to receive ASDE–X, we fear that the FAA's approach to installations—installation of this technology is creating a two-tiered system of air-traffic safety, between the haves and the have-nots of modernization.

These incidents reinforce what should be amply clear from repeated NTSB warnings. We must address the issue of runway incursions, and do so immediately. We must get our priorities in order and dedicate ourselves to working with all of the stakeholders to get the ASDE–X system deployed quickly and commit to putting in place a serious staffing strategy to ensure we have the number of controllers we need to keep our system strong.

It's my belief that we've been given a great opportunity. We have not yet had the catastrophe that must compel us to action. We're gathered here today because this Committee had the collective foresight to recognize this gathering danger and to address these issues before disaster strikes. That places a grave and serious obligation on us all.

On behalf of America's air traffic controllers, I can say that we stand ready and willing to do what it takes to make sure this mission is accomplished. We measure our success by the safety of our skies. And on behalf of the millions of passengers who count on us to guide them home, I respectfully call on these stakeholders to use this hearing as a chance to open a new chapter of cooperative ac-

tion and collaboration toward meeting our shared goal of keeping our aviation system the safest and most efficient in the world.

Thank you very much, and I'll be happy to answer any questions you might have.

[The prepared statement of Mr. Carr follows:]

PREPARED STATEMENT OF JOHN S. CARR, PRESIDENT, NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION

Good morning Chairman Burns, Senator Rockefeller, and Members of the Aviation Subcommittee.

I am John Carr, President of the National Air Traffic Controllers Association the exclusive representative of over 14,000 air traffic controllers serving the FAA, Department of Defense and private sector. In addition, NATCA represents approximately 1,200 FAA engineers, over 600 traffic management coordinators, agency operational support staff, regional personnel from FAA's logistics, budget, finance and computer specialist divisions, and agency occupational health specialists, nurses and medical program specialists.

NATCA members have a sacred trust: to ensure the smooth and efficient performance of the vast network that makes up America's National Airspace System.

On their behalf, I am pleased and grateful to have this opportunity today to discuss aviation safety and the looming threat of runway incursions.

**Runway Incursions**

Fifteen years ago the National Transportation Safety Board adopted its initial "Most Wanted" List of Transportation Safety Improvements. The list specifies the "critical changes needed to reduce transportation accidents and save lives." Stopping runway incursions has been a continuing priority on the list. Unfortunately, the NTSB currently rates the FAA with an "Unacceptable Response" when it comes to runway incursions in its most recent release.

For several years now, America's air traffic controllers, and indeed many other aviation professionals, have become increasingly concerned with a growing threat to air safety in this country. Consider the symptoms: Since October of last year, there have been 16 separate runway incursion incidents at Boston's Logan airport alone. In the past 6 months we have seen a rash of incidents, including a number of terrifying near misses at JFK Airport in New York, Newark International Airport, Tampa International Airport, and other major airports.

America's air traffic controllers see these not as isolated incidents, but as serious symptoms of fundamental problems that are threatening aircraft and passenger safety. And they must be addressed.

NATCA's fundamental concerns are as follows:

- The FAA has failed to move quickly enough or decisively enough to install the most modern equipment at all our Nation's airports.
- The FAA is facing a staffing shortage that is forcing fewer and fewer controllers to guide more and more planes—both in the air and on the ground—creating a greatly reduced margin for error.
- The FAA terminated its long standing collaborative partnership with air traffic controllers.

**AMASS and ASDE–X**

The current technology in use at many of America's airports suffers from serious deficiencies. This includes the most recently deployed technology, the Airport Movement Area Safety System (AMASS), a ground movement safety system.

The FAA deployed AMASS between 2001 and 2003 to 34 different airports. The system has several shortcomings, the most serious of which is the fact that AMASS has to be placed in a "limited mode" during periods of precipitation, meaning the safety alerting function is disabled. Therefore, during the worst possible weather conditions—snow, rain, fog—the very times a safety alerting system is needed most, this critical safety layer is missing from our airports.

The problems associated with AMASS are not just theoretical, they are all too real, posing serious threats to our busiest airports. Recently at Newark airport a commercial plane was landing on a runway traveling at around 120 miles per hour. At the same time, a smaller jet crossed the very same runway; the two planes missed each other by just 300 feet. Taped communications from the FAA obtained by local news station WABC have revealed how AMASS failed to alert the control tower of the impending collision.

In July at JFK a Boeing 767 mistook its instructions from the control tower and crossed the runway into the path of a cargo plane that was taking off. Luckily, the cargo plane was able to pull up just in time to clear the jet by a mere 75 feet. In this case, AMASS failed to alert because it had been switched off: it was raining and the system had been disabled.

A month earlier at Boston Logan's airport, the system also failed—it did not alert controllers to the fact that two commercial jets were heading toward each other. As Mark Rosenker, Acting NTSB Chair recently told a WABC reporter, the planes were "Seconds and hundreds of feet" from a catastrophic collision.

In order to address the troubling gap in our technological capabilities, NATCA has spent the last several years advocating vigorously for the rapid deployment of the Airport Surface Detection Equipment-Model X (ASDE–X) system. The ASDE–X program was originally scheduled to include 25 airports with a completion date of 2007, but due to policy shifts and budget cuts in FY 2004 and FY 2005, as well as an increase in the number of airports (30+) slated to receive ASDE–X, only 15 facilities will have received ASDE–X by 2007. The agency is now estimating that the project will be completed by FY 2011.

This past Tuesday, at the NTSB "Most Wanted" hearing, NTSB Board Member Debbie Hersman addressed the impact delayed deployment has on runway incursion: "It is a concern when the FAA pushes the schedule back. The FAA is not addressing our concerns."

The critical nature of the situation and the desperate need for this technology was highlighted in the NTSB's Safety Recommendation A–00–66, published in July 2000, which asks the FAA to "require, at all airports with scheduled passenger service, a ground movement safety system that will prevent runway incursions." In stark contrast to this NTSB recommendation, many airports in the country currently are not equipped by the FAA with any type of a ground movement safety system and most are not scheduled to receive any ground safety technology.

In September 2005, the FAA's Joint Resource Council (JRC) met to determine a new ASDE–X Rebaseline Request. The recommendation to the FAA Administrator was to reduce the number of facilities receiving ASDE–X and to terminate the deployment of ASDE–X at 15 of the original 25 facilities scheduled to receive the system.

The FAA's new plan is to take these 15 systems and upgrade facilities presently equipped with AMASS (Airport Movement Area Safety System)/ASDE–3 systems to a new ASDE–3X system. As a result of this decision we are seeing increases in the estimated cost of the program, as well as a prolonged deployment schedule from 2007 to 2011.

The primary safety concern with this policy decision is that it leaves fifteen airports originally scheduled to receive an ASDE–X system without any ground radar surveillance system. The JRC's decision clearly cuts against the NTSB recommendation of, "continuing to install ASDE–X at airports that currently have no ground movement safety systems before revisiting all existing AMASS sites to upgrade them to ASDE–X standard appears to be a reasonable method of maximizing coverage."

Likewise there is no guarantee that adding ASDE–X safety logic to an existing ASDE–3 system will work as envisioned. Louisville Standiford Tower tested the ASDE–3X system during the past year without success, and the FAA has terminated testing at the facility at this time, reverting back to the original AMASS system.

The JRC noted that due to a $31.1 million budget reduction between 2001 and 2005, along with increased costs and additional software development needed to upgrade AMASS, the new ASDE–3X project will not be completed until 2011. While NATCA agrees there is a need to upgrade the ASDE–3/AMASS system, we believe it should not come at the ultimate expense of the previously scheduled ASDE–X airports.

Additionally, the NTSB Recommendation states that the "new ground system should provide a direct warning capability to flight crews." ASDE–X has the capability to provide these direct warnings.

In addition to radar, ASDE–X uses a multilateration system which serves as an enhancement to the surface radar by using the aircraft's own electronic signature to confirm radar targets. This system has many advantages over radar alone, as it can plot an aircraft's position more precisely than radar and it is not subject to the interference caused by precipitation. This allows the ASDE–X system to continue to operate during periods of adverse weather conditions.

**Controller Staffing**

Runway incursions do not only occur because of the shortcomings of equipment or technological failures. America's aviation system depends on the skill, dedication and hard work of the men and women of America's air traffic control. As a result, a vital component of ensuring safety—and in this case avoiding runway incursions—is ensuring appropriate staffing of air traffic controllers to maintain the safety of the system.

In an environment of record levels of air traffic, simple common sense dictates that the effect of fewer air traffic controllers guiding more planes will result in increasing stress on the system. Unfortunately this is not just a theoretic principle but a pressing reality: As we meet, there is a developing crisis in understaffed air traffic control facilities throughout the United States, and direct lines can be drawn between shortages of air traffic controllers at certain facilities and some of the recent runway incursions we have been witnessing.

Following the 1981 strike in the United States, a new wave of air traffic controllers was hired. These men and women are now approaching retirement—a fact that anyone with a calendar can anticipate. But the FAA has dragged its feet on hiring adequate replacements. Today, there are 1,000 fewer controllers than there were two years ago. The FAA hired only 13 new controllers in all of FY 2004 and saw another net loss off controllers in FY 2005. The agency has stated that it plans on hiring 12,500 controllers, but that will take a decade, meaning that even in the best case scenario, the system will be left woefully understaffed for the foreseeable future. Additionally, the historical pass-fail rate of trainees in the system is about 40 percent. Even if the FAA were able to double its current rate of training success, it would not have enough qualified controllers to address the impending retirement tsunami.

It is critical to note that this staffing shortage has been looming and was publicly forecast for years before the FAA took action. The GAO concluded in its June 2002 report, "Air Traffic Control: FAA Needs to Better Prepare for Impending Wave of Controller Attrition," that the FAA had not done enough to plan for the impending staffing crisis and needed to do so as soon as possible. The report stated, (the) "FAA has not developed such a comprehensive workforce strategy to address all of the challenges it faces in responding to its impending needs for thousands of new air traffic controllers, thus increasing the risk that FAA will not have enough qualified controllers when necessary to meet air traffic demands." GAO concluded that it "believes that sound workforce planning demands that FAA develop a strategic vision that includes a workable, long-term plan to meet staffing needs." But the FAA failed to listen: it took another two years before the FAA admitted the problem, publishing their own report stating the same conclusions as the GAO, and even longer for the agency to take action.

The result is that in facility after facility, at airport after airport, staffing has been cut to dangerously low levels, putting an increasing strain on the diminishing number of air traffic controllers, and we believe, exacerbating a portion of the recent runway incursions we have witnessed.

A number of recent examples from the Nation's busiest airports make the link between staffing and runway incursions quite clear.

We believe that an important reason for the incursions at Boston's Logan Airport is the FAA's failure to adequately staff the facility. The FAA has authorized 38 certified professional controllers to staff the facility at Boston Logan Air Traffic Control Tower. However, current levels fall far short with only 31 certified professional controllers and 2 trainees on board and with the potential loss of 20 percent due to retirements in 2006.

In Los Angeles a similar problem exists. On a clear August afternoon in 2004 an Asiana airliner was landing when the pilot saw the Southwest jet swing onto the same runway. He broke off his landing and pulled up, coming within about 200 feet of the other jet. The National Transportation Safety Board's investigation was quite clear about the cause of the incident: short staffing at the facility and an overworked controller being asked to handle too much. Staffing at the facility was at about half of its capacity when the near-catastrophe occurred. Unfortunately, that chronic understaffing continues at that facility.

Just last month, the FAA's western pacific regional counsel denied two employees from giving depositions in court citing "The Airport Traffic Control Tower at Los Angeles is severely understaffed."

**FAA Terminates Collaborative Partnership With Controllers**

ASDE–X technology is a good example of what happens when the FAA includes air traffic controller input early on and throughout the approval process. The GAO cited the success of this past practice of FAA collaboration with controllers in a No-

vember 2004 report: (the) "FAA faced fewer *schedule and cost problems* in approving ASDE–X for use in the national airspace system. This was, in part, because FAA included stakeholders early and throughout the approval process. The ASDE–X program office brought in stakeholders, including maintenance technicians and air traffic controllers, during the concept of the operations phase and continued to involve them during the requirements setting, design and development, and test and evaluation."

"By obtaining the input of controllers and technicians at the beginning of the approval process, FAA was able to ensure that ASDE–X requirements were set at appropriate levels and not over specified or underspecified."

Unfortunately, and contrary to the GAO's analysis, on July 29, 2005, the FAA unilaterally ended all collaboration between the agency and air traffic controllers by terminating the liaison partnership between air traffic controllers and the FAA.

This deliberate policy shift away from controller input stands in sharp contrast to the FAA's own report on Investment Analysis (August 15, 2000) on ASDE–X. The report stated that having a cooperative work environment with controllers was critical to the Runway Incursion Reduction Program.

**Mismanagement of ATC Modernization**

Air traffic is forecast to triple in the next 15 years, add in an expected increase in regional jet and very light jet operations at small and midsized airports, and it becomes apparent that now is the time to start the installation of ASDE–X equipment. Not just at the Nation's largest airports but at the airports no longer scheduled to receive ASDE–X as well, such as Oakland, Sacramento, San Antonio, Tampa, and Columbus. Unfortunately, the FAA has consistently mismanaged ATC modernization programs. One need only look at the STARS program as an example.

Originally STARS (Standard Terminal Automation Replacement System), was to be deployed to 172 facilities by 2005, but the FAA revised its numbers and by the end of 2004, they reduced the number of facilities scheduled to receive STARS to forty-seven. Last October the Department of Transportation Inspector General reported that STARS had a cost growth of 80 percent at almost $1.7 billion and a final implementation of 2012. A similar pattern of delay, reduction of deployment, and cost overruns has also occurred with the deployment of ASR–11 (Airport Surveillance Radar Model–11).

ASR–11 was scheduled to replace aging analog radars at 111 facilities. However the FAA's Joint Resource Council recently reduced the number of ASR–11 deployments to 66 FAA sites plus 3 Department of Defense sites and one HAATS funded site.

The original deployment plan for the ASR–11 radar system included a scheduled completion date of the end of 2005 at an initial cost of $743.3 million. As of June 2005 the current schedule of deployment has been extended to 2013 while the current cost is around $916 million. The FAA has also decreased the original number of ASR–11 sites from 111 to 66, while the cost ($696.50 M) is virtually unchanged from the original estimate there has been more than a 40 percent reduction in planned radar sites. According to the JRC, the increased cost is mostly due to budget deferrals, update requirements, safety enhancements to equipment, along with cost estimating and risk.

The ASDE–X program is now marching down the familiar road the FAA has taken in previous modernization programs. Chronic mismanagement has prevented both the timely deployment of this essential equipment as well as severely reduced the number of airports originally scheduled to receive these modernization tools. NATCA considers ASDE–X to be an excellent tool that can aid pilot and controllers in the prevention of runway incursions. We believe this equipment will take us well into the 21st century, helping maintain the United States air traffic control system as the safest in the world. We also believe the FAA should reflect the same high level of concern for preventing runway incursions as the NTSB. Therefore we can only consider the FAA's $20 million reduced budget request for Fiscal Year 2006 ASDE–X funding to reflect an almost callous disregard for improving the safety of the United States air traffic control system.

*Necessary Steps*

The National Air Traffic Controllers Association urges consideration of the following:

- Deploy for safety: Considering the recent increases in the number of runway incursions around the country, why is the FAA only installing critical ground radar equipment at 16 airports despite its earlier commitments to install the equipment in more than twice as many places?

—NATCA does not believe the country should have a two-tiered system of safety where some airports deserve safe runways while others don't. Furthermore, NATCA believes that the current FAA timeline of six years to install this technology is too long and calls on the agency to expedite the timeline. This system could go a long way toward reducing runway incursions and making our airports safer.

- Staffing for safety: Chronic understaffing at our Nation's air traffic control facilities is another key contributing factor to the other cause of runway incursions. The FAA is not adequately staffing air traffic facilities across the country, even as air traffic increases to record levels. There are 1,000 fewer controllers today than there were two years ago. The FAA is losing more controllers than it is hiring and training, putting the agency in a continuing net-loss staffing situation. The agency must adequately staff the air traffic control system.
- Collaboration for safety: Why is the FAA refusing to discuss critical safety issues in contract negotiations with controllers? Though air traffic controllers know the aviation system best, FAA management just recently refused to discuss a range of critical safety issues during contract negotiations.

Mr. Chairman, we look forward to working with you and this Subcommittee to ensure that our air traffic control system remains the safest, most efficient system in the world.

Senator BURNS. Thank you very much, Mr. Carr. We appreciate that.

And now we'll listen to Mr. Basil Barimo, Vice President, Operations and Safety, from the Air Transport Association. And thank you for coming this morning.

**STATEMENT OF BASIL J. BARIMO, VICE PRESIDENT, OPERATIONS AND SAFETY, AIR TRANSPORT ASSOCIATION OF AMERICA, INC.**

Mr. BARIMO. Thank you, Mr. Chairman, Senator Rockefeller, and Members of the Committee.

I am Basil Barimo, and, on behalf of the 23 airlines who are members of ATA, I appreciate the opportunity to address airline safety today and into the future.

We have submitted a written statement for the record that covers a number of topics.

Senator BURNS. I should have—and I'm sorry—excuse me, but all your statements, your full statements, will be made part of the record. And if you can pull them down a little bit, why, we'll get through the questions and everybody'll get their due. So—I failed to mention that.

Thank you very much.

Mr. BARIMO. Thank you, Mr. Chairman.

This morning, I want to touch on three of those: the U.S. airline industry's extraordinary safety record, the use of contract maintenance by air carriers, and an emerging issue that warrants attention by all stakeholders, but particularly the FAA.

U.S. airlines currently have an extraordinary and unparalleled safety record. As the chart I've put up illustrates, airline safety today is, by any measure, exceptional. Based on NTSB data, the chart clearly shows a dramatic reduction in the airline fatal accident rate. Are we perfect? Of course not, but we will continue improving, and we're working diligently every day to maintain our forward momentum. We're proud of this record, because it the tangible result of our core operating principle: safety first.

You know well that the airline industry is fiercely competitive. But if there's one thing that binds the ATA members together, it is their interest in safety. From CEOs to ramp workers to everyone in between, airlines demand, and expect, the highest level of attention to detail when it comes to safety. And this principle extends to all of our partners—airframe and engine manufacturers, suppliers, and service providers.

As a result, notwithstanding the economic turmoil of the past 4 years, U.S. airline safety has continued to improve. In 2004, NTSB reported only one fatal accident in only—over 10 million scheduled departures. In three full years, spanning 2002 to 2004, there were three fatal accidents in 31 million scheduled departures. During that time, U.S. airlines providing Part 121 service carried nearly two billion passengers and recorded just 34 fatalities. Moreover, this trend continues in 2005. And, without question, scheduled air service is incredibly safe, and our goal is to build on that safety record.

One of the reasons why our safety record has improved is the growing use of data-driven analysis to understand and prioritize risks and to identify, and act on, indicators of potential problems. The joint FAA/industry Commercial Aviation Safety Team, better known as CAST, has led the way in this regard, and its goal of reducing the fatality risk by 80 percent by 2007 is well in sight.

CAST has successfully identified and addressed risks to produce important safety improvements. In addition, voluntary airline programs, such as the Flight Operational Quality Assurance and Aviation Safety Action programs, which rely on actual flight data and employee reporting, require labor, carrier, and FAA participation, and it helps to identify potential problems before they result in accidents.

Effective and efficient maintenance programs also play a key role in our safety record. Having managed maintenance operations and quality assurance programs at a major airline and then at a major repair station, let me state that maintenance is a 24/7 function that requires careful organization, tight control, diligent oversight, and robust quality assurance. Airlines have developed comprehensive oversight systems to ensure that aircraft are maintained properly, in accordance with FAA regulations and manufacturers' standards. Furthermore, airlines have their own staff on-site to monitor work wherever it's being performed.

An important component of any airline's maintenance program is third-party maintenance provided by repair stations. Repair stations have provided high-quality maintenance services to airlines for many years. It's nothing new. Because repair stations offer savings to airlines due to competitive pricing and flexibility when compared to the rolled-up costs of in-house maintenance, their use has grown in recent years as airlines have reduced their own cost structures. Some have suggested that this practice reduces or impairs safety, but the facts simply don't support those claims. Simply put, there is no basis for the contention that safety suffers because airlines utilize third-party maintenance.

The last point I want to make this morning is the emerging issue of the impact that very light jets, VLJs, or microjets, as you've heard them called, will have on the safety of commercial airline op-

erations when introduced in the near future. They're being marketed to individuals, and a number of entrepreneurs are planning new air-taxi services. VLJs will impact scheduled airline operations, because they will operate in the same airspace as large jets, similar altitudes, but they will operate at slower speeds, and that's a concern. Today, 2,500 VLJs reportedly are on order, and FAA estimates that 4,500 will be operating within the next 10 years. Some put those numbers even higher.

The introduction of VLJs into airspace used for commercial operations raises questions about pilot qualifications and training, as well as maintenance and oversight. We are not saying that VLJs are unsafe or that they're a hazard. What we're saying, however, is that we need to look ahead and examine the risks and determine if current regulations and practices are adequate to ensure the safety not only of VLJ operators, but of other users in the airspace. And we would support the idea of further discussion around VLJs.

In closing, we have seen a consistent improvement in airline safety. In my opinion, our improved safety record is a direct result of increased reliance on data-driven analysis that prioritizes risks and then applies resources in a disciplined manner. Our safety record also demonstrates that the expanded use of third-party repair stations by airlines does not negatively affect safety. And while there may be room for some improvement in the regulatory and oversight structure, it is, in fact, working.

Today, airline travel is safer than ever, and the facts speak for themselves.

Thank you for the opportunity to speak before you, and I'm glad to answer questions.

[The prepared statement of Mr. Barimo follows:]

PREPARED STATEMENT OF BASIL J. BARIMO, VICE PRESIDENT, OPERATIONS AND SAFETY, AIR TRANSPORT ASSOCIATION OF AMERICA, INC.

The Air Transport Association of America, Inc. (ATA), the trade association of the principal U.S. passenger and cargo airlines,[1] welcomes and appreciates the opportunity to submit these comments for the record on the state of aviation safety in the U.S. airline industry. ATA's 23 member airlines have a combined fleet of more than 4,400 aircraft and account for more than 90 percent of domestic passenger and cargo traffic carried annually by U.S. airlines. ATA and its members have a vested interest in the safety of commercial air transportation.

**The Industry's Safety Record is Unparalleled**

ATA was founded in 1936 by then-fledgling U.S. airlines for two fundamental reasons: to improve and promote safety within the airline industry, and to advocate for a legal and regulatory environment that would allow the U.S. commercial airline industry to grow and prosper. What was true then is true today, safety is the foundation of this industry. U.S. airlines will succeed and thrive only if the industry *in fact* is safe, and only if the public recognizes and *believes* it is safe. For these reasons, our members take their safety responsibilities very seriously. "Safety first" is more than just a catch-phrase—it is the core principle of this industry.

Notwithstanding the financial challenges of the past four years,[2] U.S. airline safety has remained rock solid. In 2004, the National Transportation Safety Board

[1] ABX Air, Inc.; Alaska Airlines; Aloha Airlines; American Airlines; ASTAR Air Cargo; ATA Airlines; Atlas Air; Continental Airlines; Delta Air Lines; Evergreen International Airlines; FedEx Corp.; Hawaiian Airlines; JetBlue Airways; Midwest Airlines; Northwest Airlines; Southwest Airlines; United Airlines; UPS Airlines and US Airways. Associate members are: Aeromexico; Air Canada; Air Jamaica and Mexicana.

[2] The economic plight of the U.S. airline industry since 9/11 is well known. The industry lost over $32 billion through 2004, and experts forecast it will lose another $9 billion in 2005. Seven

Continued

(NTSB) reported only one fatal accident in over 10 million scheduled departures. In the three full years spanning 2002 to 2004, there were three fatal accidents in 31 million scheduled departures. During that time, U.S. airlines providing Part 121 scheduled operations carried nearly 1.9 billion passengers and recorded just 34 fatalities. The overall number of accidents also has decreased. The rate at which any accidents occur is now less than one accident per five million departures. Moreover, this trend continues in 2005. Without question, scheduled air service is incredibly safe, and our goal is to build on that safety record.

**The Right Regulatory Philosophy and Programs**

While there are many reasons for the industry's excellent safety record, in our opinion two key developments stand out as having a significant positive impact. First, we have progressed from a prescriptive, conduct-based regulatory philosophy that focuses on what to do and how to do it, to one that looks to set performance standards first and the manner of achieving the desired performance second. This has shifted the focus to where it should be—the safety objective, allowing carriers and the Federal Aviation Administration (FAA) to better define and implement appropriate procedures and requirements. Second, instead of being reactive and establishing safety goals based on the most recent accident or incident, the industry has learned to use the wealth of hard data accumulated by all stakeholders—FAA, NTSB and air carriers—to drive the safety agenda so that the most serious risks are identified and solutions developed in an orderly, efficient and effective manner. This data-driven, risk-assessment approach to safety has paid tremendous dividends already. It is the key to future safety improvements and continued accident prevention. ATA airlines consider accident prevention the top safety priority.

FAA and airline safety programs reflect and implement the regulatory philosophy and data-driven approach to safety previously described. In particular, the development of *voluntary* programs that encourage the reporting of operational data that would otherwise be lost has expanded the data set and enhanced the value of the analytical products. Working with the FAA and other stakeholders, U.S. airlines have developed flight operational quality-assurance programs—known as FOQA programs,[3] aviation safety action programs[4] and line operations safety audit programs.[5] These programs have provided valuable data that have yielded insights into the precursors of accidents. FAA and the airlines have used this information to identify and effectively mitigate risks that might otherwise have resulted in accidents. We believe these and other similar programs will produce further improvements in aviation safety.

One of the most important programs affecting safety has been the joint industry-government Commercial Aviation Safety Team (CAST). CAST was established in 1997 to develop a comprehensive strategy to identify and prioritize risks and then develop solutions to reduce commercial aviation fatalities in the United States. Using a data-driven process, the CAST initiative identifies accident precursors and contributing factors to ensure that resources are applied to improve safety where needed most and where most effective. Over time, CAST has successfully addressed several types of accidents, such as controlled flight into terrain, approach and landing accidents, runway incursions, maintenance management, icing, and uncontained engine failures. As of April 2005, 30 different safety enhancements had been accomplished, and 17 were underway. Through these 47 enhancements, the goal is to reduce the fatality risk 80 percent by 2007.

As noted, the CAST strategy is first and foremost data-driven. It relies on comprehensive analysis of past accidents/incidents to identify accident precursors and then develop specific safety enhancements to address those precursors and related contributing factors. But the CAST process does not stop there. It is a fully integrated process that includes airlines, manufacturers, maintenance providers, commercial pilots, National Aeronautics and Space Administration (NASA) and other stakeholders, so that once the solutions have been identified, the affected parties implement the safety enhancements and track their implementation for effectiveness. Ultimately, the knowledge gained is used to continually improve not only the U.S.

---

carriers currently are reorganizing in Chapter 11, including three network carriers, and US Airways recently emerged from Chapter 11 (for the 2nd time) after merging with America West Airlines. Without question, the past four years have been the worst economic period in the history of the airline industry.

[3] FOQA programs involve the collection and analysis of data recorded in flight to improve the safety of flight operations, air traffic control procedures, and airport and aircraft design and maintenance.

[4] ASAP involves collection and analysis of safety concerns reported by employees.

[5] LOSA involves the collection of safety data through in-flight observations of flight crews by specialists.

aviation system, but aviation safety worldwide. Canadian and European authorities also participate in CAST.

**Achieving Safety on All Levels**

In addition to data-driven programs, aviation safety can be viewed as the cumulative outcome of numerous other activities by the FAA, NTSB, airlines and their employees, and airframe and engine manufacturers. The most obvious of these is the approval and surveillance by the FAA of air carrier training, operations and maintenance programs, complimented by FAA's enforcement program. Training programs for flight and cabin crews are critical to safe operations. Because of the large number of qualified pilots and flight attendants available, airlines continue to be highly selective in their hiring of crew members. Airlines employ a rigorous selection and training process that includes comprehensive initial and recurrent training. Most major airlines today utilize the Advanced Qualification Program, which enables each airline to tailor its curriculum to its unique operating environment and thereby maximize crew-member proficiency.

Effective and efficient maintenance programs also play a key role in our outstanding safety record. Maintenance is a 24/7 function that requires careful organization, tight control, diligent oversight and robust quality assurance. Airlines have developed comprehensive oversight systems to ensure that aircraft are maintained properly in accordance with FAA regulations and manufacturers' standards. These systems ensure that aircraft perform safely and reliably, regardless of where the maintenance is performed. Repair stations (third-party maintenance providers certificated under Part 145) have and will continue to play a vital role in air carrier operations. FAA oversight of repair stations is another important layer in a comprehensive safety net. In addition to FAA oversight, air carriers generally maintain their own on-site staff at their major maintenance-provider locations to continually monitor performance and quality.

**Current Issues**

Current safety issues being addressed by FAA include runway incursions, strengthened seats in transport aircraft and fuel tank flammability. We are pleased that FAA is deploying new ground surveillance systems to reduce the risk of runway incursions at our busiest airports. We look forward to working with the FAA and airports to implementing this new safety improvement. Likewise, we support the FAA's recently issued final rule on strengthened passenger and crewmember seats ("16–G seats"). Many of our members began installing 16–G seats long before the FAA proposed a new rule in 2002, and we are pleased that this voluntary effort was recognized in the final rule. The final rule is supported by a data-driven safety analysis and will result in improved safety without imposing an undue economic burden on the industry.

Earlier this week, the FAA issued a notice of proposed rulemaking ("NPRM") on eliminating the risk of catastrophic fuel tank explosions. We are in the process of reviewing that NPRM. The NPRM, however, is merely the final step in an overall initiative to address this issue. Over the past 10 years, we have worked closely with the FAA and airframe manufacturers to make numerous equipment and operational changes to reduce the potential for such an event. Those changes have been efficient and effective. Likewise, we think it makes great sense to incorporate fuel tank inerting technology in new aircraft, which the recent NPRM proposes. We hope that, like the 16–G seat rule, the FAA has made the safety case for retrofitting more than 3,200 commercial aircraft with this new technology, which would be an extremely challenging and costly undertaking. We want to be sure that the risk assessment is sound and that this is the best and most effective use of scarce resources. As previously stated, the reactive, regulate-by-incident approach of the past does not always ensure that the most serious safety issues are addressed or that effective measures are put into place. Data-driven risk analysis and related benefit-cost analysis will achieve that goal.

**Emerging Issues**

Looking ahead, we see the possibility of new risks emerging. We urge the FAA to be mindful of these emerging issues and their potential impact on commercial aviation safety. We discuss two such issues here. The first is the imminent introduction of high-performance light weight jets for personal use and air taxi operations. These jets, commonly referred to as Very Light Jets (VLJs) or microjets, will operate in the same airspace as large commercial jets, but at a slower speed. Today, 2,500 VLJs reportedly are on order, and the FAA estimates that 4,500 VLJs will be operating by 2016. Others estimate even greater numbers of these aircraft. Honeywell, for example, forecasts 8,000 units by 2018. The emergence of these aircraft raises a number of questions that must be addressed:

- How will the FAA ensure that VLJ pilots, particularly private pilots operating their own (or jointly owned) microjets, obtain and maintain the skills needed to operate safely in commercial airspace?
- Are current pilot certification standards appropriate for this new generation of aircraft?
- Are current maintenance standards for privately owned aircraft appropriate for this new generation of aircraft?
- Will FAA maintenance surveillance programs ensure the safety of these aircraft if owned and operated privately as well as by air taxi operators?
- Are the second- and third-tier airports where these aircraft are expected to operate fully prepared to respond to a safety incident?

These are just a few of the questions that must be resolved to ensure VLJs do not have an adverse impact on safety.[6] In addition to these basic safety issues, there is the question of funding safety oversight of this sector. The scheduled airline industry contributes 95 percent of the Airport and Airway Trust Fund (AATF), and in FY 2006 will pay 82 percent of the total FAA budget. Congress must ensure the VLJ sector pays its fair share into the AATF not only in relation to its use of the air traffic control system, but also to cover related safety oversight. The airlines should not subsidize safety oversight of the VLJ sector, including both private use and air taxi operations.[7]

The second emerging issue, somewhat related to the first, concerns modernizing and expanding the capacity of the air traffic control system to handle the anticipated growth in demand. Much of the growth in demand for air traffic services anticipated by FAA (FAA forecasts a 300 percent increase in demand by 2025) is from VLJs and other small aircraft operators. FAA's air traffic services must expand to accommodate this growth safely.

For this to happen, it is critical that the FAA migrate from its 1950's era ground radar system to a state-of-the-art satellite-based navigation and surveillance system that utilizes the technological capabilities of aircraft to communicate with one another and a central control facility. An adequate and stable funding mechanism is crucial if the FAA is to ensure flight safety in this new environment and, as part of this effort, the FAA must capitalize on operating cost reductions it can achieve by eliminating and consolidating costly, out-of-date facilities. Enhancing capacity will enhance aviation safety as all sectors of aviation expand in the foreseeable future.

**Conclusion**

Notwithstanding extreme economic pressure, the U.S. airline industry has experienced one of the safest, if not the safest, four-year period in its history. While hearings like this allow us to proudly reflect on this accomplishment, we understand that we cannot become complacent and rest on our accomplishments. Aviation safety demands constant vigilance, review and improvement. For this reason, we will continue to work with the FAA, the NTSB, and the many parties with a stake in the continued safety of our industry. "Safety first" will continue to be our core principle.

Senator BURNS. Thank you very much. Appreciate that.

Mr. Robert Roach, Jr., General Vice President, the International Association of Machinists and Aerospace Workers——

Mr. ROACH. Thank you.

Senator BURNS.—of which I was a member at one time.

Mr. ROACH. And I'll sign you up right today.

[Laughter.]

---

[6] Closely related is the question of security. What systems and programs will be put in place to ensure that these aircraft operate with the same level of security as large transport category aircraft? Air taxi operations, in particular, should be subject to the same level of security as all other commercial operations.

[7] The same concern exists as to the VLJ sector's contribution to Federal sources used to fund airport improvements. It would be ironic for these aircraft owners/operators to benefit from Federal programs at the airports where they operate but not contribute their fair share to funding these programs.

**STATEMENT OF ROBERT ROACH, JR., GENERAL VICE PRESIDENT, TRANSPORTATION DEPARTMENT, INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS**

Mr. ROACH. Thank you, Mr. Chairman, Senator Rockefeller, and Members of the Committee, for the opportunity to speak today.

My name is Robert Roach, Jr., General Vice President, Transportation Department, for the International Association of Machinists and Aerospace Workers. I'm appearing at the request of International President R. Thomas Buffenbarger. The Machinists Union represents more than 100,000 U.S. airline workers in almost every classification, including Mechanics, Flight Attendants, Ramp Service Workers, Public Contacts.

Let me say that Administrator Blakey has made herself personally available—and her staff—to myself and my staff. We believe that the work that she has done has greatly contributed to the fact that we are—we do have the safest U.S. airways aviation history in the world. However, we do not believe that we can allow ourselves to become complacent. We must increase our vigilance in the United States, and honestly assess and defuse the threat from overseas repair stations. The financial crisis in the airline industry is well known. Carriers are continually looking for ways to save money and, unfortunately, are increasingly looking at their maintenance programs to reduce costs. Far too often, that means subcontracting maintenance work previously done by an airline's own employees.

Unfortunately, without proper oversight, the reduction in costs can come with increased risks. For example, in January of 2003, US Airways Express Flight 5481 crashed into a Charlotte, North Carolina hangar, killing 21 people onboard. The National Transportation Safety Board determined that a mechanic for the subcontractor improperly adjusted the cables that help control the pitch of the aircraft and skipped steps that the NTSB said would have likely have helped the mechanic catch the mistakes.

FAA regulations require such flight-critical work to be inspected, but in this case, it was inspected by the same instructor who allowed the steps to be skipped. The NTSB chairman said, "I think the entire system here was broken down. There were errors at every level."

As the virtual-airline model gains favor, we must ensure that aircraft maintenance practices are strictly policed, regardless of where they are performed.

A July 2003 report by the Department of Transportation Inspector General criticized the Federal Government's inability to adequately police the dramatic increase in outsourcing by the Nation's airlines. Independent maintenance repair facilities are not the problem. The IAM represents workers at the independent repair facilities, but our collective bargaining agreements help foster maintenance excellence. Congress must pass laws so the FAA can ensure regulations, but unless the front-line mechanic isn't afraid to object when management puts profits before safety, they are meaningless. Congress can provide the funds that are needed to hire additional inspectors to perform the work that is needed.

Oversight repair facilities are a separate, more dangerous issue. The amount of certified foreign repair stations has increased more than 300 percent since Federal regulations were significantly loosened in 1988. Congress directed that the FAA submit a plan by March 12, 2004, to ensure that foreign repair stations working on U.S. aircraft are subject to the same level of safety and oversight as required here at home. Mr. Chairman, we are still waiting for the FAA to submit a plan and address Congress' requirement for one level of safety.

Furthermore, having U.S. aircraft repaired overseas opens up this country to great security risk. These stations should be immediately closed down until security audits of these stations can be conducted and security vulnerabilities addressed.

There should be one standard for safety, security and FAA oversight at all aircraft repair stations, including equivalent standards for criminal background checks and drug and alcohol testing of workers, as well as tightened access to security or repair facilities. An immediate increase in FAA inspectors is necessary to safeguard the U.S. aviation industry.

Calls for increased airport security were heard before 9/11 and ignored, for economic reasons. Experts warn that the New Orleans levee system was inadequate to withstand a major storm, but they were not shored up until due course.

Mr. Chairman, Members of this Committee, in case you haven't heard it before—let my testimony today serve as a warning that the oversight of maintenance of U.S. aircraft is almost non-existent. I'm here not only to sound an alarm, but to offer the assistance of the Machinists Union and all our members, who build and maintain aircraft, to help safeguard our aviation industry.

I thank this Committee for inviting us to participate in these proceedings and listening to our concerns. I look forward to answering your questions.

And with me today, I have our director of aviation matters for the Machinists Union, Dave Supplee, who is also here to answer any questions that you may have of a technical nature.

Thank you.

[The prepared statement of Mr. Roach follows:]

PREPARED STATEMENT OF ROBERT ROACH, JR., GENERAL VICE PRESIDENT, TRANSPORTATION DEPARTMENT, INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS

Thank you, Mr. Chairman, and Members of this Committee for the opportunity to speak to you today. My name is Robert Roach, Jr., General Vice President of Transportation for the International Association of Machinists and Aerospace Workers (IAM). I am appearing at the request of International President R. Thomas Buffenbarger. The Machinists Union represents more than 100,000 U.S. airline workers in almost every classification, including Mechanics, Flight Attendants, Ramp Service workers, Public Contact employees.

The U.S. aviation industry is the safest in the world. However we cannot allow ourselves to be complacent. In fact, just the opposite is necessary. We must increase our vigilance in the United States, and honestly assess and diffuse the threat from overseas repair stations.

The financial crisis in the airline industry is well known. Carriers are continually looking for ways to save money, and unfortunately are increasingly looking at their maintenance programs to reduce costs.

Far too often, that means subcontracting maintenance work previously done by an airline's own employees. Unfortunately, without proper oversight the reduction in cost can come with increased risk.

On January 8, 2003 US Airways Express Flight 5481 crashed into a Charlotte, NC hangar packed with IAM members, killing all 21 people on board. The subsequent National Transportation Safety Board (NTSB) investigation faulted Air Midwest, which operated the aircraft, the facility that performed maintenance of the aircraft and the FAA.

US Airways, headquartered in Arlington, Virginia, sold the tickets to the flight and the aircraft displayed the carrier's logo. Air Midwest, based in Arizona, operated the flight and was responsible for the aircraft's maintenance. But Air Midwest subcontracted that maintenance to Raytheon Aerospace in Huntington, WV.

There, the NTSB determined that a mechanic improperly adjusted cables that helped control the pitch of the aircraft. The mechanic had never done the job on that type of plane before and with his trainer's approval, skipped steps that the NTSB said would likely have helped the mechanic catch his mistakes.

FAA regulations require such flight critical work to be inspected, but in this case it was inspected by the same instructor who allowed steps to be skipped.

NTSB Chairman Ellen Engleman Conners said, "I think the entire system here was broken down. There were errors at every level."

As the "virtual airline" model gains favor, we must ensure that aircraft maintenance practices are strictly policed, regardless of where they are performed.

A July 2003 report by the Department of Transportation's Inspector General criticized the Federal Government's inability to adequately police the dramatic increase in out-sourcing by the Nation's airlines.

Independent maintenance repair facilities are not the problem. Some are very proficient. But the culture within a company, whether it is an airline-owned facility or an independent company, can lead to poor maintenance practices.

The IAM represents workers at some independent repair facilities, but our collective bargaining agreements help foster maintenance excellence. Our members do not fear the loss of jobs if they voice concern about improper maintenance practices or refuse to perform unsafe work. Congress can pass laws and the FAA can issue regulations, but unless the front-line mechanic isn't afraid to object when management put profits before safety, they are meaningless.

Overseas repair facilities are a separate, more dangerous issue. The July 2003 Inspector General Report highlighted the weak oversight of aircraft maintenance performed overseas by third-party contractors. The amount of certified foreign repair station has increased more than 300 percent since Federal regulations were significantly loosened in 1988.

Congress directed the FAA to submit a plan on March 12, 2004, to ensure that foreign repair stations working on U.S. aircraft are subject to the same level of safety and oversight as required here at home.

Mr. Chairman, we are still waiting for the FAA to submit a viable plan.

Furthermore, having U.S. aircraft repaired overseas opens up this country to a great security risk. It is not hard to imagine how certified foreign aircraft repair stations working on U.S. aircraft could provide terrorists with an opportunity to sabotage U.S. aircraft or components that will eventually re-enter the U.S. for domestic service. These stations should be immediately closed down until security audits of those stations can be conducted and security vulnerabilities addressed.

There should be one standard for safety, security and FAA oversight at all aircraft repair facilities, including equivalent standards for criminal background checks and drug and alcohol testing of workers as well as tightening access to and security of repair facilities.

But the fact is that the FAA does not have sufficient funding to hire an adequate amount of inspectors to ensure aviation maintenance safety, at home or abroad. An immediate increase in FAA inspectors is necessary to safeguard the U.S. aviation industry.

Calls for increased airport security were sounded before 9/11 and ignored for economic reasons. Experts warned that the New Orleans levee system was inadequate to withstand a major storm, but they were not shored up due to cost. Mr. Chairman, Members of this Committee, in case you haven't heard it before, let my testimony today serve as a warning that the oversight of maintenance on U.S. aircraft is almost non-existent.

I am here not only to sound an alarm, but to offer the assistance of the Machinists Union and all our members who build and maintain aircraft to help safeguard our aviation industry.

I thank the Committee for inviting us to participate in these proceedings and listening to our concerns.

I look forward to your questions.

Senator BURNS. Mr. Roach, thank you very much.

We have, now, Christian Klein, Legislative Counsel, Aeronautical Repair Station Association.

**STATEMENT OF CHRISTIAN A. KLEIN, LEGISLATIVE COUNSEL, AERONAUTICAL REPAIR STATION ASSOCIATION**

Mr. KLEIN. Good morning, Chairman Burns and Ranking Member Rockefeller, other distinguished Members of this panel.

My name is Christian Klein, and I am Legislative Counsel for the Aeronautical Repair Station Association. Our members are companies that have been certificated by the FAA, and by other civil aviation authorities, to perform maintenance on commercial air carrier and general aviation aircraft and aircraft components. In the context of our discussions about contract maintenance, our members are the companies to which the air carriers are turning increasingly for contract maintenance services.

I'd like to focus my remarks today on what I think are three of the most important issues in the discussion of contract maintenance.

The first point I'd like to make is that contract maintenance is nothing new; and, indeed, contracting, in general, in the aviation industry is nothing new. For example, manufacturers like Boeing and Airbus, have been relying on specialized subcontractors at multiple levels of the manufacturing chain for many, many years. Repair stations and the contract maintenance industry have been servicing commercial and general aviation operators for close to three-quarters of a century, and over that time they have become an important part of the aviation industry. They've also developed a significant economic footprint.

Today, contract maintenance companies employ more than 212,000 people at more than 4,000 facilities in all 50 States. I refer you to Appendix A of our written testimony, in which we have included the breakdown on a State-by-State basis so you can see the number of certificated maintenance facilities in your State, and the number of people employed. So, for instance, in Montana, there are 22 Part 145 repair stations. In West Virginia, there are 13. In New Jersey, there are 71 Part 145 repair stations. In Arkansas, there are 42. So, again, this is an industry that has a significant economic footprint all over the United States.

Although contract maintenance and repair stations are nothing new, we certainly have seen in recent years an increased use of repair stations by airlines. And we think that this is because airlines have recognized that repair stations can provide savings and flexibility while continuing to allow the airlines to meet the highest standards of safety. You've heard the statistic that over the last decade, the percentage of contract maintenance by airlines has increased from about a third to more than 50 percent. And, at that same time, we're experiencing the safest period in the history of commercial aviation in this country. Now, we're not suggesting that the latter is necessarily the result of the former, but we do think this shows that there's not a negative relationship between increased use of contract maintenance and aviation safety.

The second issue I'd like to address is that of repair station oversight by the Federal Aviation Administration. We certainly recognize that Members of this panel have concerns about FAA oversight. And, in fact, ARSA is on the record as calling for Congress to authorize and appropriate the highest possible level of funding for the FAA to make sure that it has sufficient resources to oversee the industry.

To be quite frank with you, this is not, for our members, just an issue of safety, but, given the highly regulated nature of this industry, it's also a matter of business necessity and a matter of efficiency.

But with all that in mind, I would submit to the Members of this Committee that the responsibility for safety and oversight do not begin and end with the FAA, that those are the responsibilities of all the players in the aviation industry. Although you may have concerns about the oversight of the FAA, in particular, if you look at the industry comprehensively, I think you see that there is a tremendous level of oversight. In an effort to try to illustrate this, our association conducted a member survey last week, an online member survey, that we had about a third of our members participate in and the results of which are included as Appendix C of our written testimony. What we've found was that the average domestic repair station was audited more than 30 times last year. That's more than three times by regulators, FAA and others, more than seven times by their airline customers, at least once by some outside third-party auditor, and more than 18 times by the repair station's own internal quality personnel. Now, what this suggests to us is that all the players in the industry recognize that whether or not the FAA is conducting oversight, the industry has to oversee itself. The airline customers are demanding the highest quality of work from repair stations, and our members are demanding it of themselves. Put simply, in our business, safety is good business.

I think that my time is about to expire, Mr. Chairman. I'd like to ask for one more minute, if I may, to address a third, and final, issue in the context of the debate, and that's the question of foreign repair stations.

Senator BURNS. You may proceed.

Mr. KLEIN. Thank you very much.

There are three points I'd like to make on the question of foreign repair stations.

First, it's important to note that under international law, U.S.-registered aircraft have to be maintained at FAA-certificated facilities. So, foreign repair stations are an absolutely critical part of the international aviation system. If it weren't for foreign repair stations, U.S. air carriers would have to stop flying to international destinations, because there would be no one there to service the aircraft when it got there. It's that simple.

The second point I'd like to make is that foreign repair stations are subject to the same, or an equivalent, level of oversight and regulation as domestic repair stations. Foreign repair stations are required to demonstrate that they have appropriate facilities, appropriate housing, appropriate personnel, who have been properly trained, that they have proper equipment, and that they have proper data to do the work properly. And they have to demonstrate that

they have quality systems in place to make sure that that work is done properly.

And, finally, there is a high level of oversight of these foreign repair stations. I mentioned a moment ago, the ARSA survey that we conducted last week that found that the average domestic repair station received 30 audits last year. What that survey found was that the average foreign repair station received 74 audits last year. And, again, that's 74 audits by Government regulators, by airline customers, by third-party quality auditors, and by the repair station's own internal quality people.

So, it's for all these reasons that ARSA has so zealously opposed any restrictions on the use of foreign repair stations by U.S. airlines. And it's the reason that we are so opposed to the so-called repair station security provisions of the Transportation Security Improvement Act that the full Commerce Committee is going to be considering this afternoon.

Chairman Burns, thank you very much for the opportunity to be with you. And I would, of course, be happy to answer any questions you might have.

[The prepared statement of Mr. Klein follows:]

PREPARED STATEMENT OF CHRISTIAN A. KLEIN, LEGISLATIVE COUNSEL, AERONAUTICAL REPAIR STATION ASSOCIATION

Chairman Burns, Ranking Member Rockefeller, and Members of the Subcommittee, thank you for inviting me to testify this morning about the work America's contract aviation maintenance companies are doing to ensure the safety of the traveling public while helping air carriers improve their bottom lines.

My name is Christian A. Klein and I am legislative counsel for the Aeronautical Repair Station Association (ARSA). ARSA is an international trade association with a distinguished 21-year record of educating and representing certificated aviation maintenance facilities before the U.S. Congress, the Federal Aviation Administration (FAA), the European Aviation Safety Agency (EASA), and other National Aviation Authorities (NAA).

ARSA's primary goal is to educate its members, other aviation industry participants, and government employees on regulatory compliance matters. We accomplish this through our monthly newsletter, *the hotline,* our annual Repair Symposium, and a wide range of training courses. ARSA also serves as a resource for lawmakers and policymakers to ensure that aviation laws and regulations are promulgated, interpreted, and enforced in a sensible, objective, consistent, and fair manner.

ARSA's primary members are companies that hold repair station certificates issued by the FAA under Part 145 of the Federal Aviation Regulations (FARs). These certificates are our industry's "license to do business." They authorize repair stations to perform maintenance and alterations on civil aviation products, including aircraft, engines, and propellers, and on the component parts installed on these products. The repair stations that ARSA represents perform maintenance for airlines and general aviation owners and operators. According to the FAA, repair stations currently employ 212,188 people at 4,345 facilities in all 50 states (see Appendix A). Contract maintenance providers are an important part of the $9 billion a year domestic air transportation support sector of the U.S. economy. The aviation maintenance industry's economic impact is felt nationwide.

ARSA commends the Subcommittee for holding this hearing. In recent years, the profile of the contract maintenance industry has increased dramatically. We welcome the opportunity to discuss the important role our members play in the aviation industry and the national economy.

**The History of Contract Maintenance**

Contract aviation maintenance is nothing new. Since the early twentieth century, our industry has consistently provided dependable, expert maintenance to the commercial and general aviation sectors.

Since enactment of the Civil Aeronautics Act of 1938, the Federal Government has authorized the use of repair stations to perform maintenance for airlines and general aviation owners and operators. Part 145 of the FARs, and its predecessor,

Part 52 of the Civil Air Regulations (CARs), specifically addresses the standards under which repair stations must operate. The FARs ensure that certificated repair stations meet the same safety standards as airlines' in-house maintenance organizations. Although most of the recent media attention has focused on maintenance performed for air carriers, it is important to note that repair stations or other authorized persons perform all maintenance on general aviation aircraft. This is because general aviation operators, unlike air carriers, are not authorized to perform maintenance in their own right.

In recent years airlines have realized that they can increase their use of outside maintenance contractors to reduce costs while maintaining a high level of safety. Over the past decade, network air carriers have increased contract maintenance from 37 percent of their total maintenance expenses to 53 percent.[1] Contract maintenance also plays a critical role in supporting the approximately 200,000 general aviation aircraft registered in the United States. Indeed, for decades repair stations have served as the primary source of maintenance for the general aviation sector.

**The Role of Contract Maintenance in the U.S. Economy**

The growing contract maintenance industry is a source of stable, good paying jobs for skilled workers and has absorbed employees laid off by struggling air carriers. In 1994, the Indianapolis Airport Authority (IAA) leased the Indianapolis Maintenance Center (IMC) to United Airlines, Inc. In 2003, after filing for Chapter 11 bankruptcy protection, United vacated the state-of-the-art maintenance facility. Less than a year later, AAR Aircraft Services, Inc. entered into a 10-year lease agreement with the IAA and later received a repair station certificate for that location from the FAA. AAR's investment allowed the IMC to reopen and gave hundreds of aviation maintenance workers the opportunity to work for a financially stable company.

Numerous industries throughout the national and global economy utilize the contract service model to decrease costs, increase quality and efficiency, and realize a greater return on investment. Companies that utilize contract services can avoid unnecessary capital and personnel expenditures, allowing them to more easily adapt to emerging market trends and economic conditions.

Maintenance is not the only routinely contracted service in the aerospace industry. Flight training, fueling services, and manufacturing of civil aviation products and parts are all performed by contractors. Aircraft manufacturers such as Boeing and Airbus S.A.S. have thousands of first-tier suppliers, who, in turn, have thousands of lower-tier suppliers involved in the production of each model of aircraft. These highly specialized suppliers are uniquely qualified in various aspects of the design and manufacture of Boeing and Airbus products. Like airlines that oversee contract maintenance, aircraft manufacturers maintain strict oversight of their suppliers' production operations, since they retain regulatory responsibility for the final product. In addition, as with repair stations that have their own FAA certification, some suppliers to aircraft manufacturers obtain independent production approvals from the FAA, making them independently responsible under the regulations for the replacement parts they produce and sell. Not only are contractors used to manufacture thousands of aircraft, engines and propellers, but they play a major role in the production of smaller articles, such as hydraulics, avionics and pneumatic systems. Nor is contracting unique to the aviation industry; indeed, it is a hallmark of a free market economy that virtually all industries utilize.

**Trends in Safety and Contract Maintenance**

The increased use of contract maintenance by airlines has coincided with the safest period in the history of America's commercial aviation industry.

Between 1994 and 2004, the use of repair stations to perform maintenance for "legacy" airlines increased from one-third to over half of all airline maintenance.[2] During that same period, the worldwide fatal accident rate declined.[3] Most notably, in the past five years, the number of fatal airline passenger accidents has markedly decreased, from 45 in 1999 to 26 in 2004.[4] The fatal accident rate in 2004, 26, was

---

[1] Department of Transportation Office of Inspector General, Rep. No. AV–2005–062, *Safety Oversight of an Air Carrier Industry in Transition,* at 1 (June 3, 2005).

[2] Department of Transportation Office of Inspector General, Rep. No. AV–2005–062, *Safety Oversight of an Air Carrier Industry in Transition,* at 1 (June 3, 2005).

[3] Harro Ranter, The Aviation Safety Network, *Airliner Accident Statistics 2004: Statistical summary of fatal multi-engine airliner accidents in 2004,* at 7 (January 1, 2005).

[4] *Id.* at 13.

far below the annual average of 48.8 for the three previous decades.[5] In addition, 2003 and 2004 had the lowest accident rates of any year since 1945.[6]

While we recognize that "after" does not always mean "because of," the foregoing trends suggest that the highly-qualified repair stations servicing commercial aviation aircraft are not detracting from aviation safety.

**The Who and What of Contract Maintenance**

To operate in the civil aviation maintenance industry, certificated repair stations must demonstrate to the FAA, or other NAAs if applicable, that they possess the housing, facilities, equipment, personnel, technical data, and quality control systems necessary to perform maintenance in an airworthy manner. Based upon satisfactory showings in these areas, a repair station is rated to perform certain types of maintenance. Not all repair stations look alike and their capabilities vary significantly. Some repair stations provide line maintenance—the routine, day-to-day work necessary to keep an airline's fleet operating safely. Some perform substantial maintenance, which includes more comprehensive inspection and repairs on airframes and overhauls of aircraft engines. Some repair stations offer specialized services for their customers such as welding, heat treating, and coating on a variety of aircraft parts. However, the vast majority of repair stations perform maintenance on components. Component maintenance usually occurs off the aircraft, and even away from an airport, in industrial parks and other facilities that one might not consider when thinking about aviation maintenance.

Certificated repair stations include both manufacturers of civil aviation articles who service their own equipment and independent organizations with the technical, engineering and management capabilities necessary to thrive in an increasingly complex aviation industry. The skills and technology required to maintain civil aviation products often call for an increased level of sophistication. To meet this demand, contract maintenance companies have developed highly-specialized facilities. Repair stations, like medical specialists, often seek to strengthen their core competencies by specializing in a particular line or type of product. This allows them to develop a high level of proficiency in performing certain repairs.

**Cost Savings and Quality**

Beyond the value of specialized expertise, repair stations have consistently offered cost-savings to their airline and general aviation customers. The ability to perform high quality, reliable work in a timely manner and at a lower cost has allowed repair stations to thrive, even in an economic climate that threatens other sectors of the aviation industry.

Competitive bidding in contract maintenance requires repair stations to carefully control their costs. To successfully compete for and retain business, repair stations must find efficiencies and savings that are often unavailable to in-house maintenance organizations. Without contract maintenance, an airline would have to invest capital in equipment and personnel for tasks it may not undertake as frequently or efficiently as a repair station specializing in that particular type of work.

In addition, many large airlines have found it difficult to control their labor costs. Repair stations, particularly small businesses, do not face the same demands on their resources. While employees at repair stations are not always compensated at the same levels as their unionized airline colleagues, contract maintenance workers enjoy other benefits, including the prospect of stable employment in a growing industry and the ability to work for a small, family-owned company. Their decision to accept lower pay in some cases in no way reflects the value of their contributions or the quality of their work. Indeed, the technicians at repair stations possess the training and skills necessary to ensure the highest level of safety and regulatory compliance.

**Oversight**

Government regulators play a critical role in ensuring the safety of the Nation's commercial and general aviation systems. However, ARSA is concerned that the FAA does not have adequate budget resources to fulfill all of its oversight obligations. The FAA expects to lose about 300 safety inspectors by the end of 2005. The House of Representative's Fiscal Year 2006 budget for the FAA provides $8 million in funding for hiring and training an additional 97 inspectors, while the Senate's version does not provide any specific funding for additional inspectors.[7] ARSA is on record as supporting congressional efforts to increase funding for FAA operations to

[5] *Id.* at 7.
[6] *Id.*
[7] *See,* H. Rep. 109–153; S. Rep. 109–109 (2005).

ensure that the agency has adequate resources to oversee the industry and to respond in a timely manner to requests for new ratings, new certificates, etc.

In reports published in 2003 and 2005, the Office of the Inspector General of the Department of Transportation (DOT IG) expressed concerns about the FAA's oversight of the contract maintenance industry and stated that the agency's oversight is currently insufficient for the amount of work independent repair stations perform for airlines.[8] The FAA has responded to these findings by introducing a risk-based inspection program that identifies those repair stations doing the most work for airlines and monitoring their operations more closely. ARSA supports efforts to better utilize FAA resources to ensure the continued quality of contract maintenance and to demonstrate to policymakers and the public that our aviation system remains safe.

We also note that despite the IG's observations, repair stations are subject to a tremendous amount of oversight by regulators and others. Between November 7 and 11, 2005, ARSA conducted an on-line member survey to gather data about the number of audits our members receive on an annual basis (see Appendix C). Among the survey's findings:

- The average domestic repair station is audited more than three times per year by government regulators.
- The average repair station is audited more than seven times per year by customers. These audits include the continuous analysis and surveillance programs air carriers are required to undertake by regulation through the Coordinating Agency for Supplier Evaluation (CASE) and other customer programs.
- Repair stations themselves perform an average of 18 internal audits annually.
- On average, domestic repair stations undergo a total of more than 30 audits each year, while foreign repair stations with FAA certificates undergo an average of more than 74 audits.

According to the DOT IG, the FAA needs to readjust its oversight priorities. In the meantime, however, the ARSA survey and other evidence suggest that repair stations, the aviation industry, and regulators collectively provide a high-level of oversight of contract maintenance to ensure continued quality and safety.

Finally, although the FAA's role is critical, lawmakers should recognize that safety does not begin and end with Federal regulators. The agency and its employees are not omniscient. Aviation safety inspectors will never be able to oversee each mechanic at every facility all the time. Thus, safety is not just the responsibility of the FAA, but of every maintenance employee at every certificated repair station. It is the FAA's role to ensure that repair stations have the procedures in place to ensure the quality of the work performed and to ensure that procedures are followed. Indeed, FAA regulations treat repair stations as extensions of an air carrier's maintenance organization. This means that the maintenance provider must perform the work in accordance with the carrier's maintenance program and the applicable portions of its manual. It also requires the airlines to provide a level of oversight to make certain that these standards are met.

**Contract Maintenance and the International Scene**

Unlike the United States, in which the FAA permits and expects airlines to perform maintenance on their fleets to complement their operations, European regulators view operations and maintenance as two distinct functions. EASA requires that an airline obtain a separate repair station certificate before it can perform maintenance on its fleet or the aircraft of other carriers.

In 1994, the air carrier Lufthansa converted its maintenance division into an independent stock corporation, Lufthansa Technik AG. Lufthansa Technik performs the maintenance for Lufthansa, and also manages the airline's maintenance program. As European regulators see it, an airline's core competency is operating aircraft. This demonstrates that in-house maintenance is not necessarily a logical or necessary outgrowth of airline operations.

When considering the international aspects of contract maintenance, critics often cite "outsourcing" to foreign repair stations as a trend that damages both the safety and economic health of our national aviation system. However, an objective examination of the practice reveals that the use of FAA-certificated foreign repair sta-

[8] *See,* Department of Transportation Office of Inspector General, Rep. No. AV–2003–047, *Review of Air Carriers' Use of Aircraft Repair Stations,* at 1 (July 8, 2003); Department of Transportation Office of Inspector General, Rep. No. AV–2005–062, *Safety Oversight of an Air Carrier Industry in Transition,* at 1 (June 3, 2005).

tions is a necessary component of the international aviation system and that the U.S. is a world leader when it comes to providing maintenance services to airlines.

The Chicago Convention of 1944 and International Civil Aviation Organization (ICAO) standards require that the State of Registry (i.e. the country in which an aircraft is registered) oversee the maintenance performed on an aircraft and related components, regardless of where the maintenance is performed.[9] Consequently, a U.S. registered aircraft requiring maintenance while outside of the U.S. must have that work performed by an FAA-certificated maintenance provider. For this reason, FAA-certificated foreign repair stations exist. Similarly, when an aircraft of foreign registry requires maintenance while in the U.S., only a repair station certificated by the relevant NAA may perform the work. For example, only an EASA-certificated repair station may perform maintenance on an aircraft of French registry within the U.S.

This legal regime has proven beneficial to American repair stations. Currently, there are 677 FAA-certificated repair stations outside the U.S. (see Appendix B). At the same time, there are approximately 1,275 EASA-certificated repair stations, and numerous other NAA-certificated repair stations inside our borders. Our aviation maintenance industry is highly-regarded worldwide. As a result, the U.S. enjoys a favorable balance of trade in the market for these services, a fact that has benefited repair station employees, and the towns and states in which these maintenance facilities are located.

Foreign repair stations are not an economic threat for U.S. companies, nor does their use threaten aviation safety. These entities generally must meet the same or equivalent safety standards as domestic facilities. Unlike their domestic counterparts, however, foreign repair stations must renew their certificate with the FAA annually or, at the discretion of the FAA, biannually, following a safety inspection. This ensures that the FAA evaluates the housing, facilities, equipment, personnel, and data of each repair station located outside the U.S. at least once every two years. We remind the Subcommittee of the findings of the recent ARSA survey referenced above, viz., that the average FAA-certificated foreign repair station is audited more than 74 times each year by government regulators, customers, other third-parties, and the repair station's own personnel, suggesting a high-level of combined oversight.

It is for the foregoing reasons that ARSA has consistently opposed legislative efforts to restrict the use of foreign repair stations by U.S. airlines. For example, we understand that the Commerce, Science, and Transportation Committee is considering legislation that would reduce the amount of time the FAA and Transportation Security Administration (TSA) have to develop and verify compliance with the new repair security rules mandated by Vision 100.[10] Language in the law prohibits the FAA from issuing new foreign repair station certificates if all current foreign certificate holders have not received security audits within a set period of time. ARSA is concerned that this provision will disrupt the availability of maintenance for U.S. airlines operating internationally.

**Conclusion**

Over the past decade, airline use of contract maintenance has steadily increased. During that same period, the world aviation system has experienced unprecedented safety. Repair stations play a large role in this trend through the use of highly-qualified and trained employees, state of the art facilities, and a commitment to providing high quality maintenance services to airline customers.

Congress can help maintain these positive trends by providing the FAA with adequate resources to oversee the repair station industry, encouraging continued close oversight by airline customers, and ensuring that legislation and regulations are based on objective safety factors rather than some other agenda.

---

[9] *See,* ICAO Annex 8, ch. 4 § 4.2.1(b).

[10] S. 2052, 109th Congress § 205 (2005).

APPENDIX A

## FAA Repair Stations by State

| State | Count | Employees |
|---|---|---|
| AK | 54 | 475 |
| AL | 61 | 5,265 |
| AR | 42 | 3,362 |
| AZ | 164 | 7,690 |
| CA | 712 | 31,932 |
| CO | 73 | 1,127 |
| CT | 107 | 7,817 |
| DC | 1 | 7 |
| DE | 6 | 661 |
| FL | 516 | 15,935 |
| GA | 110 | 14,873 |
| GU | 1 | 5 |
| HI | 13 | 212 |
| IA | 38 | 2,601 |
| ID | 30 | 325 |
| IL | 97 | 2,977 |
| IN | 73 | 3,019 |
| KS | 104 | 6,671 |
| KY | 36 | 491 |
| LA | 44 | 1,929 |
| MA | 59 | 2,109 |
| MD | 29 | 769 |
| ME | 13 | 729 |
| MI | 126 | 4,344 |
| MN | 63 | 17,623 |
| MO | 54 | 3,690 |
| MS | 23 | 933 |
| MT | 22 | 244 |
| NC | 66 | 3,551 |
| ND | 11 | 78 |
| NE | 13 | 1,221 |
| NH | 25 | 595 |
| NJ | 71 | 2,463 |
| NM | 22 | 668 |
| NV | 34 | 745 |
| NY | 136 | 4,763 |
| OH | 148 | 4,678 |
| OK | 150 | 9,471 |
| OR | 45 | 1,274 |
| PA | 105 | 2,265 |
| PR | 17 | 140 |
| RI | 10 | 392 |
| SC | 30 | 2,554 |
| SD | 15 | 73 |
| TN | 52 | 1,745 |
| TX | 448 | 24,696 |
| UT | 31 | 457 |
| VA | 44 | 1,705 |
| VI | 1 | 1 |
| VT | 11 | 167 |
| WA | 124 | 7,676 |
| WI | 43 | 1,445 |
| WV | 13 | 1,472 |
| WY | 9 | 78 |
| Total | 4,345 | 212,188 |

Based on FAA Air Agency Data dated: November 13, 2005.

APPENDIX B

## FAA Repair Stations by Country

| Country | Count | Employees |
|---|---|---|
| AC | 1 | 58 |
| AE | 3 | 2,673 |
| AR | 6 | 1,615 |
| AS | 15 | 6,624 |
| AU | 1 | 1,150 |
| BA | 1 | 4 |
| BE | 11 | 4,521 |
| BL | 1 | 207 |
| BR | 15 | 5,823 |
| CH | 20 | 13,585 |
| CI | 3 | 503 |
| CO | 4 | 1,278 |
| CS | 2 | 477 |
| DA | 3 | 1,123 |
| EG | 1 | 3,500 |
| EI | 12 | 3,579 |
| ES | 1 | 1,050 |
| ET | 1 | 2,230 |
| EZ | 2 | 1,295 |
| FI | 1 | 1,880 |
| FJ | 1 | 26 |
| FR | 104 | 33,194 |
| GM | 52 | 31,640 |
| GR | 1 | 898 |
| GT | 2 | 80 |
| HK | 8 | 5,047 |
| HU | 2 | 394 |
| ID | 2 | 2,813 |
| IN | 2 | 818 |
| IS | 12 | 5,526 |
| IT | 17 | 7,189 |
| JA | 23 | 19,776 |
| JO | 2 | 685 |
| KE | 1 | 5 |
| KS | 6 | 5,574 |
| LU | 1 | 322 |
| MO | 2 | 1,231 |
| MT | 1 | 42 |
| MX | 19 | 4,515 |
| MY | 9 | 4,087 |
| NL | 21 | 7,257 |
| NO | 5 | 1,503 |
| NZ | 5 | 2,841 |
| PE | 3 | 437 |
| PM | 1 | 392 |
| PO | 2 | 2,182 |
| QA | 1 | 30 |
| RO | 2 | 1,062 |
| RP | 8 | 1,680 |
| RS | 1 | 245 |
| SA | 5 | 6,353 |
| SF | 5 | 3,982 |
| SN | 45 | 12,950 |
| SP | 5 | 4,314 |
| SW | 7 | 2,128 |
| SZ | 9 | 4,216 |
| TD | 1 | 30 |
| TH | 6 | 5,554 |
| TU | 1 | 2,555 |
| TW | 6 | 4,537 |
| UK | 163 | 22,574 |
| UP | 1 | 91 |

FAA Repair Stations by Country—Continued

| Country | Count | Employees |
|---|---|---|
| VE | 3 | 247 |
| Total | 677 | 264,197 |

Based on FAA Air Agency Data dated: November 13, 2005.

APPENDIX C—ARSA REPAIR STATION AUDIT SURVEILLANCE SURVEY RESULTS

Domestic Repair Station Annual Audits

| | Responses | Internal | Regulatory | Customer | 3rd Party | Total |
|---|---|---|---|---|---|---|
| Total | 183 | 3,301 | 663 | 1,361 | 235 | 5,560 |
| Average | | 18.0 | 3.6 | 7.4 | 1.3 | 30.4 |

Foreign Repair Station Annual Audits

| | Responses | Internal | Regulatory | Customer | 3rd Party | Total |
|---|---|---|---|---|---|---|
| Total | 27 | 1,439 | 219 | 311 | 48 | 2,017 |
| Average | | 53.3 | 8.1 | 11.5 | 1.8 | 74.7 |

Total Repair Station Annual Audits

| | Responses | Internal | Regulatory | Customer | 3rd Party | Total |
|---|---|---|---|---|---|---|
| Grand Total | 210 | 4,740 | 882 | 1,672 | 283 | 7,577 |
| Average | | 22.6 | 4.2 | 8.0 | 1.3 | 36.1 |

Senator BURNS. Thank you. And we appreciate you being here today.

Mr. Carr, we seem to hear some concern about operational error reporting. And we also hear about an automated system. Do you support that system?

Mr. CARR. Absolutely. In fact, there is already an automated system for operational error reporting in the en route environment. There lacks the technology to implement an automated error reporting system in the terminal environment, which is in close to airports. And, quite frankly, it's more a question of technology than anything else. There are so many different ways that you can separate airplanes in close to the airport. You can separate them with diverging courses. You can separate them with distance. You can separate them laterally. You can separate them horizontally. In the en route environment, at high altitudes, there's really only one or two ways to separate them, altitude or distance. So, it's very easy to technologically, sort of, catch errors. In the terminal environment, it's very difficult. But we have no problem with it if—as long as the technology is robust enough to accurately report it, we don't oppose that.

Senator BURNS. Mr. Roach, your testimony pretty much was very critical of outside contracting, and given the safety record over the last years, why should Congress interfere in the airline's choice to have maintenance done by whomever it chooses, as long as it's cer-

tificated and goes through all the hoops in order to perform the maintenance?

Mr. ROACH. I think the Inspector General testified that these foreign repair, 138 inspections, this wasn't performed. In some countries, there are not any inspections. And we think that the level of maintenance in these foreign repair stations are not at the same level as they are in the United States. And we think that's very critical. And I don't know of any airlines—you know, the—Mr. Klein testified that we wouldn't be able to fly overseas if we didn't have these foreign repair stations. I don't know of any major airlines that fly into the United States, such as British Airways, that have their planes maintained. Their planes are maintained in their countries. So, I—and we're not talking about line maintenance, we're talking about major overhaul maintenance.

So, there's no reason, for—like American Airlines have all their major overhaul maintenance done in the United States, in their own facilities. There's no reason why we have to go overseas, outside this country, to have our planes maintained. And I don't see the same inspections, the same oversight over there that we have over here.

Senator BURNS. I'm going to move right along now and cut my time in half. We've got a vote on.

And, Senator Lautenberg, do you have any questions for this panel?

Senator LAUTENBERG. I have one, and that is related to the technology issue, Mr. Carr.

Do they, in the towers, have the same type of collision-avoidance systems, et cetera, that we see in the airplanes themselves or—the other comparisons, with whatever the technology is, in the airplanes, it's pretty sophisticated. Do the towers have that same availability?

Mr. CARR. They do not. Actually, in the cockpits, you had the TCAS, which is the Traffic Collision Avoidance System. It uses transponders of other aircraft to report the relative position and to give guidance strictly in terms of climb or descent, it does not give turn guidance when it forecasts potential conflicts. The only automated collision-avoidance technology that's currently available is AMASS, the Airport Movement Area Safety System. It has to be turned off in bad weather, because it misidentifies raindrops as airplanes. And the oncoming technology, ASDE–X, which augments AMASS and does a much better job of sort of the predicted logic necessary to discern runway incursions, and that's the one that's going to be rolled out over the course of the next 7 years.

Senator LAUTENBERG. One more question. What's your view on the progress of the controller contract negotiations?

Mr. CARR. I was just hoping I'd get a chance to do my Christmas list, but as relates to contract negotiations, I believe they're going slowly, albeit progress is being made. I think the parties are probably about one-third done with the work that remains before them.

We're disappointed, from the perspective that we put forward a lot of what we thought were forward-thinking proposals that had nothing to do with money, nothing to do with work schedules or vacations. We proposed continuing air traffic controller representation with the National Transportation Safety Board. The FAA pro-

posed to delete that. We proposed a way of reducing workman's compensation claims. The FAA proposed to delete that. We proposed technology issues, ranging from the JPDO to URET to information display systems, and the FAA proposed to delete those. So, we're, sort of, frustrated by our inability to move forward on what we think are modernization in safety and technology issues, and yet we continue to exchange proposals on things as arcane as dress codes. So, I'm not happy with the progress, but we're going to keep plugging away.

Senator LAUTENBERG. Mr. Chairman, I have one thing I want to be sure to clear up here. When I put in a cheer for Amtrak, it wasn't because I feel that the aviation system is unsafe. I think it's fantastic. But the one thing we do know, we need to have ways to transport people and goods in our country. And it looks like our aviation system is darn near full, in terms of capacity—in our airspace and airports. Our aviation system needs constant work, and the projections for future target dates for safety enhancements are not always taken too seriously. I mentioned Amtrak because we need to invest in alternative methods to transport people, as well as investing in our aviation system. And I don't want to shortcut aviation in any way, but I do think it would be wonderful if travelers had the option to take a highspeed train as well as a plane between cities in America.

Thank you.

Senator BURNS. Let me assure the Senator that our skies in Montana aren't that crowded.

[Laughter.]

Senator BURNS. We can handle a little more business up there.

I have a question for Mr. Klein. Could you just, for the Committee, tell us what your members have to do to be certified and certificated?

Mr. KLEIN. Absolutely, Senator. I would, actually, like to, if I could for just one second, correct a misapprehension, about the question of the balance of trade in international maintenance services. And I would just point out that there are actually twice as many repair stations in the United States that have been certificated by the European aviation authority to work on European-registered aircraft and components than there are U.S.-FAA-certificated facilities in Europe or abroad. The U.S. aviation maintenance industry really does set the gold standard and is the envy of the world. And so, we do get a lot of business from overseas into our domestic aviation maintenance industry.

But to your question of how a repair station is qualified, in order to be certificated, a repair station does have to demonstrate that it has housing facilities, equipment, that it has personnel who are properly trained, and that it has the proper technical data to do the work. It's got to demonstrate that it has systems in place to ensure the quality of the work that's done. It has to have appropriately certificated employees to supervise the work, to approve articles for return to service, and to do final inspections on products. And, finally, when you're doing work for airlines, it's taken up a notch, frankly. When you're doing work for airlines, you have to comply with the airline's maintenance program. If you're a U.S. repair station, you have to either have a DOT drug-and-alcohol program in

place or you have to be covered under the air carrier's drug-and-alcohol program. You have to have additional training. And you also have to have a quality-assurance system in place. So, again, there's a very high standard for repair stations just to get certificated. And then the standards are even higher if you're doing work for air carriers.

Senator BURNS. And they're the same, both here in the United States and on foreign soil.

Mr. KLEIN. Yes, they're very, very similar. Again, you've got to demonstrate that you have the personnel, the housing, the facilities, the equipment, the technical data, the quality systems, that your people are trained, et cetera, et cetera. So, yes, there is a very, very distinct parallel there.

Senator BURNS. Mr. Carr, as you know, we're leaving the old LINCS system and trying to transition to the FTI system. Give us your assessment on how that is going. We heard from the Administrator. I'd like to hear from you.

Mr. CARR. Operationally——

Senator BURNS. Now, we understand slow here, by the way.

Mr. CARR. Operationally, we have not really seen a great deal of change, in terms of telecommunications infrastructure, which I suppose is to the credit of those making the changes, because the current system is, while in need of replacement, it's rather robust, and it does weave together over 350 facilities in, sort of, a seamless fashion.

On the technical side, on the certification side, on the engineering side, we're hearing a lot of the same things that the Administrator already reported, which is there are issues associated with modernizing, locating, mapping out, gridding what we currently have, because the system that we—if you're going to replace it with a modern telecommunications infrastructure, we, sort of, demand present state or better, status quo or better. So, in order to get at least what we currently enjoy, in terms of systemwide improvements, systemwide ability, they have to know what they have. And that is, I think, the most dramatic challenge.

Senator BURNS. Have you been an active participator in this transition?

Mr. CARR. Unfortunately, organizationally we have not. We had a series of technical representatives and liaisons that worked with the FAA on a whole host of technologies. The agency chose not to avail themselves of those representatives and sent them home this summer. So, we no longer have representatives on the next-generation air-traffic system. We have no representatives at the Joint Program Development Office working with Commerce and DOD and NASA on next-gen. And it's unfortunate. We viewed the collaboration as noteworthy and productive. In fact, we participated in the runway safety offices that, in the late 1990s and early 2000s, brought runway incursions down significantly over the last several years. And now, I think we're seeing the bottom of that bell curve, and I think it's going in the wrong direction. So, we view the lack of collaboration as quite unfortunate.

Senator BURNS. I think everybody should be at the table, especially the people, the men and women, who work in the trenches. It has to work, and it has to be comfortable, and they have to have

confidence in it in anything that we do in the next-generation communications or any other area. So, I appreciate your comment on that.

And I appreciate all of you being here today. There were a couple of Senators that was going to try to make it here and did not make it. I think there were seven different hearings going on this morning. So, even though I may be big enough to be two people, I'm—I can't make the claim.

So, there will be some, probably, follow-up questions for our panel. And if you could answer the Senator, and also the Committee, I would appreciate that.

Senator BURNS. We'll leave the record open for more comments, but all your written comments will be made part of the record.

And I'd just like to say that this is just, kind of, the first of the oversight hearings, because we are going into a new era, so to speak. We know that all of the people that were flying prior to 9/11 are back now. And you would think, well, we could handle those, but we also are—we're handling them with more aircraft. In other words, regional jets have replaced larger airplanes, people have opted for frequency rather than big airplanes and comfort, maybe. But I think those—we will see how the market goes. Actually, we are all at the whims of the market. Whenever market attitude changes among our traveling public, well, then we have to be ready and agile enough to change as the market changes.

So, I appreciate your testimony here today, and your participating in this oversight hearing. And if you could respond, should you get a written question, I'd certainly appreciate it.

Thank you very much. We are closed.

[Whereupon, at 12 p.m., the hearing was adjourned.]

# A P P E N D I X

PREPARED STATEMENT OF GERALD L. DILLINGHAM, PH.D., DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES, UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

Mr. Chairman and Members of the Committee:

The U.S. commercial aviation industry, with less than one fatal accident per 5 million flights from 2002 through 2005, has an extraordinary safety record. This record is a result of the efforts of the Federal Aviation Administration (FAA), airlines, manufacturers, and others in the aviation industry to maintain one of the safest aviation systems in the world. However, when passenger airlines have accidents or serious incidents, regardless of their rarity, the consequences can be tragic, as a single accident can result in hundreds of deaths. In order to maintain a high level of safety, it is critical to have a safety oversight system that is comprehensive, efficient, and effective and can provide an early warning of hazards that can lead to accidents. It is equally important to have a skilled, well-trained workforce to implement and monitor this safety oversight system. FAA's workforce of about 3,200 inspectors stationed at more than 100 field offices throughout the world is responsible for carrying out the agency's processes to certify, inspect, and enforce safety regulations for all aspects of the aviation industry, including the aircraft and its component parts, over 100 commercial airlines, about 5,000 aircraft repair stations, and hundreds of thousands of pilots and mechanics. FAA augments its inspector workforce with nearly 13,600 designated organizations and individuals (designees) that conduct the more routine aspects of industry oversight, such as administering tests to pilots and mechanics as part of their certification requirements, and augments the safety information that it obtains from inspections with industry partnership programs. Keys to making this safety oversight system work are to: (1) establish programs that focus resources on areas of highest safety risk and on mitigating risks; (2) provide training and other communication to ensure that inspectors maintain the skills and knowledge to consistently carry out the agency's oversight programs; and (3) have processes and data to continuously monitor, evaluate, and improve the numerous oversight programs that make up the safety oversight system. This statement focuses on these three key areas of FAA's "early warning system" and is based on our recent reports on FAA's inspection oversight programs, industry partnership programs, enforcement program, and training program. We will also discuss our recommendations that FAA has not fully addressed in these areas.

In Summary:

- FAA's aviation safety oversight system includes programs that focus on risk identification and mitigation through a system safety approach, the leveraging of resources, and enforcement of safety regulations, but the benefits of these programs are not being fully realized. FAA's system safety approach has many strengths, including the addition of a program that emphasizes risk identification to its traditional inspection program for overseeing non-legacy airlines,[1] which is not based on risk. However, it is likely that the benefits of this approach could be enhanced if the inspection workload for non-legacy airlines was not still heavily oriented to the traditional inspection program's non-risk based activities. FAA leverages resources through its designee programs, in which designees perform about 90 percent of certification-related activities, thus allowing FAA to better concentrate its limited staff resources on the most safety-critical functions. However, concerns about the consistency and adequacy of designee oversight that FAA field offices provide have been raised by experts and other individuals we interviewed. FAA also leverages its resources through industry

[1] We refer to all passenger airlines that are not in FAA's Air Transportation Oversight System (ATOS) as non-legacy airlines. The seven "legacy" airlines and eight other airlines are overseen through ATOS. The air carriers in the ATOS program are Alaska; American; Continental; Delta; Northwest; United; American Eagle; Champion; ExpressJet; SkyWest; Southwest; Trans States; FedEx; United Parcel Service; and US Airways, which recently merged with America West.

partnership programs, which are designed to assist the agency in receiving safety information. For example, FAA encourages voluntary reports of safety violations by responding to them by issuing a warning letter rather than a fine or other legal sanction. FAA's enforcement program, which is an outgrowth of its inspection process, is intended to ensure industry compliance with safety regulations and is another important element of its safety oversight system. FAA's policy for assessing legal sanctions against entities or individuals that do not comply with aviation safety regulations is intended to deter future violations. However, we found that recommendations for sanctions are sometimes reduced on the basis of factors that are not associated with the merits of the case, and the economic literature on deterrence suggests that the goal of preventing future violations is weakened when the penalties for violations are lowered for reasons not related to the merits of the case.

- FAA has made training an integral part of its safety oversight system, but several actions could improve the results of its training efforts. FAA's use of a risk-based system safety approach to inspections requires inspectors to apply data analysis and auditing skills to identify and control potential risks. Therefore, it is important that inspectors are well-trained in this approach and have sufficient knowledge of increasingly complex aircraft and systems to effectively identify safety risks. FAA has established mandatory training requirements for its workforce as well as designees. We have reported that FAA has generally followed effective management practices for planning, developing, delivering, and assessing the impact of its technical training for safety inspectors, although some practices have yet to be fully implemented. For example, in developing its training curriculum for inspectors, FAA followed effective management practices, such as developing courses that support changes in inspection procedures resulting from regulatory changes or agency initiatives. On the other hand, FAA develops technical courses on an ad hoc basis rather than as part of an overall curriculum for each type of inspector, such as inspectors of operations or cabin safety, because the agency has not systematically identified the technical skills and competencies each type of inspector needs to effectively perform inspections. FAA has recognized the need for improvements to its training program in this and other areas.
- It is important for FAA to have effective evaluative processes and accurate nationwide data for its numerous safety oversight programs so that program managers and other officials have assurance that the safety programs are having their intended effect. Such processes and data are especially important because FAA's workforce is so dispersed throughout the world—with thousands of staff working out of more than 100 offices worldwide—and because FAA's use of a system safety approach represents a cultural shift from its traditional inspection program. Evaluation is important for understanding if the cultural shift has effectively occurred. Our most recent work has shown the lack of evaluative processes and limitations with data for FAA's inspection program for non-legacy airlines, designee programs, industry partnership programs, and enforcement program. For example, we found that FAA lacked requirements or criteria for evaluating its designee programs. In another example, FAA's enforcement policy calls for the assessment of sanctions that would potentially deter future violations. However, FAA lacks an evaluative process, so it is not known whether the agency's enforcement practices, such as at times reducing sanctions, may weaken any deterrent effect that would be expected from such sanctions. Furthermore, FAA's ability to evaluate its programs is hindered by the lack of useful nationwide data. For example, FAA's nationwide enforcement database is not as useful as it could be because of missing or incomplete historical information about enforcement cases.
- In order to help FAA fully realize the benefits of its safety oversight system, we have made a number of recommendations to address the weaknesses that we identified in our reviews. These recommendations have not been fully implemented, although in some cases FAA has taken steps towards addressing them. Evaluative processes and relevant data are particularly important as FAA works to change its culture by incorporating a system safety approach into its oversight, and we have recommended that FAA develop continuous evaluative processes for its oversight of non-legacy airlines, its designee programs, and its enforcement program, and systematically assess inspectors' technical training needs. In addition, FAA's nationwide databases are in need of improvements in their comprehensiveness and ease of use. We have recommended that FAA improve the consistency and completeness of its designee and enforcement databases. Continuous improvements in these areas are critical to FAA's ability to

have a robust "early warning system" in order to maintain one of the safest aviation systems in the world.

**Background**

FAA's safety oversight system is made up of a number of programs for airlines and other entities. Safety oversight programs for airlines provide for their initial certification, periodic surveillance, and inspection. Since 1985, FAA has used National Work Program Guidelines (NPG), its traditional inspection program for airlines, as a primary means of ensuring that airlines comply with safety regulations. In NPG, an FAA committee of program managers identifies an annual minimum set of required inspections that are to be undertaken to ensure that airlines are in compliance with their operating certificates. In 1998, the agency implemented the Air Transportation Oversight System (ATOS), which currently oversees the Nation's largest 15 commercial airlines and cargo carriers, with the goal of eventually including all commercial passenger and cargo airlines in it. ATOS emphasizes a system safety approach that extends beyond periodically checking airlines for compliance with regulations to the use of technical and managerial skills to identify, analyze, and control hazards and risks. For example, under ATOS, inspectors develop surveillance plans for each airline, based on data analysis and assessment of risks, and adjust the plans periodically based on inspection results. However, the agency has been delayed in placing a significant number of other passenger airlines in ATOS, resulting in 99 passenger airlines, which we refer to as non-legacy airlines, continuing to be overseen through NPG, a process that is not risk-based or system safety oriented. In 2002, FAA added the Surveillance and Evaluation Program (SEP) to the NPG inspection program to incorporate principles of ATOS into its oversight of non-legacy passenger airlines. The two programs are used together to establish the number of annual inspections for non-legacy airlines. (Appendix 1 describes each inspection program.) Figure 1 illustrates some typical activities covered during inspections.

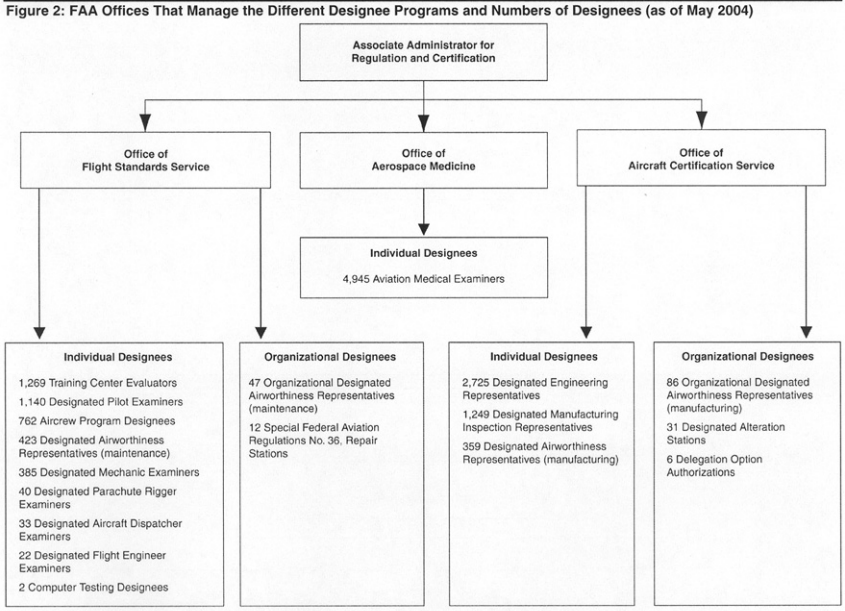
**Figure 1: FAA's Safety Inspections Cover a Wide Range of Activities**

Note: As a workforce, FAA inspectors conduct a wide variety of inspections, including ensuring that pilots are qualified to operate aircraft, inspecting aircraft for safety, and overseeing FAA-certified mechanics.

Source: FAA.

FAA's safety oversight programs for other aspects of the aviation industry—including manufacturers of aircraft and aircraft parts, repair stations, flight schools, aviation maintenance technician schools, pilots, and mechanics—involve certification, surveillance, and inspection by FAA's safety inspectors, engineers, flight surgeons, and designated representatives. FAA authorizes about 13,400 private individuals and about 180 organizations (called "designees") to act as its representatives to conduct many safety certification activities, such as administering flight tests to pilots, inspecting repair work by maintenance facilities, conducting medical examinations of pilots, and approving designs for aircraft parts. These designees are grouped into 18 different programs and are overseen by three FAA offices—Flight Standards Service, Aerospace Medicine, and Aircraft Certification Service—all of which are under the Office of Aviation Safety (see figure 2).

Figure 2: FAA Offices That Manage the Different Designee Programs and Numbers of Designees (as of May 2004)




Source: FAA.

Since 1990, FAA has emphasized gaining compliance from the aviation industry through cooperative means by establishing industry partnership programs with the aviation community that allow participants, such as airlines and pilots, to self-report violations of safety regulations and help identify safety deficiencies, and potentially mitigate or avoid fines or other legal action. For example, the Voluntary Disclosure Program encourages the self-reporting of manufacturing problems and safety incidents by participants that can include air carriers and repair stations. Appendix II describes the industry partnership programs.

When violations of statutory and regulatory requirements are identified through inspections, through the partnership programs in certain cases, or through other methods, FAA has a variety of enforcement tools that it may use to respond to them, including administrative actions (such as issuing a warning notice or a letter of correction that includes the corrective actions the violator will take) and legal sanctions (such as levying a fine or suspending or revoking a pilot or other FAA-issued certificate).

### FAA's Safety Oversight System Focuses on Risk Identification and Mitigation Through System Safety, Leveraging of Resources, and Enforcement of Safety Regulations, but Benefits Are Not Being Fully Realized

In recent reports, we found that FAA's safety oversight system has programs that focus on risk identification and mitigation through a system safety approach, the leveraging of resources, and enforcement of safety regulations, but that the benefits of these programs are not being fully realized. In our recent report on FAA's oversight of non-legacy airlines, we found that the focus on risk identification through the addition of SEP has many strengths and allows for enhancing the efficiency of FAA's oversight activities.[2] Rather than relying on NPG's customary method of conducting a set number of inspections of an airline's operations, SEP emphasizes a system safety approach of using risk analysis techniques. SEP allows for the efficient use of inspection staff and resources by prioritizing workload based on areas of highest risk, and it includes a requirement that inspectors verify that corrective actions have occurred. For example, FAA has developed risk assessment worksheets for SEP that are aligned with key airline systems that guide inspectors through

[2] GAO, *Aviation Safety: System Safety Approach Needs Further Integration into FAA's Oversight of Airlines*, GAO–05–726 (Washington, D.C.: Sept. 28, 2005).

identifying and prioritizing risks. The worksheets guide inspectors to organize the results of their previous inspections and surveillance into a number of areas such as flight operations and personnel training in order to identify specific risks in each area and target the office's resources to mitigating those risks. The development of a system safety approach addresses a long-standing concern by us that FAA did not have a methodology for assessing airline safety risks so that it could target limited inspection resources to high-risk conditions.[3] Another strength of SEP, consistent with findings in our past reports, is that SEP relies on teams of inspectors, which are generally more effective than individual inspectors in their ability to collectively identify concerns.[4]

However, the benefits of FAA's system safety approach for the inspection of non-legacy airlines could be enhanced by a more complete implementation of SEP and addressing other challenges. The inspection workload for non-legacy airlines is still heavily oriented to the NPG's non-risk based activities. For example, as shown in table 1, from Fiscal Years 2002 through 2004, 77 percent of inspection activities required for the top 25 non-legacy airlines in terms of the number of enplanements were identified through NPG, and the remaining percentage of inspection activities were identified based on risk through SEP. Although inspectors can replace NPG-identified activities with SEP-identified activities that they deem constitute a greater safety risk, we found that FAA inspectors interpret agency emphasis on NPG as discouraging this practice. In order to ensure that all inspectors who oversee non-legacy airlines have a complete and timely understanding of the agency's policies relating to the inspection process, we recommended in September 2005 that FAA improve communication with and training of inspectors in this area.

Table 1: SEP- and NPG-Initiated Required Inspections for the Top 25 Non-legacy Airlines, Fiscal Years 2002–2004

| Type of inspection | 2002 | 2003 | 2004 | Total |
|---|---|---|---|---|
| SEP-initiated | 1,261 | 1,567 | 927 | 3,755 (23%) |
| NPG-initiated | 5,470 | 3,623 | 3,338 | 12,431 (77%) |
| Total | 6,731 | 5,190 | 4,265 | 16,186 (100%) |

Source: GAO analysis of FAA information.

Another way that FAA attempts to enhance the efficiency of its oversight activities is through its designee programs. We reported that FAA maximizes its resources by allowing designees to perform about 90 percent of certification-related activities, thus allowing FAA to better concentrate its limited staff resources on the most safety-critical functions.[5] For example, while designees conduct routine certification functions, such as approvals of aircraft technologies that the agency and designees have had previous experience with, FAA focuses on new and complex aircraft designs or design changes. In addition, the use of designees expands FAA's access to technical expertise within the aviation community. For the aviation industry, the designee programs enable individuals and organizations to obtain required FAA certifications—such as approvals of the design, production, and airworthiness of aircraft—in a timely manner, thus reducing delays and costs to the industry that might result from scheduling direct reviews by FAA staff. For example, officials from an aircraft manufacturer told us that the use of designees has added significantly to the company's ability to enhance and improve daily operations by decreasing certification delivery time and increasing the flexibility and utilization of company resources. In addition, designees are convenient to the aviation industry due to their wide dispersal throughout the United States.

However, concerns about the consistency and adequacy of designee oversight that FAA field offices provide have been raised by experts and other individuals we interviewed. For example, designees and industry officials that we spoke with indicated that FAA's level of oversight and interpretation of rules differ among regions and among offices within a region, which limits FAA's assurance that designees' work is performed uniformly in accordance with FAA's standards and policy. Experts also

[3] GAO, *Aviation Safety: Weaknesses in Inspection and Enforcement Limit FAA in Identifying and Responding to Risks*, GAO/RCED–98–6 (Washington, D.C.: Feb. 27, 1998); GAO, *Aviation Safety: FAA Needs to More Aggressively Manage Its Inspection Program*, GAO/T–RCED–92–25 (Washington, D.C.: Feb. 6, 1992).

[4] GAO/RCED–98–6; GAO/T–RCED–92–25.

[5] GAO, *Aviation Safety: FAA Needs to Strengthen the Management of Its Designee Programs*, GAO–05–40 (Washington, D.C.: Oct. 8, 2004).

ranked this issue as a top weakness.[6] Table 2 shows the top five weaknesses identified by our experts. Experts also made a number of suggestions to strengthen the designee program, including clearly defining and following agency criteria for selecting designees and increasing penalties for designees found to violate standards or who do not exercise proper judgment. To improve management control of the designee programs, and thus increase assurance that designees meet FAA's performance standards, we recommended that FAA develop mechanisms to improve the compliance of FAA program and field offices with existing policies and incorporate, as appropriate, suggestions from our expert panel. In response to our recommendations, FAA is planning, among other things, to form a team to identify and share best practices for overseeing designee programs.

Table 2: Experts' Ranking of Top 5 Oversight Weaknesses

| Ranking | Weakness |
|---|---|
| 1 | FAA offices level of oversight and interpretation of rules are inconsistent. |
| 2 | Inactive, unqualified, or poor performing designees are not identified and removed expeditiously. |
| 3 | It is difficult to terminate poor performing designees. |
| 4 | Inadequate surveillance and oversight of designees. |
| 5 | FAA has not made oversight of designees a high enough priority. |

Source: GAO analysis of expert panel information.
Note: Rankings based on responses from 62 experts and the frequency of responses indicating a "great" or "very great" weakness.

FAA also leverages its resources through its industry partnership programs. These partnership programs are designed to assist the agency in receiving safety information, including reports of safety violations. According to FAA officials, the Aviation Safety Action Program, Aviation Safety Reporting Program, and Voluntary Disclosure Reporting Program augment FAA's enforcement activities and allow FAA to be aware of many more safety incidents than are discovered during inspections and surveillance. In addition, the Flight Operational Quality Assurance Program provides safety information in the form of recorded flight data from participating airlines. FAA has established some management controls over its partnership programs, such as procedures to track actions taken to correct safety incidents reported under the programs, but the agency lacks management controls to measure and evaluate the performance of these programs, an issue that we will discuss later in the testimony.

FAA's enforcement process, which is intended to ensure industry compliance with safety regulations, is another important element of its safety oversight system. FAA's policy for assessing legal sanctions against entities or individuals that do not comply with aviation safety regulations is intended to deter future violations. FAA has established some management controls over its enforcement efforts, with procedures that provide guidance on identifying regulated entities and individuals that are subject to inspections or surveillance actions, determining workload priorities on the basis of the timing and type of inspection to be performed, detecting violations of safety regulations, tracking the actions that are taken by the entities and individuals to correct the violations and achieve compliance with regulations, and imposing punitive sanctions or remedial conditions on the violators. These procedures provide FAA inspectors, managers, and attorneys with a process to handle violations of safety regulations that are found during routine inspections.

However, we found that the effect of FAA's legal sanctions on deterrence is unclear, and that recommendations for sanctions are sometimes changed on the basis of factors that are not associated with the merits of the case. We found that from Fiscal Years 1993 through 2003, attorneys in FAA's Office of the Chief Counsel authorized a 52 percent reduction in the civil monetary penalties assessed from a total of $334 million to $162 million. FAA officials told us that the agency sometimes reduces sanctions in order to prioritize attorneys' caseloads by closing the cases more quickly through negotiating a lower fine. Economic literature on deterrence suggests that although negative sanctions (such as fines and certificate suspensions) can

[6] We identified 62 aviation experts with knowledge and expertise in FAA's designee programs, who participated on a Web-based panel that provided the group's views on the strengths and weaknesses of the designee programs and ways to improve the programs. The experts included designees, FAA inspectors and engineers, independent experts and university academics, and private sector and aviation industry associations. We obtained the experts' views by employing an iterative and controlled feedback process for obtaining individual views and then allowing each participant to respond to the entire panel's comments.

deter violations, if the violator expects sanctions to be reduced, he or she may have less incentive to comply with regulations. In effect, the goal of preventing future violations is weakened when the penalties for present violations are lowered for reasons not related to the merits of the case. In addition, FAA lacks management controls to measure and evaluate its enforcement process, which we discuss later in this testimony.

**FAA Has Made Training an Integral Part of Its Safety Oversight System but Several Actions Could Improve Results**

FAA's use of a risk-based system safety approach to inspections requires inspectors to apply data analysis and auditing skills to identify, analyze, assess, and control potential hazards and risks. Therefore, it is important that inspectors are well-trained in this approach and have sufficient knowledge of increasingly complex aircraft, aircraft parts, and systems to effectively identify safety risks. It is also important that FAA's large cadre of designees is well-trained in Federal aviation regulations and FAA policies. FAA has made training an integral part of its safety inspection system and has established mandatory training requirements for its workforce as well as designees. FAA provides inspectors with extensive training in Federal aviation regulations; inspection and investigative techniques; and technical skills, such as flight training for operations inspectors. The agency provides its designees with an initial indoctrination that covers Federal regulations and agency policies, and refresher training every 2 to 3 years.

We have reported that FAA has generally followed effective management practices for planning, developing, delivering, and assessing the impact of its technical training[7] for safety inspectors, although some practices have yet to be fully implemented.[8] In its planning activities for training, FAA has linked technical training efforts to its goal of safer air travel and has identified technical proficiencies needed to improve safety inspectors' performance in meeting this goal. For example, FAA's Offices of Flight Standards and Aircraft Certification have identified gaps in several of the competencies required to conduct system safety inspections, including risk assessment, data analysis, systems thinking, and designee oversight. According to FAA, it is working to correct these gaps. We have also identified gaps in the training provided to inspectors in the Office of Flight Standards who oversee non-legacy airlines, and have recommended that FAA improve inspectors' training in areas such as system safety and risk management to ensure that these inspectors have a complete and timely understanding of FAA's inspection policies. We have identified similar competency gaps related to designee oversight. For example, FAA does not require refresher training concerning designee oversight, which increases the risk that staff do not retain the information, skills, and competencies required to perform their oversight responsibilities. We recommended that FAA provide additional training for staff who directly oversee designees.[9] We did not identify any specific gaps in the competencies of designees.[10] In prioritizing funding for course development activities, FAA does not explicitly consider which projects are most critical. Figure 3 describes the extent to which FAA follows effective management practices in planning training.

---

[7] We define technical training as training in aviation technologies. FAA includes in its definition of technical training topics such as system safety and risk analysis, inspector job skills, data analysis, and training in software packages.

[8] GAO, *Aviation Safety: FAA Management Practices for Technical Training Mostly Effective; Further Actions Could Enhance Results*, GAO–05–728 (Washington, D.C.: Sept. 7, 2005). We compared FAA's management of its inspector technical training efforts with effective management practices outlined in GAO, *Human Capital: A Guide for Assessing Strategic Training and Development Efforts in the Federal Government*, GAO–04–546G (Washington, D.C.: Mar. 1, 2004).

[9] GAO–05–40.

[10] However, many experts on our panel indicated it was of high or highest importance to ensure standard training of designees within specific specialties to improve the consistency of their work, and to increase the number of subject-matter workshops for designees.

**Figure 3: Extent that FAA Follows Effective Management Practices in Planning Technical Training**

| Effective management practices | Extent followed |
|---|---|
| Ensures training goals and related performance measures and targets are consistent with overall mission and goals | |
| Ensures human capital professionals work in partnership with agency leadership in addressing agency priorities, including training, in strategic and annual performance planning processes | |
| Determines skills and competencies its workforce needs to achieve current and emerging agency goals and identifies gaps -- including those training strategies can help address | |
| Identifies appropriate level of investment for training and prioritizes funding so that the most important training needs are addressed first | |
| Ensures agency strategic and tactical changes are promptly incorporated into training efforts | |

Not followed | Partially followed | Mostly followed | Fully followed

Source: GAO

In developing its training curriculum for inspectors, FAA also for the most part follows effective management practices, such as developing courses that support changes in inspection procedures resulting from regulatory changes or agency initiatives. On the other hand, FAA develops technical courses on an ad hoc basis rather than as part of an overall curriculum for each inspector specialty—such as air carrier operations, maintenance, and cabin safety—because the agency has not systematically identified the technical skills and competencies each type of inspector needs to effectively perform inspections. Figure 4 describes the extent to which FAA follows effective management practices in developing training.

**Figure 4: Extent that FAA Follows Effective Management Practices in Developing Technical Training**

| Effective management practices | Extent followed |
|---|---|
| New courses developed to meet emerging demands and improve performance | |
| Course development teams enable stakeholders to provide input | |
| Guidelines provide progressive course development steps with ongoing evaluation at each step | |
| Merits of different course delivery methods are considered | |
| Criteria used for decisions regarding outside training providers | |
| Analysis of training needs and course development linked to overall curriculum approach[a] | |

Not followed | Partially followed | Mostly followed | Fully followed

[a]This management practice is not specifically identified in our assessment guide. However, a management approach that assesses training needs holistically rather than on a course-by-course basis can provide for a more systematic assessment of whether and how training will help meet organizational needs.

Source: GAO

In delivering training, FAA has also generally followed effective management practices. (See Figure 5.) For example, FAA has established clear accountability for ensuring that inspectors have access to technical training, developed a way for inspectors to choose courses that meet job needs and further professional development, and offers a wide array of technical and other courses. However, both FAA and its inspectors recognize the need for more timely selection of inspectors for technical training. In addition, FAA acknowledges the need to increase communication between inspectors and management with respect to the training program, especially to ensure that inspectors have bought into the system safety approach to inspections.

**Figure 5: Extent that FAA Follows Effective Management Practices in Delivering Technical Training**

| Effective management practices | Extent followed |
|---|---|
| Clearly delineates accountability for achieving agency training goals | |
| Uses a suitable and timely process for selecting inspectors for technical training given inspectors' current duties and existing skills | |
| Fosters an environment that is conducive to learning | |
| Takes steps to encourage employee buy-in to goals and priorities of technical training | |

Not followed | Partially followed | Mostly followed | Fully followed

Source: GAO

FAA offers numerous technical courses from which inspectors can select to meet job needs. However, from our survey of FAA's inspectors, we estimate that only about half think that they have the technical knowledge needed for their jobs.[11] FAA officials told us that inspectors' negative views stem from their wanting to acquire proficiencies that are not as crucial in a system safety environment. We also found a disparity between inspectors and FAA concerning the receipt of requested training. We estimated that 28 percent of inspectors believe that they get the technical training that they request. However, FAA's records show that FAA approves about 90 percent of these requests, and inspectors are making good progress in receiving training. Over half of the inspectors have completed at least 75 percent of technical training that FAA considers essential. FAA officials told us that inspectors' negative views on their technical knowledge and the training they have received stem from their not accepting FAA's move to a system safety approach. That is, the inspectors are concerned about acquiring individual technical proficiency that is not as crucial in a system safety environment. Given that it has not completed assessing whether training for each inspector specialty meets performance requirements, FAA is not in a position to make definitive conclusions concerning the adequacy of inspector technical training.

FAA also generally followed effective management practices in evaluating training. The agency requires that each training course receive a systematic evaluation every 3 years to determine if the course is up to date and relevant to inspectors' jobs, although training officials noted that many courses have yet to undergo such an evaluation. However, FAA collects limited information on the effectiveness of training, and its evaluations have not measured the impact of training on FAA's mission goals, such as reducing accidents. Training experts acknowledge that isolating performance improvements resulting from training programs is difficult for any organization. (See Figure 6.)

[11] Because of the statistical survey techniques we employed in surveying FAA's inspectors, we are 95 percent confident that the results we present are within 4.6 percentage points of the results that we would have obtained if we had surveyed all 3,000 inspectors. That is, we are 95 percent confident that had we surveyed all inspectors, between 48 and 57 percent of them would have told us that, to a great or very great extent, they have the technical knowledge to do their jobs. All percentage estimates from the survey have a margin of error of plus or minus 4.6 percentage points or less, unless otherwise noted.

**Figure 6: Extent that FAA Follows Effective Management Practices in Evaluating Its Training Program**

| Effective management practices | Extent followed |
|---|---|
| Systematically plans for and evaluates the effectiveness of training and development efforts | |
| Uses the appropriate analytical approaches to assess its training and development programs | |
| Uses appropriate performance data (including qualitative and quantitative measures) to assess the results achieved through training and development efforts | |
| Incorporates evaluation feedback into the planning, design, and implementation of its training and development efforts | |
| Incorporates different perspectives (including those of line managers and staff, customers, and experts in areas such as financial, information, and human capital management) in assessing the impact of training on performance | |
| Assesses the benefits achieved through training and development programs | |

Not followed Partially followed Mostly followed Fully followed

Source: GAO

While FAA follows many effective management practices in its training program, the agency also recognizes the need for improvements, including (1) systematically assessing inspectors' needs for technical and other training, (2) better timing of technical training so that inspectors receive it when it is needed to perform their jobs, and (3) better linking the training provided to achieving agency goals of improving aviation safety. FAA has begun to act in these areas, and we believe that if effectively implemented, the actions should improve the delivery of training and ultimately improve aviation safety. Therefore, it is important for FAA to follow through with its efforts. As a result, we recommended in September 2005, among other things, that in order to ensure that inspector technical training needs are identified and met in a timely manner, FAA systematically assess inspectors' technical training needs, better align the timeliness of training to when inspectors need the training to do their job, and gain inspectors' acceptance for changes made or planned to their training.

It is important that both FAA's inspection workforce and FAA-certified aviation mechanics are knowledgeable about increasingly complex aircraft, aircraft parts, and systems. While we did not attempt to assess the technical proficiency that FAA's workforce requires and will require in the near future, FAA officials said that inspectors do not need a substantial amount of technical training courses because inspectors are hired with a high degree of technical knowledge of aircraft and aircraft systems. They further indicated that inspectors can sufficiently keep abreast of many of the changes in aviation technology through FAA and industry training courses and on-the-job training. However, in its certification program for aviation mechanics, we found that FAA standards for minimum requirements for aviation courses at FAA-approved aviation maintenance technician schools and its requirements for FAA-issued mechanics certificates do not keep abreast with the latest technologies. In 2003, we reported that those standards had not been updated in

more than 50 years.[12] We recommended that FAA review the curriculum and certification requirements and update both. FAA plans to make changes in the curriculum for FAA approved aviation maintenance technicians that reflect up-to-date aviation technologies and finalize and distribute a revised Advisory Circular in March 2006 that describes the curriculum changes. FAA then plans to allow the aviation industry time to implement the recommended curriculum changes before changing the requirements for FAA-issued mechanics certificates.

**FAA Has Evaluated Some Safety Programs, but the Lack of Evaluative Systems and Nationwide Data Impedes FAA's Ability to Continuously Monitor Its Safety Programs**

It is important for FAA to have effective evaluative processes and accurate nationwide data on its numerous safety oversight programs so that program managers and other officials have assurance that the safety programs are having their intended effect. Such processes and data are especially important because FAA's workforce is so dispersed nationwide—with thousands of staff working out of more than 100 local offices—and because FAA's use of a risk-based system safety approach represents a cultural shift from its traditional inspection program. Evaluation is important to understanding if the cultural shift has effectively occurred. Our most recent work has shown the lack of such processes and limitations with data for FAA's inspection program for non-legacy airlines, designee programs, industry partnership programs, and enforcement program. In response to recommendations that we have made regarding these programs, some improvements are being made. On the positive side, as we mentioned earlier, our most recent work found that FAA generally follows effective management practices in evaluating individual technical training courses.

FAA has not evaluated its inspection oversight programs for non-legacy airlines—which include SEP and NPG—to determine how the programs contribute to the agency's mission and overall safety goals, and its nationwide inspection database lacks important information that could help it perform such evaluations—such as whether risks identified through SEP have been mitigated. In addition, the agency does not have a process to examine the nationwide implications of or trends in the risks that inspectors have identified through their risk assessments—information it would need to proactively determine risk trends at the national level on a continuous basis. FAA's evaluation office instead conducts analyses of the types of inspections generated under SEP by airline and FAA region, according to FAA. We recommended that FAA develop a continuous evaluative process for activities under SEP and link SEP to the performance-related goals and measures developed by the agency, track performance toward these goals, and determine appropriate program changes. FAA is considering our recommendation, but its plan to place the remaining non-legacy airlines in the ATOS program by the end of Fiscal Year 2007 might make this recommendation unnecessary, according to the agency. Since FAA's past efforts to move airlines to ATOS have experienced delays, we believe that this recommendation is still valid.

We also found that FAA lacked requirements or criteria for periodically evaluating its designee programs. In 2004, we reported that the agency had evaluated 6 of its 18 designee programs over the previous 7 years and had plans to evaluate 2 more, although it had no plans to evaluate the remaining 10 programs because of limited resources.[13] FAA conducted these evaluations on an ad hoc basis usually at the request of headquarters directors or regional office managers. In addition, we found that FAA's oversight of designees is hampered, in part, by the limited information on designees' performance contained in the various designee databases.[14] These databases contain descriptive information on designees, such as their types of designations and status (i.e., active or terminated). More complete information would allow the agency to gain a comprehensive picture of whether staff are carrying out their responsibilities to oversee designees. To improve management control of the designee programs, and thus increase assurance that designees meet the agency's performance standards, we recommended that FAA establish a process to evaluate all designee programs and strengthen the effectiveness of its designee databases by improving the consistency and completeness of information in them. To address our recommendations, FAA expects to develop a plan to evaluate all des-

[12] GAO, *Aviation Safety: FAA Needs to Update the Curriculum and Certification Requirements for Aviation Mechanics*, GAO–03–317 (Washington, D.C.: Mar. 6, 2003).

[13] GAO–05–40.

[14] These databases are Flight Standards Service's Program Tracking and Reporting Subsystem and National Vital Information Subsystem; Aircraft Certification Service's Designee Information Network, and Office of Aerospace Medicine's Airmen Medical Certification Information Subsystem.

ignee programs on a recurring basis and intends to establish a team that will examine ways to improve automated information related to designees.

In addition, we found that FAA does not evaluate the effects of its industry partnership and enforcement programs to determine if stated program goals, such as deterrence of future violations, are being achieved. For example, little is known about nationwide trends in the types of violations reported under the partnership programs or whether systemic, nationwide causes of those violations are identified and addressed. Furthermore, FAA's enforcement policy calls for inspectors and legal counsel staff to recommend or assess enforcement sanctions that would potentially deter future violations. However, without an evaluative process, it is not known whether the agency's practice of generally closing cases with administrative actions rather than legal sanctions[15] and at times reducing the amount of the fines, as mentioned earlier in this testimony, may weaken any deterrent effect that would be expected from sanctions.

FAA's ability to evaluate the impact of its enforcement efforts is also hindered by the lack of useful nationwide data. FAA inspection offices maintain independent, site-specific databases because they do not find the nationwide enforcement database—the Enforcement Information System (EIS)—as useful as it could be because of missing or incomplete historical information about enforcement cases. As a result of incomplete data on individual cases, FAA inspectors lack the complete compliance history of violators when assessing sanctions. We recommended that FAA develop evaluative processes for its enforcement activities and partnership programs and use them to create performance goals, track performance towards those goals, and determine appropriate program changes. We also recommended that FAA take steps to improve the usefulness of the EIS database by enhancing the completeness of enforcement information. FAA expects to address some of these issues as it revises its enforcement policy, which is expected to be issued later in Fiscal Year 2006. In addition, FAA has established a database workgroup that is developing long- and short-term solutions to address the problems with EIS.

**Recommendations We Have Made To Improve FAA's Safety Oversight System**

In order to help FAA fully realize the benefits from its safety oversight system, we have made a number of recommendations to address weaknesses that we identified in our reviews. These recommendations have not been fully implemented, although in some cases FAA has taken steps towards addressing them. Evaluative processes and relevant data are particularly important as FAA works to change its culture by incorporating a system safety approach into its oversight, and we have recommended that FAA develop continuous evaluative processes for its oversight programs for non-legacy airlines, its designee programs, and its industry partnership and enforcement programs, and systematically assess inspectors' technical training needs. In addition, FAA's nationwide databases are in need of improvements in their comprehensiveness and ease of use. Without comprehensive nationwide data, FAA does not have the information needed to evaluate its safety programs and have assurance that they are having the intended results. We have recommended that FAA improve the completeness of its designee and enforcement databases. Continuous improvements in these areas are critical to FAA's ability to have a robust "early warning system" and maintain one of the safest aviation systems in the world.

**Contacts and Acknowledgments**

For further information on this testimony, please contact Dr. Gerald Dillingham at (202) 512–2834 or by email at *dillinghamg@gao.gov*. Individuals making key contributions to this testimony include Brad Dubbs, Phillis Riley, Teresa Spisak, and Alwynne Wilbur.

## APPENDIX I: DESCRIPTION OF FAA'S INSPECTION PROGRAMS

Table 1 describes FAA's three inspection processes for overseeing airlines: ATOS, NPG, and SEP. Many of the elements of ATOS, such as the use of data to identify risks and the development of surveillance plans by inspectors, are incorporated in the SEP process. The NPG process, in contrast, is not focused on the use of data and relies on an established set of inspections that are not risk based.

[15] We found that during Fiscal Years 1993 through 2003, FAA closed about 53 percent of the nearly 200,000 enforcement actions with administrative actions (such as warning notices). About 28 percent of the actions were closed with legal sanctions (such as fines) and about 18 percent were closed with no enforcement action.

**Table 1: Various Elements of ATOS, NPG, and SEP**

| | ATOS | NPG | SEP |
|---|---|---|---|
| Description of program | • Focuses on safety vulnerabilities rather than regulatory compliance<br>• Analysts and inspectors review airline data to identify areas of safety risk<br>• Inspectors develop surveillance plans for each airline, based on data analysis and assessment of risks, and adjust the plans periodically based on inspection results | • Focuses on inspectors completing a prescribed number of inspection activities<br>• Primarily based on checking airline compliance with regulations<br>• Relies on inspectors' expertise to identify trends and risks | • Focuses on inspectors conducting a risk assessment of various areas<br>• Inspectors review data to identify areas of safety risk and use Flight Standards Safety Analysis Information Center and the Safety Performance Analysis System as analytical tools<br>• Inspectors develop surveillance plans for each airline, based on data analysis and assessment of risks, and adjust plans periodically based on inspection results<br>• Inspectors can also verify that planned NPG activities meet the surveillance needs for a particular year |
| Type of commercial passenger airline inspected | Legacy commercial airlines | Non-legacy commercial airlines | Non-legacy commercial airlines |
| Frequency of inspections | Continuous safety oversight | Periodic; regular inspections are established annually by an FAA headquarters committee | Periodic; inspections are established during meetings held at least twice a year using risk-based criteria |
| Approximate number of aviation safety inspectors conducting inspections[a] | 585 | 1,100[b] | 1,100[b] |
| Number of commercial passenger airlines under the program[b] | 13[c] | 99 | 99 |

[a]As of July 2005.

[b]There are a total of about 1,100 inspectors for both the NPG and SEP inspections.

[c]FedEx and United Parcel Service, two cargo air carriers, are also in the ATOS program. This number reflects the recent merger of US Airways and America West, which were both in ATOS prior to the merger.

Source: GAO and FAA

## APPENDIX II: DESCRIPTION OF FAA'S PARTNERSHIP PROGRAMS

### Aviation Safety Action Program (ASAP)

*Year Established*: 1997

**Participation:** Participants include employees of air carriers and repair stations that have entered into a memorandum of understanding with the Federal Aviation Administration (FAA). The memoranda can cover employee groups, such as pilots, maintenance employees, dispatchers, or flight attendants. Each employee group is covered by a separate memorandum of understanding. As of June 2004, FAA had accepted 54 memoranda of understanding and received over 80,000 ASAP reports, which may or may not include safety violations, according to FAA officials.

**Purpose:** ASAP seeks to improve aviation safety through the voluntary self-reporting of safety incidents under the procedures set forth in the memorandum of understanding. Under the program, FAA does not take enforcement action against employees who voluntarily self-reporting safety violations for reports that are sole-source (the report is the only way FAA would have learned about the incident) and will pursue administrative action only for reports that are not sole-source. Incidents that involve alcohol, drugs, criminal activity, or an intentional disregard for safety are not eligible for self-reporting under ASAP.

**Process:** Each memorandum of understanding is a voluntary partnership between FAA, the airline, and an employee group. Although employee groups are not always included, FAA encourages their participation. The memorandum of understanding ensures that employees who voluntarily disclose FAA safety violations in accordance with the procedures and guidelines of ASAP will receive administrative action or no action in lieu of enforcement action.

Once a memorandum of understanding is approved, employees can begin reporting violations that fall under the agreement. When a violation occurs, an employee notifies the Event Review Committee, which includes representatives from FAA and the airline or the repair station and generally includes the appropriate employee association. The Committee must be notified in writing within the time limit specified

in the memorandum of understanding. The Committee then determines whether to accept the report under the ASAP program. If the report is accepted (it meets the acceptance criteria in the memorandum and does not involve criminal activity, substance abuse, controlled substances, or alcohol), then the Committee determines the action to take. That action may include remedial training or administrative action, but it will not include a legal sanction.

**Results:** FAA does not know the overall program results because it does not have a national, systematic process in place to evaluate the overall success of ASAP. However, FAA cites examples that describes ASAP's contribution to enhanced aviation safety. These examples include identifying deficiencies in aircraft operations manuals, airport equipment, and runways. In July 2003, FAA's Compliance and Enforcement Review recommended that FAA evaluate the use and effectiveness of this program.

**Aviation Safety Reporting Program (ASRP)**

*Year Established*: 1975

**Participation:** Participants are all users of the national airspace system, including air traffic controllers and employees of air carriers and repair stations.

**Purpose:** The program is designed to improve aviation safety by offering limited immunity for individuals who voluntarily report safety incidents. ASRP was founded after TWA Flight 514 crashed on approach to landing in December 1974 after the crew misinterpreted information on the approach chart. This accident occurred only 6 weeks after another plane experienced the same error.

**Process:** The National Aeronautics and Space Administration (NASA) administers this program. When a safety incident occurs, a person may submit a form and incident report to NASA. There are four types of forms that can be submitted to NASA: (1) Air Traffic Control, (2) General Reports (includes Pilots), (3) Flight Attendants, and (4) Maintenance Personnel.

At least two aviation safety analysts read these forms and the incident reports that accompany them. The analysts at NASA screen the incident reports for urgent safety issues, which will be marked for immediate action to the appropriate FAA office or aviation authority. NASA analysts also edit the report's narrative to eliminate any identifying information. In addition, each report has a tear-off portion, which is separated and returned to the individual who reported the incident as a receipt of the incident's report's acceptance into the ASRP. When a safety violation that has been previously reported under ASRP comes to the attention of FAA, the agency issues a legal sanction, which is then waived. Reports that would not be eligible to have a legal sanction waived include deliberate violations, violations involving a criminal offense, or accident; reports filed by participants who have committed a violation of Federal aviation regulations or law within the last 5 years and reports filed later than 10 days following an incident.

**Results:** While FAA and NASA do not know the overall program results because they do not have a formal national evaluation program to measure the overall effectiveness of the program, the agencies widely disseminate information generated from the program to aircraft manufacturers and others. ASRP reports are compiled into a database known as the Aviation Safety Reporting System. When a potentially hazardous condition is reported, such as a defect in a navigational aid or a confusing procedure, NASA will send a safety alert to aircraft manufacturers, the FAA, airport representatives, and other aviation groups. The database is used for a monthly safety bulletin that includes excerpts from incident reports with supporting commentary by FAA safety experts. NASA officials estimate that the bulletin is read by over 150,000 people. In addition, individuals and organizations can request a search of the database for information on particular aircraft aviation safety subjects, including human performance errors and safety deficiencies. Further, NASA has used the database to analyze operational safety issues, such as general aviation incidents, pilot and controller communications, and runway incursions.

**Flight Operational Quality Assurance (FOQA)**

*Year Established*: 1995

**Participation:** Participants include air carriers that equip their airplanes to record flight data. As of March 2004, 13 airlines had FAA-approved FOQA programs, and approximately 1,400 airplanes were equipped for the program.

**Purpose:** FOQA is designed to enhance aviation safety through the analysis of digital flight data generated during routine flights.

**Process:** Air carriers that participate in the program equip their aircraft with special acquisition devices or use the airplanes' flight data recorders to collect data and determine if the aircraft are deviating from standard procedures. These data include engine temperatures, descent rate, and deviations from the flight path.

When the aircraft lands, data are transmitted from the aircraft to the airline's FOQA station, where they are analyzed for flight trends and possible safety problems.

Once the data are transmitted to the FOQA ground station, the data are extracted and analyzed by software programs. The FOQA data are combined with data from maintenance databases, weather conditions, and other safety reporting systems, such as ASAP, in order to identify trends in flight operations. The analysis typically focuses on events that fall outside normal boundaries specified by the manufacturer's operational limitations and the air carrier's operational standards.

FOQA data are collected and analyzed by individual air carriers. The data on safety trends are made available to FAA in an aggregated form with no identification of individual carriers. According to FAA officials, air carriers do not want to release this data to any outside party (including FAA) because of concerns that the data could then be publicly released. Air carriers pay for the special flight data recorders that can record FOQA data, which cost approximately $20,000 each. Although this can be an expensive investment for some air carriers, most newer aircraft models come with the data recorder built into the airplane. The International Civil Aviation Organization (ICAO) has recommended that airlines from member countries implement a FOQA program. FAA has notified ICAO that the program will remain voluntary in the United States.

**Results:** Although FAA has no formal national evaluation program to measure the overall results or effectiveness of FOQA programs, FAA cites examples that describe FOQA's contribution to enhanced aviation safety. For example, one FOQA program highlighted a high rate of descent when airplanes land at a particular airport. On the basis of the information provided from FOQA, air traffic controllers at the airport were able to develop alternative approach procedures to decrease the rate of descent.

**Voluntary Disclosure Reporting Program (VDRP)**

*Year Established:* 1990

**Participation:** Participants include air carriers, repair stations, and production approval holders.[16]

**Purpose:** FAA initiated the program to promote aviation safety by encouraging the voluntary self-reporting of manufacturing, and quality control problems and safety incidents involving FAA requirements for maintenance, flight operations, drug and alcohol prevention programs, and security functions.

**Process:** Upon discovering a safety violation, participants can voluntarily disclose the violation to FAA within 24 hours. The initial notification should include a description of the violation, how and when the violation was discovered, and the corrective steps necessary to prevent repeat violations. Within 10 days of filing the initial notification to FAA, the entity is required to provide a written report that cites the regulations violated, describes how the violation was detected, provides an explanation of how the violation was inadvertent, and provides a description of the proposed comprehensive fix. The FAA may pursue legal action if the participant discloses violations during, or in anticipation of, an FAA inspection.

The violation must be reported immediately after being detected, must be inadvertent, must not indicate that a certificate holder is unqualified, and must include the immediate steps that were taken to terminate the apparent violation. If these conditions are met, and the FAA inspector has approved the comprehensive fix, then the FAA inspector will prepare a letter of correction and the case is considered closed with the possibility of being reopened if the comprehensive fix is not completed.

**Results:** FAA does not know the overall program results because it does not have a process to measure the overall effectiveness of the program nationwide. A 2003 internal FAA report recommended that the agency evaluate the use and effectiveness of this program.

**Selected GAO Reports on Aviation Safety**

*Aviation Safety: System Safety Approach Needs Further Integration into FAA's Oversight of Airlines*. GAO–05–726. Washington, D.C.: September 28, 2005.

*Aviation Safety: FAA Management Practices for Technical Training Mostly Effective; Further Actions Could Enhance Results*. GAO–05–728. Washington, D.C.: September 7, 2005.

*Aviation Safety: Oversight of Foreign Code-Share Safety Program Should Be Strengthened*. GAO–05–930. Washington, D.C.: August 5, 2005.

---

[16] A production approval holder is an entity that holds a certificate, approval, or authorization from FAA to manufacture aircraft, aircraft engines, propellers, and related parts and articles.

*Aviation Safety: FAA Needs to Strengthen the Management of Its Designee Programs*. GAO–05–40. Washington, D.C.: October 8, 2004.

*Aviation Safety: Better Management Controls are Needed to Improve FAA's Safety Enforcement and Compliance Efforts*. GAO–04–646. Washington, D.C.: July 6, 2004.

*Aviation Safety: Information on FAA's Data on Operational Errors at Air Traffic Control Towers*. GAO–03–1175R. Washington, D.C.: September 23, 2003.

*Aviation Safety: FAA Needs to Update the Curriculum and Certification Requirements for Aviation Mechanics*. GAO–03–317. Washington, D.C.: March 6, 2003.

*Aviation Safety: FAA and DOD Response to Similar Safety Concerns*. GAO–02–77. Washington. D.C.: January 22, 2002.

*Aviation Safety: Safer Skies Initiative Has Taken Initial Steps to Reduce Accident Rates by 2007*. GAO/RCED–00–111. Washington, D.C.: June 30, 2000.

*Aviation Safety: FAA's New Inspection System Offers Promise, but Problems Need to Be Addressed*. GAO/RCED–99–183. Washington, D.C.: June 28, 1999.

*Aviation Safety: Weaknesses in Inspection and Enforcement Limit FAA in Identifying and Responding to Risks*. GAO/RCED–98–6. Washington, D.C.: February 27, 1998.

---

PREPARED STATEMENT OF THE AIRLINE PILOTS ASSOCIATION

The Air Line Pilots Association, representing 63,000 pilots of 40 different airlines appreciates the opportunity to comment on the runway safety issues to be discussed by this Subcommittee.

In a 2001 submission on the same subject to this Subcommittee, ALPA supported the fielding of seven categories of runway incursion safety enhancements recommended through the Commercial Aviation Safety Team (CAST) Runway Incursion Joint Safety Action and Joint Safety Implementation Teams. Those safety enhancements were:

1. The installation of GPS-driven moving map displays in the cockpit to enhance pilot situation awareness;
2. The use of improved Standard Operating Procedures for ground operations across the industry—current standardization is woefully inadequate;
3. Improved pilot training, including action by the FAA to increase the significance of ground operations performance on all flight training;
4. Improved air traffic control procedures;
5. Improved training for air traffic controllers, particularly the use of high-fidelity visual tower simulators, which are similar in quality to aircraft simulators routinely used for pilot training;
6. Improved situational awareness technology for air traffic controllers, including ASDE–X and the emerging capabilities demonstrated in the FAA's Safe Flight 21 Program; and
7. Visual aids enhancement and automation technology for airports, including improved all-weather conspicuity signs, visual runway occupancy for flight crews on final approach, and automated "Smart Lighting" to indicate taxi routes.

Runway incursion risk has been mitigated, but there is still work to do. We applaud FAA efforts to this point and look forward to working in cooperation with them in the future. Since the above submission, ALPA has seen substantial progress made with a number of those enhancements. That progress relate to pilot performance as noted:

- **Improved Pilot Training:** The FAA Office of Runway Safety and Operational Services funded a program during Fiscal Year 2005, to assist the Aircraft Owners and Pilots Association (AOPA), and the Air Line Pilots Association (ALPA), with developing a web based interactive training video similar to one previously developed for AOPA. The video provides an interactive training aid to deliver the ground operations runway safety message. The AOPA program went live on *http://www.aopa.org* in 2004, and the ALPA program went live on *http://www.alpa.org* in September 2005, and it is available to anyone signing on the public ALPA page. Also included in the funding provided by the FAA for the web based training video, was additional authorization for a Runway Safety Training DVD program, to be produced through the cooperative efforts of the United Airlines Training Center and ALPA. The anticipated release period for that DVD is later in calendar 2005. The DVD program will be distributed to

commercial pilots, and to all Part 121/135 operators by the FAA Office of Runway Safety and Operational Services.

- **Visual aids enhancement and automation technology for airports:** Airport lighting research and development programs are testing runway and taxiway lighting alternatives to automatically project runway status information. A system of Runway Entrance Lights (RELs) has been tested and implemented on Dallas-Ft. Worth (DFW) Runway 18L/36R, to automatically warn pilots of takeoff or landing traffic; and a Takeoff Hold Lights (THLs) test program begins on that same runway during November. ALPA pilots and Flight Safety technicians have been directly involved in both programs. Runway Safety research and development has been ongoing to discover and test new surface painting and marking strategies to mitigate the runway incursion threat. Surface paint and markings tested at Providence, RI that clarify and enhance the taxiway and runway information provided to traffic in the aircraft movement areas have become the new standard for the 87 busiest commercial airports in the U.S., with implementation required by 2008. Many of those airports have already implemented the program. ALPA pilots were involved in helping to determine the final marking strategies to be evaluated.

**Improved situational awareness technology for air traffic controllers:** FAA has begun installations of the ASDE–X electronic traffic monitoring with multilateration, providing exact location of transponder equipped airborne and ground targets. Pilot awareness is enhanced in each of these applications. ASDE–X should be fast tracked immediately. FAA has also approved the further development and deployment of ADS–B to harness the ability to capture Safe Flight 21 capabilities. ADS–B capabilities should also be fast tracked.

- **The installation of GPS-driven moving map displays in the cockpit to enhance pilot situation awareness:** In addition to fast tracking ADS–B capabilities, FAA must certify either a permanent panel mounted Cockpit Display of Traffic Information (CDTI), or an Electronic Flight Bag installation (EFB) capable of displaying own-ship position on a moving airport map. Coupled with ADS–B display could provide other traffic information as well. Pilot situational awareness is always enhanced when an interactive picture is available.
- **The use of improved Standard Operating Procedures for ground operations across the industry:** ALPA applauds the publishing of Standard Operating Procedures Advisory Circulars 91–73 and 120–74. FAA has advised Part 91 operators, as appropriate, of the availability of the 91–73 document; and they have promoted the incorporation and the use of the 120–74 document through Ops Specs where appropriate. Pilots invariably demonstrate improved performance when standard operating procedures are employed.

Significant attention has been paid throughout the aviation industry to the challenge of runway incursion mitigation. As we have shown above, the problem has been approached in several ways, most with favorable results. FAA data show that pilot deviations that have resulted in a loss of separation that could be defined as a runway incursion have been reduced by a significant percentage.

Thank you for the opportunity to provide this information. Any questions concerning this submission may be directed to the Air Line Pilots Association, Engineering and Air Safety Department, 535 Herndon Parkway, P.O. Box 1169, Herndon, VA 20172.

---

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GORDON H. SMITH TO HON. MARION C. BLAKEY

*Question*. Administrator Blakey, since 1997, I have been working with FAA to provide radar coverage in Central Oregon. Air traffic numbers for the region continue to grow quickly and the need for radar to manage the traffic is critical.

As you know, Senate Report 108–146 asked the FAA to provide a process and timetable for addressing radar coverage for Central Oregon. Back in 2004, that study showed that establishing radar in Central Oregon was a cost effective option for the FAA, even without cost share. More importantly, safety would also improve once the radar is installed and active.

Redmond Airport informs me that site preparation and the environmental work will be complete next summer.

Additionally, Congress earmarked $1.6 million in the FY 2007 Transportation Appropriations Bill to keep this project moving forward.

If the site is ready this summer, will you commit to installing the equipment by the end of the 2007 calendar year?

Answer. In October 2004, the FAA reported to Congress that it planned to install an ATCBI–6 system at the Redmond, Oregon Airport to provide low altitude surveillance coverage in Central Oregon. This report stated that the effort would begin in FY 2006 and the beacon system would be placed in operation in 2009.

This schedule was based on the assumption that the majority of funding for this project would not be available until FY 2007/2008. Since Congress earmarked $1.6M for this project in the FY 2006 Appropriations Bill, the schedule can be accelerated. The current plan is to procure needed equipment (tower and antenna) and award the construction contract by September 2006 and complete construction and install the equipment by the end of 2007. This will allow the system to be operational by early 2008.

---

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. INOUYE TO HON. MARION C. BLAKEY

*Question 1*. When the Committee held a hearing on Capacity and Congestion in the National Airspace System (NAS) on May 26, 2005, the FAA followed up that hearing by informing me that whenever there is an equipment outage or some type of problem FAA specialists consider the extent of the problem before determining the actions to be taken. Most of the FAA's options lead to a slow down in traffic and a resulting overall reduction in the capacity of the system.

Do you believe that backup systems in place at alternate locations to address significant outages at major locations would help to promote a safer more effective airspace system?

Answer. We do not believe that geographically separate manned facilities providing redundant service capabilities for an existing major manned facility would promote a safer and more effective airspace system. Such a backup scenario (a manned facility located in a different location than the primary major manned facility) would make the NAS more immune to catastrophic outages where there was prolonged loss of the primary manned facility. However, this manned facility level backup would require significant additional redundant equipment and infrastructure to maintain in the remote instance where such a need should arise.

It is important to understand that many of our systems have built-in redundancy in order to achieve the high reliability/availability of service today. We measure and track operational availability every day and consistently sustain an operational availability level over 99.9 percent. The backup and or fully redundant systems in service today effectively eliminate or reduce the negative effects to the control of Air Traffic when a system fails. These types of systems or service-specific backup and costs are usually limited to that of the backup system and associated support equipment.

*Question 1a*. Would having such systems in place reduce the need for a Ground Delay Program (GDP) in the event of an emergency?

Answer. We employ various backup systems as described above and in those cases, they allow most Air Traffic Operations to continue while using the backup or redundant system.

*Question 1b*. In places where we have seen a number of outages in recent years, like LAX, what would be the impact of having a backup system in Hawaii to ensure system viability in the event of an extended power outage or the potential for a natural disaster?

Answer. To create a system and facility backup similar to that characterized in the LAX/Hawaii example would pose significant infrastructure requirements/costs etc, essentially duplicating buildings, display, communications and other connectivity. Additionally, there would be issues with getting the number of controllers, knowledgeable of the LAX airspace to the Hawaii facility to conduct operations.

*Question 2*. Among the most promising technologies to protect against the problem of runway incursions is Airport Surface Detection Equipment, model X (ASDE–X) which can use radar or accept data from more precise sources to pinpoint a plane's location. The FAA recently announced plans to install the all-weather ASDE–X systems at 14 of the Nation's most active airports. However, the program was originally scheduled to include 25 airports with a completion date of 2007. Now, only 14 airports are planned to receive the device with a scheduled completion date of 2011.

What was the cause of the FAA's change in plans regarding ASDE–X? When do you plan to introduce this system to all of the airports listed in the agency's most recent capacity benchmark study, including Honolulu International (HNL), as the Nation's busiest?

Answer. On September 9, 2005, the FAA's Joint Resources Council recommended approval of the plan to install ASDE–X capability at 35 airports, including Honolulu International (HNL). There are currently four operational ASDE–X airports: General Mitchell International (MKE); Orlando International (MCO); Theodore Francis Green State (PVD): and William P. Hobby (HOU). Another six systems are currently installed and being optimized: Seattle-Tacoma International (SEA); Hartsfield-Jackson Atlanta International (ATL); Lambert-St. Louis International (STL); and Bradley International Airport (BDL); Charlotte Douglas International (CLT); and Louisville International-Standiford Field.

In a November 2, 2005 press release, the FAA announced 14 of the additional airports (including SEA which is referenced above) scheduled to receive ASDE–X. Plans are being made to announce the remaining airports soon.

The FAA plans to deploy ASDE–X as expeditiously as possible and 10 more systems will be installed by the end of Fiscal Year 2007; however it takes approximately 2 years for the ASDE–X capability to become operational at an airport. The process includes: site survey; site design; lease approval; completion of environmental requirements; site preparation; construction and installation activities; air traffic controller and technician training; and system optimization, acceptance, and commissioning activities. The last ASDE–X airport is currently planned to become operational prior to the end of the Fiscal Year 2011, although the FAA is looking into ways to expedite this schedule.

*Question 3*. The Commerce Committee has been considering the Age 60 pilot age standards. The current proposal would cede FAA authority to the International Civil Aviation Organization, a mini-U.N. for aviation issues.

Can you tell me if the FAA has ever ceded its safety responsibilities to ICAO?

Answer. The FAA has never delegated, and would never delegate, the discharge of its safety responsibilities to an international organization.

A little background might be helpful. The United States is a signatory to the 1944 Chicago Convention, which established the International Civil Aviation Organization (ICAO) as the United Nation's specialized authority to develop standards and recommended practices for all aspects of international civil aviation. A signatory country—there are now 189—agrees to abide by the international standards set out in the Annexes to the Convention, unless it files what is known as a "difference." Such a country could have either a more liberal standard or more rigorous for its own civil aviation system, but the country could not prevent operators who comply with the ICAO standard from flying in their airspace.

FAA does not "cede" authority to ICAO, but rather, determines whether any new ICAO standard enhances aviation safety sufficiently to justify any societal costs that result from implementation. If so, FAA will take the steps necessary to implement the standard.

In many cases, ICAO promulgates standards that reflect actions that the FAA has already taken, whether by statute, rule, or otherwise.

The way this has worked with the age 60 limitation (the current ICAO standard), some countries have already filed differences concerning that standard and permit pilots to serve after age 60 as a pilot-in-command (PIC) for their commercial passenger operations. Currently, the U.S. does not recognize such "differences" (i.e., our rule is consistent with the current ICAO age 60 standard) and therefore, a PIC over age 60 cannot operate in most commercial passenger operations in U.S. airspace. If ICAO changes the standard to permit PICs over age 60, that would become the international standard. Still, any country could keep its existing age-60 rule for its own certificated pilots and file a difference with ICAO. But countries that meet a new, liberalized standard will be able to use pilots over the age of 60 for their commercial passenger operations to the U.S. Whether the U.S. retains the age-60 rule for our own operators and airmen would not matter. The U.S. would be obligated under the Chicago Convention to recognize pilot certificates that meet or exceed the new international standard.

*Question 4*. The FAA is responsible for establishing the core curriculum for FAA-approved aviation maintenance technician schools (AMTS). In 2003, GAO identified serious problems with the curriculum, including the fact that the last major overhaul of the courses occurred about 50 years ago. In response, FAA stated that it would work with the aviation community to review current and future skill requirements for the mechanics, and identify and revise the curriculum as needed.

What progress has been made in updating the certification of mechanics?

Answer. On January 18, 2005, the FAA published Advisory Circular (AC) 147–3A Certification and Operation of Aviation Maintenance Technician Schools (AMTS), allowing AMTS curriculum updates. AMTS applicants are encouraged to exceed the FAA minimum standards for facilities, curriculum, and teaching levels. AMTS appli-

cants are encouraged to teach subjects beyond those required by the regulations such as composite material repair, solid-state electronics, nondestructive inspection techniques, and built-in test equipment. We also recommend adding courses in human factors and inspection principles. When an AMTS chooses to exceed FAA minimum standards, the proposal must be approved by the FAA. Once approved, the AMTS must follow the new curriculum which remains mandatory until the school modifies the curriculum in accordance with section 147.38.

AC 147–3A reminds and allows an AMTS to strive to keep its approved AMTS curriculum current to meet industry needs by revising courses as appropriate while still maintaining the basic core elements of the curriculum. However all revisions to the curriculum require FAA approval before they can be implemented.

---

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO HON. MARION C. BLAKEY

*Question 1.* In the Administration' FY06 FAA budget, the Administration proposed reducing, by $500 million, the Airport Improvement Program citing a lack of need for this funding. Although Congress has rejected this cut to airport construction funding, I would like to know:

Why did the Administration not originally request that this funding be reprogrammed to other FAA accounts such as the Facilities and Equipment Accounts that had been drastically reduced the year before if the agency is really facing a long-term financial crisis?

Answer. The Facilities and Equipment (F&E) appropriation is separate in its purpose, mission, and funding requirements from the Airport Improvement Program (AIP). The F&E budget request contains projects to manage the National Air System (NAS) and maintain air traffic control systems. The AIP program, on the other hand, aims to improve surfaces and structures for both commercial airports and general aviation operations. The Administration's proposed reduction in AIP does not entitle F&E to a higher funding level.

The Administration's proposed FY06 funding of $3.0 billion for AIP would have allowed the program to continue its basic structure of entitlement formulas and discretionary resources. In the National Plan of Integrated Airport Systems (NPIAS) Report issued in September 2004, the FAA projected a 15 percent reduction in estimated development needs from FY 2005–FY 2009. GAO reviewed and found that the NPIAS estimates were credible. Our FY 2006 AIP budget request matched this reduction in capital requirements.

*Question 2.* Looking back on the Air Midwest crash in 2003 in Charlotte, NC, the NTSB cited both the FAA and the company for lax oversight of aircraft maintenance as a contributing factor to the crash.

How common is it for air carriers to outsource the evaluation of "quality assurance" of their contract of outside maintenance facilities? How does the FAA certify these outside inspectors? How often must they secure re-approval to be engaged in this business? Aren't the risks for failing to catch a critical mistake greater if we allow outsourced maintenance to be validated by outsourced inspections?

Answer. By regulation, air carriers are required to evaluate the effectiveness of their maintenance programs whether or not it performs the maintenance (14 CFR section 121.373). A carrier cannot contract out the responsibility for quality assurance, but the FAA may authorize the use of a third-party to perform baseline audits in support of the air carrier's overall quality assurance program.

It is a common practice for air carriers to contract baseline audits to a third party. For example, the carrier might use the Coordinating Agencies for Supplier Evaluation (C.A.S.E.). In order to use this provider to perform audits, the air carrier must join C.A.S.E. as a member-organization, and obtain the authorization from the FAA to use the audit function as part of its continued airworthiness and surveillance program. C.A.S.E. is the accepted industry standard as auditor and shares non-prejudicial vendor information and quality control data with its members. The FAA does not certificate C.A.S.E. since it must report audit findings to the carrier for review and action.

It is ultimately the carrier's responsibility to maintain their aircraft in accordance with the regulations and its FAA-approved manuals. It is also the carrier's responsibility to perform risk analysis and evaluate the results of an audit in light of the potential risk.

*Question 3.* The (Airport Surveillance Radar Model-11) (ASR–11) was scheduled to replace aging analog radars at over one hundred airports when the FAA first announced the radar upgrades. It is my understanding that this program has been de-

layed and the number of airports that were to receive the program dramatically reduced.

What is the status of the ASR–11 radar program? If the FAA is not going to install upgraded radar at dozens of smaller airports around the country, what other steps will the agency be undertaking to make sure that these airports have the necessary equipment?

Answer. In September 2005, the FAA established a new ASR–11 program baseline to address significant budget deferrals that contributed to schedule extensions and cost increases. Based upon a benefit-to-cost analysis the program baseline was divided into two segments. Segment 1 supports the procurement of 66 ASR–11 radar systems through Fiscal Year 2007 and Segment 2 will address the need for any follow-on purchases. Purchases of systems through FY07 will be used to replace the ASR–7 radars, the oldest of the radar systems.

The FAA is updating program cost, safety, and performance benefits to build the business case for Segment 2 systems. As part of Segment 2 analysis, the FAA will review the remaining ASR–8 radar locations to determine if sufficient business justifications exist to replace these systems. The business case will focus on validating legacy radar operations and maintenance (O&M) costs as well as quantifying the additional FAA and user benefits provided by the ASR–11 radar. In addition, the FAA will consider the Next Generation Air Traffic Control System (NGATS) strategy as part of the Segment 2 analysis.

Once the business case is developed, then a new baseline will be proposed. If the FAA determines that replacement of the systems is not warranted, then more detailed planning and analysis will be undertaken to ensure continuation of the ASR–8 radar system service life.

*Question 4.* As you know, a number of U.S. carriers are aggressively entering global alliances to improve their reach and improve profitability. The GAO has questioned the FAA's processes and oversight of the safety code-sharing partners of U.S. airlines. Although the GAO did not state that the lack of effective oversight threatens passenger safety, it raises a number of questions, especially in light of the DOT's recent notice to potentially allow greater foreign ownership interests greater control over U.S. carriers.

Did DOT consult with you regarding potential safety issues that may arise from the NPRM? Do you have any concerns that foreign owners may not take maintenance and safety as seriously as their U.S counterparts given an investor's desire to make a fast return on its investment?

Answer. Senior FAA staff were contacted by the Office of the Secretary (OST) before the NPRM was issued. The FAA will continue to work closely with OST as they review the comments and the Secretary decides whether to issue a final rule. Safety is of paramount importance to all the agencies in DOT; FAA will continue to work closely with OST and the aviation community as DOT considers what, if any, further action to take in this rulemaking.

*Question 5.* The FAA recently announced that it was installing new safety technology at 15 major airports over the next year. The equipment, Airport Surface Detection Equipment, Model X (ASDE–X), helps air traffic controllers spot potential collisions by integrating data from a variety of sources. The FAA is to be commended for installing new safety equipment at 15 major hub airports, but I understand that this equipment was originally developed for mid-sized facilities. While I certainly welcome the installation of this technology, which everyone seems to agree will greatly improve safety, the aviation industry is changing quickly and a number of mid-sized airports are seeing a surge in passengers and operations.

Given your limited resources, how will FAA prioritize which airports receive this equipment in the future?

Answer. Last year the FAA reevaluated the sites scheduled to receive ASDE–X capability. A benefit/cost analysis was conducted for 59 candidate airports including the 34 ASDE–3/AMASS sites and the original ASDE–X baseline sites. Both safety and efficiency benefits associated with incorporating ASDE–X functionality at the candidate airports were analyzed in developing the business case justification. The business case presented to the FAA's Joint Resources Council (JRC) on September 9, 2005 showed that maximum benefit is achieved by deploying ASDE–X capability to airports with larger traffic counts and/or more complex operations, e.g., airports that use the same runway(s) for arrivals and departures.

The JRC recommended approval of the plan to install ASDE–X capability at 35 airports. The initial list of 14 airports was released November 2, 2005. Plans are being made to announce the remaining airports soon. We are in the process of developing the deployment schedule taking all of the following factors into consideration:

safety and efficiency benefits; available funding; personnel resources; and other planned airport activities.

There are currently four operational ASDE–X airports: General Mitchell International (MKE); Orlando International (MCO); Theodore Francis Green State (PVD); and William P. Hobby (HOU). Another six systems are currently installed and being optimized: Seattle-Tacoma International (SEA); Hartsfield-Jackson Atlanta International (ATL); Lambert-St. Louis International (STL); Bradley International Airport (BDL); Charlotte Douglas International (CLT); and Louisville International-Standiford Field.

---

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. FRANK R. LAUTENBERG TO HON. MARION C. BLAKEY

*Question 1.* Why doesn't the FAA require all major commercial airports and all airports receiving Federal assistance to meet its runway safety standards, as the NTSB has recommended after investigating aircraft overrun accidents?

Answer. The FAA promotes standard runway safety areas (RSA) at airports in two ways:

First, the FAA requires that airport runway projects comply with RSA standards as a condition of receiving a Federal grant for the project. This applies at all federally assisted airports—both commercial and general aviation.

Second, FAA safety regulations require commercial airports to upgrade their RSAs to the agency's standards "in a manner authorized by the Administrator." This has consistently been interpreted as "to the extent practicable," in recognition that it is simply not feasible to get a full standard RSA at every runway end.

- Because many airports did not meet the new standards when they were adopted, FAA regulations require that airports upgrade an RSA during the next major construction work on the runway.
- To complete upgrades sooner than the rule requires, FAA has funded the upgrade of RSAs through a priority grant program.
- All of these upgrades cannot be completed right away. The accelerated schedule will still take several years, because planning and environmental review take time, and because available AIP funds can support only a portion of the remaining projects each year.

The FAA's regulatory authority applies only to commercial airports. (Specifically, 49 U.S.C. § 44706 authorizes the agency to certificate airports served by air carriers operating aircraft with more than 10 seats in scheduled service or aircraft with more than 30 seats in any commercial service.) Therefore, the agency cannot compel general aviation airports to meet RSA standards. However, as mentioned above, a general aviation airport will not receive Federal grant funds for a runway construction project unless that project complies with FAA standards, including standards for runway safety areas.

*Question 2.* By letter to the NTSB, you claimed that FAA had a plan to bring all Part 139 airports and all airports receiving Federal assistance into compliance with Federal RSA standards by 2007. Is it still possible to meet this goal? Is it possible to meet this goal by 2015?

Answer. Following the American Airlines accident at Little Rock, Arkansas in 1999, the FAA initiated an accelerated funding program to upgrade RSAs earlier than required by Part 139. The FAA strongly encouraged airport sponsors to upgrade RSAs in advance of major runway work, and made Federal grant funding available on a priority basis for those upgrades. FAA surveyed runways at Part 139 airports in 2000 to establish a baseline of runways with nonstandard RSAs. At the more than 500 Part 139 airports with more than 1,000 runways, 42 runways did not meet standards and could not be improved at all. FAA found that RSAs for 456 runways could be brought up to standards or at least improved.

FAA began tracking upgrade projects in 2001 with the goal of initiating all upgrade projects by 2007. Unfortunately, our 2003 letter to the NTSB was not clear on several points. We regret any confusion that it has caused. Specifically, it gives the impression that actual physical work would be completed on all RSAs by 2007, which was never the agency's intention and would not have been possible given the time required for planning, budgeting, and environmental review of each project and given the AIP funds available each year. Also, that letter must be read to refer to airports certificated under Part 139, and not general aviation airports. This corresponds to the actual NTSB recommendation, and reflects the fact that FAA's regulatory authority under Part 139 does not extend to general aviation airports.

In Fiscal Year 2005, given the progress in initiating projects as planned, the FAA changed from a goal of initiating projects to a goal of completing projects. "Completing" a project means upgrading it to the extent practicable, even if it does not fully meet design standards.

In FY 2005, the FAA again inventoried Part 139 airport runways with non-standard RSAs. This new survey was intended to revalidate and update the funding plan for completion of all RSA upgrades, and also to consider the availability of Engineered Material Arresting System (EMAS) technology. That inventory, completed in August 2005, showed that since 2000, the FAA has completed more than 200 projects. Of 1,007 Part 139 runways, more than 650 now substantially comply with FAA standards—about 66 percent.

Based on the 2005 inventory, FAA's Office of Airports Business Plan for Fiscal Year 2006 sets the following goals:

Complete 34 additional improvements by September 30, 2006;
Complete 92 percent of practicable improvements by 2010; and
Complete all practicable RSA improvements by 2015.

We are confident that remaining Part 139 RSAs can be upgraded by 2015. We have developed a multi-year plan that considers expected funding levels and the time requirements to accomplish environmental work and the actual construction. When the program is completed in 2015, an estimated 86 percent of Part 139 runways will substantially meet RSA design standards. The remaining 14 percent will have been improved to the extent practicable to do so.

*Question 3*. Of the 782 Mitsubishi MU–2 aircraft produced, 188 have been involved in accidents, causing 241 deaths. In the last year and a half, 10 more people have died in MU–2 crashes. In many instances, investigators could not determine the cause of the loss of engine power. Why is the FAA not reviewing this aircraft's certificate?

Answer. In response to an increasing number of accidents, the FAA initiated a comprehensive safety evaluation of the Mitsubishi MU–2B airplane in July 2005. The safety evaluation included an in-depth review and analysis of MU–2B series airplane accidents, incidents, safety data, engine reliability, service difficulty reports (SDR), Mandatory Continued Airworthiness Information (MCAI) and Airworthiness Directives (AD), pilot training requirements, maintenance, and commercial operations. The team also reviewed the airplane's type certification basis and operating environment.

We have concluded that the airplane does have some unique characteristics that warrant follow on action. We have proposed a Special Federal Aviation Regulation to require MU–2B specific initial and recurrent pilot training, specific testing of pilot skills, maintenance training for technicians, and other changes as to how the airplane is flown and maintained. In addition, the FAA will propose airworthiness directives (ADs) for five airframe, and two engine issues.

*Question 4*. Has the FAA investigated the possible causes of the loss of engine power involved in many of these accidents? What did you conclude?

Answer. Yes, reviewing engine failures in the MU–2B airplane was a key part of the safety evaluation. FAA review of the available in-flight shut down data for the Honeywell TPE331 series engines from the past 10 years does not indicate a trend in engine problems. However, the safety evaluation did uncover two possible unsafe conditions and the FAA will propose two airworthiness directives (ADs) relating thereto. One will propose the use of a modified fuel control unit and the other will propose a change in how turbine wheel cycles are determined.

*Question 5*. Is the FAA considering additional training requirements for pilots of MU–2 aircraft? If so, why?

Answer. Yes, additional training requirements for the Mitsubishi MU–2 aircraft are being considered. After evaluating operating characteristics and techniques, the FAA's MU–2 Safety Evaluation Team concluded that the MU–2 is a complex aircraft requiring operational techniques not typically found in other light turboprop aircraft, but similar to those of turbo-jet aircraft, which requires a type rating. A full understanding of the system complexity becomes even more critical during emergency situations.

After a thorough evaluation, the team made the following recommendations:

- that pilots attend annual (every 12 months) training for the MU–2 aircraft that must conform with an FAA Approved Training Program; and
- that completion of a flight review to satisfy the requirements of 14 CFR 61.56 is valid for operation of an MU–2 only if that flight review is conducted in an MU–2.

All training and checking for the MU–2 aircraft must be conducted in accordance with an FAA Approved Training Program. These training requirements are far more extensive than what an aircraft-specific type rating typically requires.

A draft copy of the recommendations was released on December 19, 2005. Based on the Safety Evaluation Team Report, FAA is proposing a Special Federal Aviation Regulation (SFAR), which would make aircraft specific training for the MU–2 mandatory for *all* users, including Part 91,129, 135 and 121.

*Question 6*. Has the FAA determined that there are aircraft with comparable safety records as the MU–2? What action has FAA taken with respect to such aircraft?

Answer. The FAA is unable to develop an accident rate for general aviation aircraft because we do not have accurate data on hours flown. We did, however, attempt to normalize the MU–2B accident data versus similar airplanes as part of the safety evaluation. We developed a "rate" based upon fleet size using the assumption that most similar airplanes flew a similar number of hours on average. One analysis of fatal accidents in air taxi operation indicated that the Swearingen SA 226/227, the Beechcraft 99, and the Embraer 110 warrant further analysis. We will complete this analysis as a part of the MU–2B safety evaluation action plan.

*Question 7*. What will be the effect of reducing the budget for the Traffic Flow Management initiative within the Air Traffic Management program from the President's requested level of $83.3 million to $53.6 million?

Answer. The Fiscal Year (FY) 2006 budget ultimately passed by Congress reduced the Traffic Flow Management (TFM) funding by $10 million vice the initially proposed $29.7 million. The primary impact of the $10 million reduction will be an estimated 6 month schedule slip of the initial operating capability for the processing center deployment. The processing center is roughly equivalent to the hub site at Volpe in the current system and represents the core of the new architecture. Without the funds, we are cutting back on some of the development staff, which impacts production in late FY 2006 through the start of FY 2007.

In addition to the impact to TFM modernization described above, we are cutting some of the software functionality from our version 8.3 release for next fall. Specifically, we are looking to cut enhancements to eSTMP (enhanced Special Traffic Management Programs) and pop-up handling, which are intended to help us improve the use of airspace flow programs to be initially deployed in the spring.

*Question 8*. How will this reduction impact the modernization program and the ability to deal with air traffic demands, especially during events like the hurricanes?

Answer. As discussed in the previous answer, the primary impact of the $10 million reduction is on the schedule for the initial operating capability of the new processing center deployment.

Severe weather, including hurricanes, is a challenge every spring and summer. The FAA, drawing on years of experience managing the National Airspace System, has developed special plans and procedures to ensure rapid, effective action in any weather. When the weather or other conditions threaten to cause problems, specialists at the Air Traffic Control System Command Center adjust air traffic flow to keep the system safe and efficient. The reduced funding level in Fiscal Year 2006 will impact our ability to enhance the existing system capabilities, specifically in the application of lessons learned from each severe weather season and translation into new capabilities to better deal with the next year's severe weather season.

*Question 9*. What oversight steps is the FAA taking to ensure that the transition to a new air traffic control communications system does not cause outages that have occurred in recent months?

Answer. Please see the detailed responses to questions 30 through 32 below, which address essentially the same inquiry made here.

*Question 10*. Does FAA have a comprehensive plan that involves the new and old carriers to ensure that safety is not compromised in the transition from one network to the other? If so, please describe it.

Answer. Yes, FAA has a comprehensive plan to transition new and old carriers from our "legacy system" of surveillance using the National Work Program Guidelines (NPG) to the Air Transportation Oversight System (ATOS).

Using a comprehensive process, FAA certificate management teams (CMTs) are converted to ATOS. The plan directs the CMT to pass through five "gates": outreach, staffing, automation, training, and transition. These gates are sequenced so that converting CMTs can continue to accomplish required inspections under the legacy surveillance system without interruption. When the final gate of the plan is complete, the CMT terminates work functions under the NPG and immediately begins to execute the comprehensive surveillance plan prescribed by ATOS. Consequently, there is no interruption of safety oversight during the conversion to ATOS.

*Question 11*. Given recent survey results concerning government employee satisfaction, what are you doing and what do you plan to do to address concerns about FAA employee morale? Do FAA contract negotiators have such concerns in mind as they work to formulate new employment agreements with FAA personnel? What specific actions are they taking?

Answer. The morale of FAA employees is good overall as measured by our Employee Attitude Survey (EAS) and by government surveys such as the Federal Human Capital Survey (FHCS). The EAS provides more accurate results since we usually survey all employees and in 2003 the overall job satisfaction result was 71 percent positive, for the over 20,000 respondents. FAA's FHCS 2004 result for overall job satisfaction was 66 percent positive, very comparable to the government average of 68 percent.

In addition, other possible indicators of employee morale have shown increasing positive trends on the EAS between 2000 and 2003. For example, the organizational commitment of employees has improved from 77 percent positive to 81 percent. Employee perceptions of the quality of work life (improved from 63 percent positive in 2000 to 66 percent in 2003) and availability of training opportunities (improved from 67 percent positive in 2000 to 70 percent in 2003) have shown improvement.

Although we have made progress in key areas, we still have more work to do. The results have been lower for employee perceptions of various management processes, such as communication. Starting with EAS 2003, FAA identified issues in four Focus Areas: Leading Performance (performance management, accountability); Recognizing and Rewarding Performance; Communication; and Conflict Management. We have implemented ongoing actions to address these issues. Progress on actions, including FAA-wide (Corporate) actions and actions tailored for each FAA organization is tracked monthly as part of the Administrator's Flight Plan Assessment meeting.

To ensure an emphasis on effective management of employees, FAA's Flight Plan includes targets for an Organizational Effectiveness metric using EAS results. The next EAS will be administered in mid-2006 and will provide feedback on job satisfaction and other morale-related issues, as well as the impact of our EAS action plans.

FAA's contract negotiations are guided by the objective of obtaining a balanced agreement that is fair to employees, the agency and the taxpayer. The impact and intent of both union and agency contract proposals regarding employee conditions of employment are fully explored and considered by both parties in the collective bargaining process.

*Question 12*. How much funding did FAA let in contracts related to Hurricane Katrina relief?

Answer. As of January 6, 2006, the FAA has let a total of $270,162,492 in funding towards the Hurricane Katrina relief effort. Of this amount, 98 percent, or $265,822,754, was for FEMA contracts, and 2 percent or $4,339,738 was FAA awarded contracts. Under the Emergency Support Function #1 (ESF–1) of the National Response Plan, the FAA is tasked by FEMA through mission assignments to provide specialized support services that result in FEMA contracts. These contracts are reimbursed by FEMA. A copy of the most recent Stewardship Report on Hurricane Katrina, Wilma, and Rita is attached.

*Question* 13. What oversight steps did FAA take with respect to such contracts?

Answer. The FAA developed a stewardship plan as a tool to assist in tracking and monitoring all Hurricane Katrina relief related expenditures on a weekly basis. A working group was established to ensure constant oversight. Procurement and program officials worked in partnership with their applicable financial office to ensure taxpayer's dollars were spent wisely. Approval levels and type of contract (e.g. Firm Fixed Price) were verified via weekly reports submitted to the Office of the Secretary of Transportation for overall agency inclusion. In addition, the FAA:

- fully utilized existing contract oversight policies;
- commissioned a DCAA audit of the contract for FEMA transportation support with Landstar, where approximately $241,973,538 was tasked;
- agency internal control division completed an additional review of contracting activities to ensure that proper controls were in place; and
- mandated proactive communications at all levels by immediately establishing a stewardship workgroup under the direction of the agency CFO, to oversee all financial and reporting aspects of our relief and recovery efforts.

*Question 14*. What oversight steps has FAA taken since the DOT inspector General's announcement of investigation into oversight of such contracts?

Answer. The FAA instituted procedures to require the contractor to provide documentation for all quotes and efforts to obtain competition for subcontractors to perform specific relief tasks. The FAA also mandated a written verification of invoices and documenting receipt of goods from a Federal Government representative.

*Question 15*. You spoke about both short and long-term plans for hiring controllers to deal with the current staffing crisis and the wave of retirements that are expected in coming years. The number you intend to hire for 2006 is, I believe, 1,249. The longer term plans involve hiring 12,500 between now and 2014. I understand that training those controllers is very intense and that trainees have high failure rate. What are the specific steps being taken by FAA to ensure enough trained controllers will be available to meet staffing needs?

Answer. Based on our updated and most recent plan, the FAA intends to hire 1,129 controllers in FY 2006. Between now and 2015, the longer term plans involve hiring 11,500 controllers. While controller training is intense, the failure rate is not as high as you might think. The failure rate through initial qualification training at the FAA Academy has been approximately 5 percent. The anticipated failure rate through on-the-job training at the facility is approximately 10 percent. These percentages, and other factors, were used to calculate the appropriate number of new controllers needed to be hired to meet our staffing goals. The FAA is also taking a detailed look at the entire controller selection and training process to find additional efficiencies. These steps include streamlining the controller hiring process, evaluating the Air Traffic Collegiate Training Initiative to determine how best to take advantage of advanced training capabilities at certain colleges, and analyzing the on-the-job training process to determine where additional efficiencies can be gained.

*Question 16*. Do you believe that you can realistically meet the hiring targets given the training complexities?

Answer. The training complexities and historical wash out rates were calculated into the non-attrition losses and has allowed us to accurately predict future hiring needs and meet the staffing targets.

*Question 17*. When and how will the FAA hire new airworthiness inspectors?

Answer. All ASI hiring is normally conducted throughout the year at our regional and international field offices.

The FY 2006 appropriation provided funding for additional ASI positions. Due to the continuing resolution in early FY 2006 we were unable to begin the hiring process. Therefore, the process of hiring ASIs began in the second quarter of FY 2006. This will provide additional support for expanded repair station oversight and replace some of the safety critical staff lost in FY 2005.

While the FAA received additional funding in support of hiring, the one percent rescission and unfunded pay raise resulted in a funding reduction almost $10m for the Flight Standards Service. With this funding reduction, AFS will be able to support new hiring and training for only the original 80 inspectors requested in FY 2006.

All new aviation safety inspectors (ASI) attend an extensive training curriculum. On average, an inspector receives all training, including indoctrination and required on-the-job training, within 12 months of their entry into the FAA. Every new hire inspector attends a "string" of courses separated into 3 phases.

In general, examples of Phase 1 training for an air carrier operations ASI totals 160 hours (20 days), and for an airworthiness maintenance ASI it takes 168 hours (21 days). Phase 2 training is 176 hours (22 days) and 200 hours (25), respectively. However, the individual inspector training varies greatly according to their specialization. Specialties include: air carrier (operations, maintenance, avionics, and cabin safety) and general aviation (operations, maintenance, avionics).

One of the goals of the Curriculum Transformation initiative, which has just started, is to reduce the time required to get new-hire inspectors through their initial training and credentialing by restructuring the training and expanding the service's use of distance learning.

*Question 18*. Why has there not been more of a focus on increasing this workforce in light of the increase of outsourced maintenance, especially considering the work being sent to foreign repair stations?

Answer. The FAA has been forced to trim its safety workforce as a result of budget cuts in 2005, specifically the rescission and partially funded Federal pay raise in last year's omnibus appropriations law.

The FAA's FY 2006 appropriation provided for our request for 80 additional positions plus additional funding. However, as noted above, because of the 1 percent rescission and the unfunded pay raise, we will not be able to hire as many as antici-

pated. Funding will support inspector hiring of critical safety staff lost in FY 2005 and provide some support for repair station oversight.

Safety will always come first, and the FAA will not reduce its oversight of the air carriers. Instead, if our budget is cut further, the agency will continue to delay or defer new certification activities related to the growth of existing operators, or applications for new operators in order to absorb further reductions without resorting to cuts in current services.

*Question 19*. How will the FAA ensure that worked performed outside of the United States is done in accordance with U.S. Federal standards?

Answer. Although located outside the U.S., repair stations that service U.S. registered aircraft are still FAA-certificated and must comply with the requirements contained in 14 CFR Part 145 of our aviation safety regulations. Repair stations, whether located in the United States or outside, are held to the same safety standards.

FAA rules are clear: whether maintenance is performed at an air carrier's maintenance facility or a repair station, it is the air carrier's responsibility to ensure that the work is done to the same high safety standards.

The air carrier's maintenance program must include oversight of its contractors and vendors to ensure they are following the air carrier's procedures. The air carrier must maintain a vendor list, and its operations specifications (OpSpecs) must identify those vendors performing substantial maintenance for the air carrier. The FAA reviews the results of air carrier audits of vendors and performs its own inspections of contractor facilities, focusing on the repair station's adherence to the air carrier's maintenance program.

The FAA has two sets of inspectors to oversee contracted maintenance if this maintenance is being done by a repair station—the air carrier's principal maintenance inspector as well as the repair station principal inspector. When deficiencies arise, each communicates the concern to the other FAA office as well as to the facility and air carrier to ensure the appropriate actions are taken.

Foreign repair stations also receive additional surveillance from their country's civil aviation authority.

*Question 20*. Does FAA currently certify foreign repair facilities who do not meet drug testing, alcohol testing, or security standards which domestic repair facilities are required to meet? If so, why?

Answer. The United States is a signatory of three trade agreements with provisions that specifically affect aircraft and aircraft engine repair stations. These agreements all specify, to some degree, that the U.S. must extend free trade privileges to the other signatories as much as possible. If barriers to trade are erected by the U.S., the agreements specify the repercussions that could take place, which includes retaliatory action by other signatories. For example, one such barrier would be the U.S. imposing its drug testing requirements on the personnel of foreign repair stations.

The FAA's drug and alcohol testing regulations require the regulated air carriers to ensure domestic contracted maintenance personnel are covered under FAA approved drug and alcohol programs. In accordance with international trade agreements, foreign repair stations are not subject to U.S. drug and alcohol testing requirements. However, repair stations outside of the U.S. may have drug and alcohol requirements, depending on the regulations within their own countries.

Currently there are no security requirements for repair stations. Establishing security requirements is a responsibility of the Transportation Security Administration (TSA). Although TSA has proposed requirements, they are not finalized. The FAA continues to assist TSA with technical resources regarding repair stations.

*Question 21*. Does FAA intend to require foreign repair facilities to meet all standards required for domestic repair facilities? If so, how and when would such requirements be made equivalent?

Answer. In January 2004, 14 CFR Part 145 was revised requiring foreign and domestic repair stations to meet the same performance standards. Both foreign and domestic repair stations must demonstrate that they have the training, equipment, facilities, and technical skills to be certificated as a repair station and retain that certification.

There are administrative differences between domestic repair stations and those outside the U.S. borders. For example, repair stations outside the U.S. are required by regulation to renew their certificate every twelve to twenty four months.

*Question 22*. What is the FAA doing to monitor and/or control the introduction of substandard components into the country's aviation system, either into aircraft themselves or the air traffic control system? How does the FAA ensure proper oversight of the possible use of these parts at foreign facilities?

Answer. In 1995, the FAA established the Suspected Unapproved Parts (SUP) Program Office to operate as the focal point for the investigation of substandard aviation components, or unapproved parts. The program supplements other mechanisms for industry to report problems to the FAA, and for the FAA to issue alerts or Airworthiness Directives to the industry.

The SUP Program Office receives complaints of suspect parts and coordinates the FAA's efforts to identify, investigate and ultimately remove any such parts from spares inventories or aircraft. The reports of suspect parts are provided to a network of law enforcement authorities, including DOT/OIG, FBI, DCIS, NASA, Customs and Coast Guard, for coordination if criminal activity is involved. If a part that is suspect is not in compliance with Title 14 of the Code of Federal Regulations, it is deemed unapproved.

When a SUP has been determined to be an unapproved part, several things happen. The unapproved parts must be accounted for or the potential end users must be notified. If end users cannot be notified directly, then the FAA sends out an Unapproved Parts Notification (UPN) alerting the aviation community to the problem. Unapproved Parts Notifications are posted on the Internet for worldwide accessibility and distributed by other modes to more than 70,000 people.

This surveillance of aviation parts is global in scope since the office coordinates investigations with foreign Civil Aviation Authorities and FAA International Field Offices. In addition, the SUP Program Office interacts with the aviation industry so that there is a collaborative effort in keeping industry informed and involved in preventing the entry of unapproved parts into aviation's stream of commerce.

The office's Parts Reporting System database tracks the aviation companies and parts that have been reported, yielding important information on possible problems and trends.

To increase awareness of unapproved parts in the aviation industry, the office develops presentations and seminars that are given worldwide to government agencies and businesses.

*Question 23*. Why is the FAA employing aviation consultants, who are focused on fast-tracking safety certification, when current inspectors are not authorized to oversee this work?

Answer. FAA does not employ certification consultants, nor does FAA require applicants for an air carrier certificate to use certification consultants. FAA has established a program, however, to approve certification consultants who meet minimum standards and to list these consultants on an FAA Internet site. At this time, there are three certified consultants: CAVOK International, JDA Aviation Technology Solutions, and Murray Air Associates.

FAA's certification process is the same for all applicants, whether or not they choose to use consultants. In either case, FAA inspectors are the only ones authorized to issue an air carrier certificate to successful applicants.

*Question 24*. What is the current status of the remaining bargaining impasses with FAA employee organizations? What are the FAA plans for resolving the remaining impasses?

Answer. The only contract negotiations currently at impasse involve a collective bargaining agreement that would cover multiple bargaining units represented by the Professional Airways Systems Specialists (PASS). The FAA's labor relations system is subject to the procedures set forth in 49 U.S.C. § 40122. While the Agency is generally subject to the provisions of the Federal Service Labor Management Relations statute (5 U.S.C. Chapter 71), in § 40122 Congress provided a specific procedure governing the negotiations over pay related issues and changes to the FAA personnel management system. If agreement cannot be reached, the law calls for mediation through the Federal Mediation and Conciliation Service (FMCS). If the services of the FMCS do not lead to an agreement, the Administrator's proposed changes to the personnel management system are submitted to Congress. Implementation cannot not take place until 60 days after Congressional notification.

A decision to submit items that have reached impasse to Congress has not yet been made. In addition, a lawsuit filed by PASS and the National Air Traffic Controllers Association over whether the Federal Services Impasses Panel has jurisdiction to resolve the current impasse is currently pending before the U.S. Court of Appeals. The agency remains open to considering any revised union proposals that could resolve the impasse.

*Question 25*. Due to low staffing and budgetary problems, several FAA certificate managing offices with oversight over several carriers are requesting waivers from staffing requirements in order to transition to ATOS, and I understand you are granting these waivers. When the FAA is attempting to address the system safety

issues raised up by the IG and GAO, how can you issue waivers that deviate from these safety standards?

Answer. FAA has not and will not issue waivers that deviate from safety standards. Nor has FAA issued waivers to staffing requirements in order to convert certificate management teams (CMTs) to ATOS. FAA has issued waivers to enable ATOS CMTs to share personnel such as data evaluation program managers, operations research analysts, and inspectors who collect surveillance data. At the same time, FAA has waived the requirement for some of these personnel to be physically located in the CMTs home office. These waivers are necessary for efficiency and do not compromise oversight functions or safety.

*Question 26*. In light of FAA's budget concerns, has the FAA considered increasing fees for certification and services to foreign entities who perform maintenance on aircraft used in the U.S.? If not, why not? If so, when will FAA take action to impose the fee increase?

Answer. FAA charges for airman and repair station certification services performed outside the U.S. The user fees are reviewed annually and adjusted, if needed, to recover costs. Last year, the user fee for these services was increased from $80 per inspector hour, plus any transportation and subsistence costs, to $137 per inspector hour, plus any transportation and subsistence costs. The fees are scheduled for the next annual review in July 2006.

*Question 27*. In regard to the FTI contract, can you explain the distinction between "site acceptance" and "service acceptance" of new communications equipment? How does the FAA ensure that the network is fully functional?

Answer. The following definitions explain the distinction between site acceptance and service acceptance:

**Site Acceptance** is a contractual milestone that is achieved when the service provider successfully demonstrates (in accordance with documented site verification test procedures) that its network infrastructure deployed at a government facility is functioning properly and has connectivity to the FAA's Network Operations and Control Center (NOCC) so that it can be monitored and controlled. Once the site acceptance milestone has been achieved, the site is ready to support the implementation of individual telecommunications services.

**Service Acceptance** is a contractual milestone that is achieved when the service provider successfully demonstrates (in accordance with the documented service verification test procedures) that a service meets the government-specified performance requirements and is ready for use by the end user system. For each distinct service class defined under the FTI contract, there is a tailored set of service verification test procedures that must be successfully executed in order to achieve the service acceptance milestone.

With respect to the question of *how does the FAA ensure that the network is fully functional,* it is important to understand the following key points:

- Before a specific service class is made available to users, extensive performance testing is conducted at the Harris test lab in Melbourne, Florida and additional integration testing with the FAA's end user systems is performed using the FTI test bed at the FAA Technical Center in Atlantic City, New Jersey.
- Unlike FAA's legacy operating environment where a service may be implemented in segments, FTI services are implemented *end-to-end* and so there are not operational dependencies between individual services from a network standpoint.
- Services are being implemented on the FTI network one service at a time. For example, the operation of a point-to-point service between air traffic control facilities in California is not dependent upon the operation of a point-to-point service between air traffic control facilities in Ohio. As a result, there is no distinct milestone where the network as a whole achieves a status of "fully functional," rather the assurance is obtained on a service-by-service basis.
- There are some special circumstances where services are implemented on a dedicated subnetwork within FTI. For example, FTI has a separate subnetwork for users who require an "IP interface." In this situation, additional testing is conducted to ensure that the user can properly communicate with each IP address with which it requires connectivity. In this situation, there is an explicit effort to make sure that the subnetwork is fully functional before users are connected.

*Question 28*. Can the FTI network, as designed, provide for less reliable service levels than the current standards? If so, why? Are lower reliability levels tied to any cost savings? If so, please describe such identified expected sources, levels, and timing of such savings.

Answer. The FTI network is specified and designed to provide higher levels of reliability and service availability. In addition, FTI offers a greater number of availability levels so that the FAA can better match price to performance. As shown in the table below, FTI provides six different levels of service availability compared to the two service availability specified on the LINCS contract—one of the legacy networks that are being replaced by FTI.

| FTI Availability Levels | | Legacy Network Availability Levels | |
|---|---|---|---|
| Level | Availability | Level | Availability |
| RMA1 | 0.9999971 | | |
| RMA2 | 0.9999719 | High | 0.99999 |
| RMA3 | 0.9998478 | | |
| RMA4 | 0.9979452 | Standard | 0.99800 |
| RMA5 | 0.9972603 | | |
| RMA6 | 0.9904215 | | |

In comparing these availability levels, it is important to note that FTI services are truly end-to-end whereas the legacy services are inter-connected to FAA-provided communications equipment that reduces the end-to-end service availability to the end user. As a result, the magnitude of the improvement in end-to-end service availability under FTI is actually greater than suggested by the table above.

The selection of which service availability level to implement for a particular end user system is based upon the criticality of the functions supported. The FAA does not systematically use lower than required levels of service availability to obtain cost savings. The selection of services is based upon level of service availability required by the user application based upon the criticality of the function performed.

By offering a greater number of service availability levels, FTI provides the potential to select a level that is closer to what the user requires and possibly support the user's requirement more cost effectively. However, this determination is made as service requirements are identified—there is no projection or timetable for potential cost savings that could be realized from the broader selection of service availability levels offered by FTI.

*Question 29*. Why is FAA using a method called "simultaneous deployment" in incorporating the FTI contract? Did FAA determine the safety impact of such an approach? If so, what did FAA find?

Answer. The FTI transition approach can be described as nation-wide or National Airspace System (NAS)-wide. As described in the response to question #27, there are generally no dependencies between services in different geographic areas.[1] As a result, the transition of those services can take place in parallel without impacting each other.

Another key consideration is the availability of personnel to support the FTI transition. The FAA workforce supporting the FTI transition is based in Sector Maintenance Offices (SMOs), which are distributed throughout the country. The SMO personnel have the specific expertise required to support the facilities in that geographical area. Proceeding with transition and implementation activities in multiple geographic areas at the same time makes the most effective use of the available FAA resources. This is the same approach that was used successfully when the FAA transitioned to the LINCS network.

To concentrate all transition and implementation activities in a limited number of airspaces would represent a significant risk to air traffic control operations in those areas. So, in addition to making the most effective use of the available resources, the NAS-wide transition approach also mitigates the risk to NAS operations.

*Question 30*. I understand that there have been several recent incidents of network interruptions caused by telecommunications equipment and power supplies—that were in service—being moved or removed by FTI technicians trying to install new equipment. Does the FAA have a transition plan that involves the incumbent provider and the new vendor, so that everybody knows what the other party is doing so that wires and equipment that are providing service are not unwittingly disturbed?

[1] With respect to the National Airspace System (NAS), the distinct geographic areas are referred to as "airspaces."

Answer. The FAA has a Transition Master Plan (TMP) for the FTI Program. The incumbent service providers and the new vendor are fully aware of the content of the TMP and are encouraged to recommend any adjustments to the plan they feel would be beneficial to accomplishing the transition consistent with the FAA's defined objectives for minimizing risk while operating within financial constraints.

The TMP describes the individual steps involved in transitioning sites and services to the FTI network. *No portion of the TMP calls for moving or removing legacy network equipment to facilitate the installation of FTI network equipment.*

The TMP describes the transition approach as it generally applies to all sites. For a detailed description of installation requirements unique to a particular site, the FTI vendor produces a site specific implementation plan (SSIP) for each major site. The SSIPs are reviewed by FAA regional and facility-level points-of contact, updated based upon FAA feedback, and formally approved as a contractual deliverable.

There have been a few isolated incidents where human error by FAA employees resulted in a minor disturbance to legacy network equipment, but these incidents did not result in what could be considered a "network interruption." Following these incidents, the FTI Program issued guidance to reaffirm existing policies to field personnel with the objective of ensuring that the mistakes that led to the disruptions are not made again.

*Question 31.* What was the cause of the September San Juan, Puerto Rico, communications outage? Was the FTI transition involved? Did the failure of the FTI system to adequately provide for backup power have any impact on the outage?

Answer. The outage was caused by an automatic protection switch that did not function properly. The FTI vendor identified the source of the problem and worked with their equipment supplier to develop a firmware revision to correct the problem. The firmware revision has been implemented and the problem has not reoccurred. The failure was not related to back-up power. It should be noted that FTI provides back-up power as ordered by the government. As a standard practice, the FAA orders back-up power at all facilities that support critical air traffic control operations.

*Question 32.* On October 31, the Chicago Tribune reported that a faulty phone line knocked out the primary radar serving O'Hare International Airport forcing controllers to switch to a backup system. This incident resulted in a 5 to 40 minute delay for about 35 aircraft around the country. My understanding is that the faulty phone line was a circuit that had been transitioned to the new FTI system just the day before. What was the cause of this outage? Was it related to the FTI transition? Did the FTI circuits include an appropriate backup path? If not, what impact did this have on the outage?

Answer. The outage was caused by the loss of the primary DS3 access circuit. The outage was related to the FTI transition to the extent that the FAA incorrectly ordered the radar services without diversity (i.e., a back-up path). This had a direct impact on the outage because if the back-up path were available, the service would have switched to the back-up path and it is likely that no disruption to air traffic control operations would have occurred.

Lessons learned from this incident have resulted in the following corrective actions for future cutovers:

- FTI program management will conduct in-depth reviews with the local system support personnel prior to service acceptance at the facility.
- Appropriate site personnel will validate the functional operation of the service by end-to-end testing. FAA system maintenance personnel will utilize the draft cutover flowchart developed by the FTI program office for all future cutovers.
- Harris and its subcontractors will review and validate responsiveness to meet the needs of FAA operations.
- New RMA–1 services are being ordered for the O'Hare radar and a review of all terminal radar services nation-wide has been initiated by the FTI program office.

○