OVERSIGHT OF FEDERAL AVIATION ADMINISTRATION SAFETY PROGRAMS

(109–98)

HEARING

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

SEPTEMBER 20, 2006

Printed for the use of the Committee on Transportation and Infrastructure

U.S. GOVERNMENT PRINTING OFFICE

30–668 PDF WASHINGTON : 2007

For sale by the Superintendent of Documents, U.S. Government Printing Office
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OVERSIGHT OF FEDERAL AVIATION ADMINISTRATION SAFETY PROGRAMS

Wednesday, September 20, 2006

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON AVIATION, COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, WASHINGTON, D.C.

The subcommittee met, pursuant to call, at 2:02 p.m., in room 2167, Rayburn House Office Building, Hon. John L. Mica [Chairman of the subcommittee] Presiding.

Mr. MICA. I would like to call this hearing of the Aviation Subcommittee to order. Welcome, everyone, today.

The subject of today's hearing is oversight of Federal Aviation Administration safety programs, and the order of business is going to be as follows:

We will have opening statements from members, and we have one panel of witnesses, I see, today. I also have had requests from a number of members, some who sit on the Transportation and Infrastructure full committee, but not on our Aviation Subcommittee; and then we have requests for members who are not on the T&I Committee, who also have asked to participate.

So I am going to entertain a unanimous consent request from Mr. Costello that these Members be allowed to participate after members of our committee are heard. Without objection, so ordered.

So we do welcome other Members to participate and, again, give preference to those on our subcommittee who will participate first. So with that under way, I will open the proceedings today with my opening statement. I yield to Mr. Costello, and then other members who wish to be recognized, and then we will proceed to our panel of witnesses.

As I said, today's hearing will focus on oversight of our Federal Aviation Administration's safety programs. We are conducting this hearing at a time when America's aviation system has been safer than at any time in our history. In fact, the remarkable safety record achieved in the last several years, I believe, is the result of sound safety policy and continuous oversight.

Safety is the number one priority of our subcommittee. It is also the number one priority of the FAA and the users of the aviation system. That is why I believe also that the U.S. aviation system is the safest in the world.

In fact, we have got a slide up there; if you want to look at that, it does show how good our performance is vis-a-vis other areas of the world. That safety record is clearly reflected by the table that we have displayed, and with the data from the Aviation Safety Net-

work of the Flight Safety Foundation, which is an independent, nonprofit, international organization engaged in research, auditing and education—also advocacy and publishing—to improve aviation safety.

The table sets forth the percentage of world departures versus the percentage of accidents by international region. Even though 42 percent of all the world's departures are in the North American region, North America accounts for only 8.6 of the world's accidents.

Aviation is also, by far, the safest form of transportation in the United States. You are about 40 times safer in an airliner than on the safest stretch of any highway in our country today. And today and every day of the year, unfortunately, more than a hundred people will die in automobile accidents, just to give you some comparison.

Since 2001, the FAA has handled 50 million successful flights with 2.7 billion passengers flying on commercial aircraft in the United States and arriving at their final destination safely. This safety record is all the more amazing when you consider how incredibly complicated our U.S. aviation system is. On a typical weekday in the United States, there is an average—and this is an average—of 33,000 commercial and 55,000 instrument flight rules departures.

I think we have got a slide up there that we will now address. This slide shows—and was produced by the Aircraft Owners and Pilots Association; it is on their Web site, and it shows the latest statistical data available from the National Transportation Safety Board, and is current through August 25, 2006. The data includes both fatal and nonfatal accidents.

This graph also shows the year-to-date change of accident counts compared to the previous year. With the exception of business and corporate and executive operations, all other types of operations, including commercial and general aviation, have seen a reduction in the number of accidents compared to the same period just last year in 2005. And we may have some questions for our panelists about the exception category.

Let me just say a few other areas where safety has improved. The fatal accident rate for commercial carriers is, in fact, down. Ten years ago the rate was 0.51 fatal accidents per 100,000 departures. Today, the rate is less than half that—well, even—far less than that. What is that, about—do the math on it here. But it is .02 percent, so it is down absolutely dramatically.

General aviation fatal accidents have also dropped. The number of fatal accidents through May 2006 is 36 less than in the same period of 2005.

Emergency medical aircraft accidents have been cut in half in 1 year from 2005 and 2006.

We are all aware that the risks associated with flight cannot be eliminated completely. In fact, we have been very boldly reminded of that with the Comair accident in Lexington, Kentucky, last month, and that was a sobering reminder that again we still can have accidents in our aviation industry. So while flying is by far the safest mode of transportation, we must continue to strive for an even safer aviation system.

The witnesses for today's hearing will provide detailed testimony on the aviation industry's safety record as well as issues that they believe should be addressed, including—some of the issues we will hear about are runway safety, operational errors, training, the inspection processes, aging aircraft, center fuel tanks, air tours and emergency medical service flights.

They will also highlight emerging issues that they believe will require our attention as the system continues to expand, areas such as the new, very light jets, unmanned aircraft systems and commercial space transportation. These are all very important issues for the Aviation Subcommittee, and particularly as we assess the continued safe operation of our National Airspace System.

Another emerging issue that has been the subject of much review is ensuring that we have adequate air traffic control and safety inspector training and staffing levels to deal with expected retirements and the growing use of our airspace system. This discussion should include not only FAA's workforce plan and staffing models, but also ways to create efficiencies such as consolidating FAA facilities and expanding FAA—our FAA contract tower program.

In particular, I believe we should closely examine the benefits both in terms of safety and funding and the consolidating, I should say, of FAA terminal radar approach control facilities, also known as TRACONs. Due to the improvements in technology, the FAA is able to consolidate TRACONs that are located in close proximity to one another and whose separation—separate operation is highly inefficient at the current time. The benefits of TRACON consolidation include reducing controller workload, decreasing facility overhead staffing requirements, enhancing safety and efficiency within the system, and still providing, I think, even better redundancy and backup in the system.

Another hugely beneficial program in terms of meeting future staffing needs is our FAA contract tower program. We have this in a number of airports. We have an outstanding record, and I am going to ask that we submit that rather than review it for the record. Both the contract tower program and the TRACONs consolidation proposal, I believe, deserve due consideration as we evaluate the best way to ensure adequate staffing in the future.

In terms of ensuring aviation's safety, no one would argue that air traffic controllers don't have a very important role and certainly, at times, have a stressful job. They do have a stressful job and an important role, and that is why our air traffic controllers are now one of the highest paid government groups in our entire Federal Government.

This subcommittee has been closely monitoring the FAA staffing and hiring plans, and we have held hearings on that topic. Since 2001 the FAA has hired some 2,500 controllers. To date, the FAA has hired 920 controllers and expects to hire a total of 1,100 during fiscal year 2006 alone. The FAA's fiscal year 2006 onboard staffing target, I am told, is some 14,670 controllers. This reflects a ramping up of hiring in order to replace controllers who, FAA anticipates, will retire in the next few years.

As of September 3, there were 14,537 controllers on board. The FAA expects to meet its staffing goals by the end of September. Unfortunately it appears that some have chosen the unfortunate

tragedy of Lexington, the Lexington Comair crash in August, to forward their own agenda.

It is important to note that the accident investigation on that particular crash is still being investigated by the NTSB. They haven't reached any final conclusion on the cause of the accident, and we will pay close attention to their findings.

It is important to note that we have over 100 commercial air service airports across the country with no tower and no air traffic controllers, and they all function very well. I believe that efforts to make that accident and the tragic loss of life that occurred on that day a sounding board for one's own agenda is not in very good taste.

I am confident the NTSB—and I have talked with officials there that are involved in the investigation—will consider all factors, eliminating some and drawing appropriate and fact-based conclusions. Second-guessing and sharing piecemeal bits of information is not only inappropriate; I think it is uncalled for.

Today's witnesses will highlight areas where they believe we can improve safety of our already very safe aviation system. There is always room for improvement. This is a very healthy exercise. Actually, this hearing was requested by the ranking member long before the terrible accident in Lexington. So it is not a reaction to that particular serious accident.

As we engage in discussing the important safety issues today, I want members not to lose sight of the fact that the United States does, in fact, have the safest aviation system in the world. We have got some great people working at FAA. They have set standards that are adopted by the world, and we look forward to hearing from our witnesses on ways that we can make our system even safer.

With that, those long opening statements—actually I had some longer ones which we will put in the record. By unanimous consent, so ordered.

I will be yielding to Mr. Costello in just one second. Don't usually take a point of personal privilege, but I have a number of personal constituents from my district, and I think most of you on the panel have done this before, and I have had to put up with it.

I am pleased to have from the Seventh Congressional District of Florida, and I think many of you know, Members, that we have had both cancer survivors and those who are here speaking on behalf of increasing Congress' efforts towards research and cure. So I am very pleased to welcome you to my subcommittee. Sorry you had to endure my long opening statement, but if you all weren't here, I would have made them listen to even more. So thank you, and you are welcome.

Thank you, Mr. Costello. You are recognized.

Mr. COSTELLO. Mr. Chairman, thank you, and I thank you for calling the hearing today. As you mentioned, we requested this hearing several months ago in order to examine the issue of safety.

Let me also say that I want to make it clear for the record—Mr. Chairman, I want you to hear this if you will—I know of no one on this side of the aisle that is attempting to use the Comair tragedy to further a personal agenda; and I want to make that clear. And if there is anyone on our side of the aisle that is doing that,

I certainly would want you or anyone else to identify who that might be.

I do appreciate your responding to our request for this safety hearing today. I believe that safety is the number one issue that this subcommittee has the responsibility of dealing with. As the chairman pointed out, the United States does have the safest air transportation system in the world, with the fatal accident rate of about one in every 16 million flights. However, we must not become complacent about our past success.

The recent crash of Comair Flight 5191 has once again placed aviation safety in the spotlight. It is the responsibility of this subcommittee to make certain that the FAA is fulfilling its duties to provide effective safety oversight in every aspect of the aviation system from aircraft maintenance to air traffic control to runway safety.

Both the GAO and the Department of Transportation's inspector general have highlighted numerous safety issues of concern including the use of noncertificated repair stations and maintenance outsourcing in general, runway incursions, inspector staffing and general concern about the FAA's ability to meet the changing needs of the airline industry. And it is because of these GAO reports and the inspector general's issues that they have raised that we asked for this hearing today.

I am particularly concerned about the increased use of aircraft maintenance, both foreign and domestic repair stations. Airlines continue to look for ways to trim costs by outsourcing maintenance of their airplanes.

In January of 2005, The Wall Street Journal did a comparison of wages paid by U.S. carriers, both wages and benefits, and compared them to outsourced maintenance stations in North America, Europe, Asia and Latin America. It is very clear to me, and I think it is clear to anyone, that the U.S. airlines are relying more heavily on outside contractors to perform everything from routine maintenance to major overhauls in order to cut their cost.

According to the DOT inspector general, U.S. air carriers now outsource 62 percent of their maintenance expense, compared to just 37 percent in 1996. The IG noted in a June 2005 report that the FAA safety oversight has not kept pace with changes in the aviation industry, including increased maintenance outsourcing. This was evident in the 2003 crash of Air Midwest Flight 5481 in Charlotte, North Carolina, which killed 21 people. The NTSB found that deficient maintenance by a third-party repair facility and lack of oversight by both the FAA and the air carrier of the work being performed by the repair facility contributed to this crash. Safety must not be compromised in an effort to save money or for a lack of resources and oversight.

Another area of concern to me is personnel. The FAA is well below the safety staff necessary to fulfill its critical safety mission, including the oversight of our air carriers, as well as foreign and domestic repair stations. The FAA, according to the statistics and numbers that I have, have a total of 68 inspectors to oversee 688 foreign repair stations; and in fact, in a recent conversation I had with an employee of the FAA, I was informed that only six inspec-

tors were responsible for inspecting 99 foreign repair stations in the FAA's facility out of Singapore.

The commercial aviation industry is constantly changing, and the FAA's ability to change and adapt with that is very questionable. As this subcommittee moves toward the FAA reauthorization, we must make certain that the FAA is able to meet its mission of safety first and foremost.

One final point: I have real concerns about the speed and the completion at FAA with rulemaking. For example, the Department of Transportation compiles a list of significant rulemaking, giving the status of each rule and where it is in the process. For the FAA, 21 significant rulemakings are listed; only three of them are on schedule, and 17 are either behind schedule or have no schedule at all. Many of these deal with important safety issues.

In December of 1996, not even 6 months after the TWA 800 flight tragedy, the NTSB strongly recommended the installation of a nitrogen safety system to reduce fuel tank flammability across the fleet for U.S. commercial air carriers. Yet today—it was December of 1996, yet today we still do not have a final rule, almost 10 years later.

Aviation safety is the number one issue that this subcommittee should be concerned with. We must continue to ask tough questions, issue the even tougher and sometimes costly rules, and push forward in order to ensure the highest level of safety for the travelling public.

With that, Mr. Chairman, I will, as you did, submit the rest of my statement for the record, and yield back the balance of my time.

Mr. HAYES. [presiding.] I thank the gentleman for yielding, and I will take my time, since I have changed seats, to thank you and Chairman Mica for giving very well informed, comprehensive, crucial and relevant opening statements.

This is a safety hearing. Until the accident rate reaches zero, until the fatality rate reaches zero, until we are zero across the board, we will continue to appropriately have these hearings.

As I look at the system today I am impressed, constantly, having flown as recently as today in the system, at the professionalism, the competence, the tremendous contribution that our controllers make to our air traffic system. By the same token, the FAA is absolutely conscientious—not perfect—in the prosecution of their mission.

What is left? The pilots. We also have a huge part to play in the outcomes of aviation safety today. And I won't quote the additional figures because both the ranking member and the chairman have given you a very clear idea. We are moving in the right direction, and we have the safest system in the world, but zero is still the target that we all desire.

Now, I have talked to my friend, Mr. Costello, about the situation that occurred in Lexington. That is not the focus of today's hearing, but it is something that I am sure we will discuss. Unfortunately, it was misreported. It was not the controller's fault, it was not the FAA's fault; those are simply the facts.

We have, that I know of, three pilots here—myself, Mr. Salazar and Mr. Graves, maybe others; and we have a certain knowledge

of what goes on and why. And unfortunately, again for whatever reason, the press has created an incorrect perception of what happened there. It wasn't the controller's fault. It wasn't the FAA's fault.

Same thing happened when we had an incursion—and unfortunately, Mr. Chandler, Kentucky was involved again. When we had the incursion in the airspace in Washington several years ago, I went through every step and visited every facility to track down exactly what happened to improve safety and to see how we prevent that in the future.

We got there. By the time we arrived, having carefully looked, the press had gone away. They weren't interested at that point.

But, again, back to the purpose in being here today, it is to continually, at every step of the way, make sure that we are doing everything that we reasonably, responsibly and in any way can do to make this the perfect aircraft safety transportation system, realizing full well that human beings are flying mechanical devices called airplanes.

Again, I thank each and every one of you for being here.

Mr. COSTELLO. Mr. Chairman, can I ask for 20 seconds to make a point for the record?

I would agree with your assessments in our conversation. Everyone knows, as the chairman stated, the NTSB, regarding the Comair fatality and tragedy, has not concluded their investigation; and as you have said, no one has indicated that it was the air traffic controller's fault.

But I do want to make clear for the record that the FAA has said that a directive that they had issued—two controllers should have been on duty at that tower at that time when, in fact, one was on duty—that their own directive was not followed. And I just want to make that clear for the record.

That is not to say that the tragedy would not have happened, but the directive was not being followed by the person in charge of the air traffic controllers in that region.

Mr. HAYES. Very relevant comment, and not necessarily in response, but the other side of that is, the comment made by the FAA was relevant to another situation in a different place at a different time.

And again, what—I don't want people to come away, and I am sure you don't either—you have to have controllers in a tower for aviation to be safe. You don't have to have one, you don't have to have two, you don't have to have three. All kinds of things that you might do, but at what point do reason and common sense take over?

But the controller who was there did exactly what he was to do. Again, we are not arguing for the fact, for the record, for the public responsibility of the controller is to separate traffic, get them to the point of departure. You are cleared to runway—I don't have the diagram in front of me—26. They stopped at 22. So you know, that is—the FAA misspoke, NTSB misspoke.

But that is not why we are here today. We want to make sure that the lessons we learn are correct and that we apply them appropriately going forward so that everybody can be as safe as they possibly can be. Again, thank the gentleman.

Mr. Chandler, you are recognized.

Mr. CHANDLER. Mr. Chairman, thank you. And for the record, I want to make it clear that I was not involved personally in the incursion into the Capital airspace except to the extent that I had to run for my life, like so many other people did. It was our governor.

I appreciate the chairman and Ranking Member Costello holding this hearing today, and I am sorry that it is timely in respect to my district. And while we do have the best safety record in the world in our country, and we are very proud of that, I believe it is appropriate to ask questions when a tragedy occurs. And the August 27 Comair Flight 5191 crash occurred in my district at the Blue Grass Airport in Lexington, Kentucky. It resulted in the deaths of 49 people, and has not left one person in central Kentucky unaffected.

One of the many issues that has been raised after the crash is that of FAA tower staffing, and let me read a number of the headlines that were published by the two local newspapers, the Lexington Herald Leader and the Louisville Courier Journal: ″tower Should Have Had Two Controllers; FAA Acknowledges It Broke Its Own Rules; FAA Controllers Clash on Staffing; Controller Had Two Hours of Sleep; New Shift Began Nine Hours After Last Shift Ended; Controllers Say They Will Have to Work When Tired.″

Now, this has caused a great deal of confusion about what the FAA is doing, particularly regarding air traffic controller staffing. Earlier this month, the entire Kentucky delegation joined me in passing House Resolution 980, which expressed the House's condolences to the families, the friends and the loved ones of the victims of Comair Flight 5191. I am grateful for the House's support, but we must also answer the many questions that remain in the wake of this terrible accident.

It is premature, I believe, to speculate on the causes of the Comair crash, but it is not premature to ask what Congress and the pertinent Federal agencies must do to improve our Nation's safety policies as we move forward. It seems critical to me that the FAA promote policies that lead to happy and well-qualified air traffic controllers operating in a well-staffed environment. These are serious questions—there are serious questions as to whether this goal was being properly pursued.

On September 6, the FAA briefed Mr. Oberstar, Mr. Costello and me on the Comair accident. On page 14 of the briefing packet that they gave us, the FAA stated, ″We have now ensured that all FAA tower managers understand that during the midnight shift, regardless of low traffic levels, they should normally schedule one controller for the tower control function and one controller for the radar control function.″

However, on September 12, the Lexington Herald Leader published this story with the headline ″Another Brush With Short Staff, Indianapolis Almost Took Radar Duties for Lexington.″ why did the Lexington air traffic control tower nearly relinquish critical radar duties not even a week after FAA officials personally assured us that they had addressed the staffing problems at that tower?

It is not comforting that Lexington's air traffic control tower ultimately may do with half of its normal number of controllers. And that same night, between 3:00 and 4:00 a.m., in Louisville, Ken-

tucky, the airport did relinquish its radar duties to Indianapolis due to a lack of controllers.

We must make a better effort to address these sorts of staffing shortfalls before they require last-minute decisions like the ones I just mentioned.

The Louisville incident is reminiscent of the staffing shortages faced by the Lexington control tower on the morning of the Comair accident. And so we should be concerned because the FAA has yet, in my view, to address its staffing problems.

That is a safety issue, but the Comair incident raises other questions that I would like to address today. First, I want to know why the FAA is issuing major safety policies via verbal guidance rather than through written correspondence with its towers.

Second, I want to hear more about who is responsible to ensure that pilots have an up-to-date understanding of runway layouts.

Finally, I want to ensure that the NTSB has all the resources they need to conduct a comprehensive investigation of this tragedy.

Our Nation has the most aviation traffic in the world, as we have seen, and we maintain the highest safety standards in the world. That is something for us all to be proud of, but we must not, and I am sure that we will not, rest on our laurels. Therefore, I hope as we go forward that we work together to ensure that we are doing everything possible to prevent tragedies like Comair 5191 from occurring again in the future.

Thank you, Mr. Chairman.

Mr. HAYES. I thank the gentleman for most appropriate comments and remind him that the governor was in the back. He didn't even know what was going on.

Mr. Graves is recognized.

Mr. GRAVES. Thank you, Mr. Chairman. Thank you very much. And I appreciate the opportunity to speak today and have this hearing.

Aviation is obviously near and dear to many of us, and you know, it is very important. As a pilot, I am concerned about our safety, as I know you are. I am taking a little bit different focus. I am interested in general aviation and what is going on there and the safety there.

I know this is one of the safest periods we have ever had in aviation. I think we can always do a little bit better, but I enjoy hearing—or I am looking forward to hearing today what the FAA's ideas are, and what their advancements in safety and what their plans are to make the skies even safer; but I am particularly interested in regards to general aviation. The accident rate for general aviation pilots has gone down, but I do believe too many accidents are occurring.

There are a number of great programs out there that the FAA has put out, a number of materials, guide books, a lot of information. I know a lot of the private organizations have put together some great programs, mentoring programs, out there for new pilots; and the plethora of technology, which just continues to get better, is making the skies safer all the time. But I want to make sure that as we move forward and we modernize the system that general aviation isn't left behind and is very much considered, that

we don't strangle them with so much regulation that it pushes some aspects of general aviation out.

I am also additionally concerned about the implementation of the new contract between the FAA and air traffic controllers. I am afraid there could be some confusion among controllers. Our air traffic controllers are obviously folks that guide a lot of aircraft through a lot of different types of weather and through some of the busiest airports in the world; and we want to make sure that—you know, that they are considered as this contract moves forward.

But having said all that, I do want to thank and commend the FAA and everybody from the Department of Transportation and the NTSB for a fantastic job in terms of safety. This has been an incredibly safe period of time. And I am proud of that aspect and proud to be a part of it, but again looking forward to this hearing.

Thanks, Mr. Chairman.

Mr. HAYES. Thank the gentleman for his comments.

And Mr. Pascrell is recognized for any statement he might have.

Mr. PASCRELL. Thank you, Mr. Chairman. Far be it from me to defend the press; I have a different slant.

Before I get into that, I want to commend Chairman Mica for today, exposing what the committee has talked about in terms of the detection of explosives in passenger luggage. It is a disgrace, and it would seem to me, Mr. Chairman, that the FAA and the TSA better get their act together—yesterday.

Whether this Congress has the will to do what is necessary—and I think the chairman laid out specifics and this committee discussed them. So we are not here to exchange pleasantries today; I want you to know that.

I want to thank the Chair and the ranking member for putting this together. It is unconscionable that to end a contractual agreement in the midst of a labor dispute is absolutely not only unacceptable, but has put people in jeopardy. And I want to address that today and not soft-coat it.

The FAA's self-described mission is to provide the safest, most efficient aerospace system in the world. They are tasked with regulating the National Airspace System, to promote safety and reduce and eliminate aviation accidents; that is their charge.

In 1997, in response to the TWA 800 crash, the White House Commission on Aviation Safety and Security recommended that the FAA set a target to reduce the airline fatal accident rate fivefold in 10 years. Over the last 4 years, the fatal accident rate has reached an all-time low. However, having a target rate for accidents that is anything more than zero is frankly a bit macabre. One accident we would agree on either side of the table is one too many.

The skies over New Jersey and New York are the busiest in the world and are expected to grow even more crowded over the coming years. By 2015, domestic passenger traffic will nearly double to 1 billion passengers annually. This creates not only an air traffic nightmare, but a real safety concern.

The National Airspace Modernization effort launched by the Reagan administration in 1981 was supposed to be completed by 1996 at a cost of $2.5 billion; $43.5 billion later, it is not. This committee has responsibilities of oversight and accountability. This ef-

fort has been fraught with significant cost overruns, delays, has had numerous high-profile program failures. A full 10 years after the original completion date, we are still awaiting modernization of our airspace system. The GAO, certainly an objective agency in government, in a review of the FAA's work on this project, reported this:

"the FAA did not recognize the technical complexity of the effort, realistically estimate the resources that would be required, and adequately oversee its contractors' activities or effectively control system requirements," unquote—quote-unquote.

In addition to poor planning, the FAA has failed to gain appropriate cooperation and involvement by the private sector, nor have major stakeholders been sufficiently involved in the process. Aside from the major system development, it is my understanding that some of our nation's major air traffic control centers do not yet even have some of the most basic upgrades.

Last April, the Air Traffic Organization released a preliminary cost estimate that found that the latest project would cost a total of $18 billion. This is in addition to the $50 billion needed just to sustain the existing air traffic control system between 2008–2025.

This subcommittee has shown consistent support for the goal of modernization. We have been supportive of that; no one can point to anything different. Yet our task is made more difficult by the fact that a lot of time and funding has gone into this project, and the results are sorely lacking.

Technological advancements have contributed to the remarkable decline in fatal commercial air carrier accidents, but technology cannot do it alone, and I would contend people are still the most vital factor in air safety and in controlling the airways. You can have all the technology in the world, and if the people don't know what they are doing or there are not enough of them or they don't get proper rest or we don't give attention to it except when there is an accident, there is something wrong. And there is something wrong here, dramatically.

I think that this seems to have been a factor in the fatal crash in Kentucky. According to those reports, there was only one air traffic controller working at Lexington that morning; correct me if I am wrong. The FAA acknowledged violating its own policies when it assigned only one controller to the airport tower that morning.

Now, what would possess the FAA to do that? And at how many more airports is that the case? And God forbid, if there is one, if that individual male or female has a catastrophic illness all of a sudden, who do we turn to? Who do we turn to?

It appears that one result of that violation—and we know what the disaster was. So I believe that the FAA has come to grips with some very serious air traffic controller staffing issues. And, really, when I read that in the future we are going to change procedures and technology and we are going to reduce the number of controllers—and I would like to know how we are going to do that, I am trying to figure this out very carefully.

So I am sure that you will place me on the right path because I think we all want the same thing; and if we do, then we can't play games about this and wait for tragedies. We are long past the

time when the redesign of the system should have been done, and I am not satisfied that we are even close.

So, Mr. Chairman, I ask that you read The New York Times article, September 20, about reducing staffing levels. And nobody else wants to talk about it.

I want to talk about it.

Mr. MICA. [presiding.] I thank the gentleman, and we will, I am sure, be asking questions in that regard.

The gentleman from Texas has requested to be recognized. Mr. Poe.

Mr. POE. Thank you, Mr. Chairman. I want to thank you for holding this important hearing.

Down there in Texas, Bush Intercontinental Airport is in my district, the headquarters of Continental Airlines. So when it comes to talking about aviation safety, of course, as all members here do, I take these matters very seriously, because we are talking about risking the lives of many people who are my constituents.

Recently some air traffic controllers from Bush Intercontinental Airport have met with me—several times, in fact—regarding their staffing levels. Bush Intercontinental Airport is the fourth fastest growing airport in the world. It recently opened its fifth runway, and traffic continues to increase to about 1,700 operations every day.

On one hand, I am glad the airport is growing and serving more customers. However, I am still concerned when I talk to air traffic controllers, how their numbers are smaller than they should be. Bush Intercontinental Airport is authorized to have 42 controllers; they have 29. They need at least 28 to fully staff throughout every day. This means they have one extra staffer to cover if someone gets sick or goes on vacation.

This lack of staffing leads to unnecessary overtime being paid. It also creates extra wear and tiredness on the air traffic controllers as they pull additional hours to cover for each other.

And next year, 10 of those 29 will be eligible for retirement. That is over one-third of the current workforce. However, they are only expecting six, maybe eight new controllers to be added to the tower. This situation isn't helping retain our current aging controller workforce nor has it taken the staffing level up to the authorized 42 staffing level where it should be.

And this is not a unique problem at Bush. It occurs all over the country with our aging air traffic controllers. So I am concerned and curious to see what the FAA says about the air traffic controller staffing crisis and the aging air traffic controllers crisis that are before our Nation.

And thank you, Mr. Chairman. I will yield back.

Mr. MICA. Mr. DeFazio, you are recognized.

Mr. DEFAZIO. Thank you, Mr. Chairman. Mr. Chairman, I would like to associate myself with the remarks of the gentleman who preceded me. Excellent questions, well poised; and I hope they can be addressed.

I think we have a system under extraordinary stress when you think about deregulation and bankruptcies that have resulted—the economic pressures in the industry itself, the pressures that are

being exerted, both ideological and budgetary, by the current administration. Anywhere you look, the system is stressED.

Mechanics or mechanical work is being outsourced to foreign countries because it is cheaper, not because it is safer, better, more desirable or meets security needs. Noncertified repair facilities are being used by desperate airlines. The FAA hasn't taken adequate steps to address that. I hope to hear about that.

Our air crews are under stress. I spent about half of a recent flight talking to a flight attendant who was telling me how her pension was going to be about $200 a month, and she had lost all her stock and 401(k), let alone what has happened to the pilots and others.

ATC is now under stress because of the arbitrary imposition of work rules and an agreement by this administration. You know, there are numerous reports there.

And Mr. Poe just talked about another aspect of that. The equipment is not adequate. We are way behind schedule in terms of updating the equipment for our ATC system. And now we have new stresses, you know, the proliferation of private jets, the very light jets, again which is a symptom of all the other problems because anybody who can afford to is fleeing the commercial system, and going to private jets to avoid it.

I think we have a system in crisis. I think it is only a matter of time, you know, when and where it is going to break again. And I am hoping that this hearing is the beginning of a plan to rebuild the integrity at each and every level that I just described.

Thank you, Mr. Chairman.

Mr. MICA. Additional members seeking time?

Mr. Matheson.

Mr. MATHESON. Thank you, Mr. Chairman. And I associate myself with the previous remarks about stress on the system in addition to the staffing levels within the control towers.

I also want to raise the issue of staffing for maintenance, and I want to refer to an article dated August 5, 2006, in the Salt Lake Tribune about an incident that occurred at the Salt Lake Airport, and I am just going to read a few passages from that during my opening statement. It describes the following:

″A sudden loss of both radio and radar communications Thursday at the Salt Lake City International Airport occurred while six passenger jets were in the air sent air traffic controllers scrambling for alternative communications to keep the skies safe.

″Federal Aviation Administration technicians conducting routine maintenance of a backup generator were to blame, but the controllers didn't know that. All they knew was the weather was getting worse.

″'we were panicked,' Brady Allred, a controller at the airport's Terminal Radar Approach Control tower said Friday, 'We had a half dozen planes in the sky, a couple thousand people.'″

Fortunately, no one was hurt in this incident.

″Allred said the scene was barely controlled desperation as controllers broke out cell phones, whose use FAA prohibits in the towers, to seek help from other control centers and Hill Air Force Base,″ which is nearby the Salt Lake City airport.

'"we had no ability to see the airplanes or to talk to them,' said Allred, a spokesman for the controllers' union. 'we have battery backup, we have a huge generator, we have all kinds of redundancies but for some reason they didn't work.'

'"that's because they were all turned off,' said Allen Kenitzer, an FAA spokesperson based in Seattle.

'"to put it bluntly, this was human error,' he said.

"the outage was planned. Technicians who were testing a backup generator ended up turning off all power to the radar and the radio system.

"told Friday the reason for the outage, Allred," from the controllers union, "fumed, 'Why pick a day when thunderstorms are blowing through to test a backup generator?'

He pointed out the only bright side was "relatively few flights were coming in and out of the airport at the time. 'had the outage occurred 45 minutes earlier or 45 minutes later, it would have been chaos,' he said.

Now, Kenitzer, the spokesman for the FAA, "said it was a management decision"—and this is the key to all my comments here—"it was a management decision to test the backup system during the day instead of at night, when it would have been more expensive."

Now, he said, "While pilots couldn't have landed on visual flight rules because they couldn't have seen the runway through the clouds, said Kenitzer, safety was never compromised. There was never a total break in communications," according to the spokesman from the FAA.

"Mr. Allred," from the controllers union, "said he is still gathering information on the power outage. During the past 5 years, there were other situations in which controllers lost a critical component, but losing both radio and radar 'was the worst,' he said, and he denied the FAA's claim 'that there was no danger.' he said, 'That's what the FAA always says, but the reality was, it was scary.' he said, 'Safety was compromised.'"

I just bring this to light because I think this is an incident that reflects a broader issue here about scheduled maintenance and an effort to try to cut costs; and I think we are compromising safety, and we have a classic example right here.

I look forward to hearing the witnesses' testimony. And I wanted to make sure they were aware of what happened in Salt Lake City in August of this year.

Thank you, Mr. Chairman. I will yield back.

Mr. MICA. Thank you.

Do any other members seek recognition at this time?

If not, what we will do is turn to our first panel of witnesses, and we have on panel Mr. Nick Sabatini, who is the Associate Administrator For Aviation Safety with the FAA; Mr. Thomas Haueter, Deputy Director of the Office of Aviation Safety at the National Transportation Safety Board; Mr. Gerald Dillingham, Director of Physical Infrastructure Issues with the United States Government Accountability Office; and we have Mr. Todd Zinser, Acting Inspector General at the Office of Inspector General, the U.S. Department of Transportation.

Welcome. I think most of you have been before us before. If you have anything lengthy or a report you want to be to made part of the record, just seek recognition through the Chair, and we will accommodate you. We won't hold you to the j5 minutes, but as you can see, there will be some questions from members who are in attendance today.

So, with that, let's turn to our number one expert on aviation safety, Mr. Sabatini with the FAA.

Welcome back, and you are recognized.

STATEMENT OF NICHOLAS SABATINI, ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY, FEDERAL AVIATION ADMINISTRATION

Mr. SABATINI. Thank you. Mr. Chairman, Congressman Costello, members of the subcommittee, I am pleased to appear before you today to discuss the current state of Federal Aviation Administration aviation safety oversight.

My primary message to you today is that despite the tragic accident that took place in Lexington, Kentucky, last month, the safety record of aviation in the United States is extraordinary. And while the Kentucky accident serves as an important reminder that our work as safety professionals is never done, we remain in the midst of the safest period in aviation history.

In the past 3 years, U.S. scheduled air carriers have transported approximately 2.2 billion passengers, or 7 times the population of our United States. Over that time period, we have had a total of 78 passenger fatalities. All of us who work for or with aviation professionals can take pride in the results of our collective efforts, especially given the economic turbulence that has been experienced by U.S. carriers in recent years.

I am here to admit to you that while I take great pride in the current state of aviation safety, the FAA has no intention of becoming complacent. Aviation is extremely dynamic, and the FAA must be prepared to not only keep pace with, but stay ahead of changes in the industry.

In the early 1990's, the Boeing Company projected that if the aviation industry did not take strong preventive measures in safety initiatives in commercial aviation, the projected growth in the operations over the next 20 years would increase the number of hull-loss accidents worldwide to approximately one every week. This was a wake-up call to all who work in and care about aviation.

I would like to direct your attention to the chart currently on the screen. It shows an accident rate that not only has not risen, as Boeing feared, but has declined appreciably. Because of work done collectively by government, industry and operators today, a fatal accident occurs about every 15 to 16 million commercial flights, an accomplishment about which we can all be proud.

By no means do I want to downplay the Kentucky accident, but it must be put into context so the flying public understands that our system is extremely safe. In fact, pilots are actually safer on the job than when they are not at work.

At about the same time, both the White House Commission on Aviation Safety and Security and the National Civil Aviation Review Commission recommended the adoption of a goal of an 80 per-

cent reduction in the fatal accident rate by 2007. FAA and industry embraced this recommendation and have made significant inroads in meeting the goal. In virtually all segments of the aviation industry, the accident trend lines are going in the right direction.

The FAA sets annual goals for itself, and we are meeting them. We know the system is safe, but it is difficult to measure the non-events, the accidents that did not happen, the headlines that were not written, the lives that were not lost. Only over time can we begin to quantify how our safety initiatives are working. We can plot data points to represent when certain safety initiatives were implemented and then we can document the absence of failure, the lack of accidents.

This brings me to my second chart, which does just that. I would like to bring your attention to the blue shaded area. It represents the accidents that did not happen. As you can see, it tells quite a dramatic story. We are no longer dealing with ″common cause″ accidents.

As the name suggests, common cause accidents are a series of accidents that were caused by a similar problem, such as engine failure, controlled flight into terrain and loss of control, to say—to just list a few examples.

Now that we have tackled the obvious safety problems that cause multiple accidents, we are dealing with accidents that are each caused by a unique set of circumstances. We are just as committed to preventing these accidents, but due to the distinctive nature of each accident, it poses a greater challenge.

I have stated repeatedly that FAA must not and will not become complacent when it comes to finding ways to improve an already safe system. The one certainty we must face is that humans make mistakes. It is the human condition. Therefore, our focus must be on making the total system more error tolerant. We have done a lot to create a series of intertwined defenses to trap the human error.

This continues to be the challenge before us today. Working with my colleagues at this table, Congress, and our partners in the aviation industry, I am confident that safety can continue to be improved. We are moving into an exciting period of aviation with the advent of new aircraft types and systems. FAA's bottom line has always been and will continue to be that safety will never be compromised.

Mr. Chairman, I know of your commitment and this Committee's commitment to finding solutions to the safety challenges we face. This afternoon I want you to understand the strength of my commitment and the commitment that exists within FAA at all levels of the agency to do what needs to be done to make a safe system safer.

This concludes my prepared statement. I will be happy to answer your questions at any time.

Mr. MICA. Thank you. And we will hold the questions until we have heard from everyone.

And we have Thomas Haueter, Deputy Director of the Office of Safety with the NTSB.

Welcome, sir, and you are recognized.

STATEMENT OF THOMAS HAUETER, DEPUTY DIRECTOR, OFFICE OF AVIATION SAFETY, NATIONAL TRANSPORTATION SAFETY BOARD

Mr. HAUETER. Good afternoon, Chairman Mica, Member Costello and other members of the committee.

Mr. MICA. Pull that mike up as close as you can. I want to hear every word.

Mr. HAUETER. Thank you.

Since becoming an independent agency, the Safety Board has issued over 3,500 aviation safety recommendations. Eighty-two percent of these recommendations have been adopted by the FAA or the aviation industry.

We believe that through the Safety Board's accident investigations and recommendations, the United States enjoys the safest commercial air transportation system in the world. However, as the recent accident in Lexington, Kentucky, shows, we must maintain our vigilance and continue to find ways to make this very safe system even safer.

The investigation of the accident at Lexington is ongoing and no recommendations or conclusions have been issued.

Runway incursions continue to be an area of concern. On July 2006, a United 737 passenger jet and an Atlas Air 747 cargo plane nearly collided at O'Hare International Airport. Only the evasive action by the pilot of the 737 prevented the accident.

The runway incursion rate has not appreciably changed in the United States in the last 4 years, about 5.2 runway incursions per billion tower operations. Simulations of actual incursions show that the alerts may occur 8 to 11 seconds before potential collision. In recent incidents, controllers were not alerted in time to be effective.

The investigation of the TWA 800 accident found that fuel tank design and certification that relies solely on the elimination of every ignition source, while accepting the existance of fuel tank flammability, is fundamentally flawed. In May 2006, a fuel vapor explosion occurred in the left wing of a Transmile Airline 727 in India resulting in substantial damage to the wing. The Safety Board believes that operating transport category airplanes with flammable fuel air vapors in fuel tanks represents an avoidable risk.

The comment period on FAA's proposed rulemaking for flammability reduction is now closed. We hope that the lessons learned from TWA will be carried forward to prevent a similar accident.

Aircraft icing is two different types of icing events, inflight icing and icing that occurs on the ground, more commonly called upper wing icing. In January of 2006, an American Eagle Saab 340 encountered icing conditions in departed controlled flight. Fortunately there were no injuries.

An example of ground icing is the December 2004 accident involving Canada Air 600 that crashed shortly after takeoff from Montrose, Colorado. The flight crew failed to ensure that the airplane's wings were free of ice and snow contamination that accumulated while the airplane was on the ground.

Industry continues to address these types of events on a case-by-case basis rather than incorporating standards as recommended by the Safety Board.

The above cases are but a small sample of the Safety Board's efforts; there are additional areas of concern, such as landing distance calculations, emergency medical service aircraft, fatigue, turbine engine disk failure, helicopter servo actuators, air cargo, unmanned aerial vehicles or systems, flight recorders, and air tour operations.

As I previously mentioned, the United States enjoys a very safe transportation system, and the Safety Board and staff are dedicated to continue to find ways to make aviation travel even safer.

Mr. Chairman, that completes my statement.

Mr. MICA. Thank you.

And now we will hear from Gerald Dillingham with the U.S. GAO office.

Welcome and you are recognized.

STATEMENT OF GERALD DILLINGHAM, DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. DILLINGHAM. Thank you, Chairman Mica, Mr. Costello, Mr. Oberstar.

My testimony today focuses on three areas. The first is FAA's safety management system. The second area is training of the staff that are responsible for implementing that safety management system. And third is some of the key safety-related challenges that are on the horizon for FAA.

With regard to the safety management system, the safety management system includes a complex array of people, programs and processes. It also represents a major cultural shift for FAA from the old ″go out and kick every tire″ approach to one that has focused on risk identification and mitigation through systems safety. I think that the long-term trends we see in the decline of commercial and cargo accidents, as well as a decline in serious runway incursions, are attributable to that system's approach, as well as the efforts of the wider aviation community.

Mr. Chairman, I am, however, concerned that some of the recent developments may be the early warnings of a system under strain. The system is again experiencing widespread delays. There have been four fatal commercial aviation accidents this fiscal year, and FAA will not meet its commercial air carrier safety performance target for fiscal year 2006.

General aviation continues to be involved in a significant number of fatal accidents every year. And although the cargo accident rate has been on a downward trend over the last few years, according to FAA, it is still as much as six times that of commercial aviation.

There has also been a spike in the number of air ambulance accidents. Over the last 3 years, there were 55 air ambulance accidents with 54 fatalities, the highest number of accidents since the 1980's. FAA has also missed its performance target for the last 3 years for reducing the number of operational errors.

Regarding my second issue, the training for safety-related staff, GAO's work for this committee has shown that FAA has made training an integral part of its safety oversight system and generally follows effective management practices for its training pro-

grams. Where we have made recommendations for improvement, FAA has generally agreed with those recommendations.

With regard to my final issue, safety challenges on the horizon, the broadest and perhaps most difficult challenge will be to continue and complete the cultural transformation that is under way at the Agency, that is, transforming the safety oversight program from a direct oversight approach to the safety management system approach. We believe that this cultural change will take several years; and for FAA to know whether the cultural change is effective, it will have to increase both the quantity and quality of the data available to evaluate the initiative.

A more immediate challenge is the replacement of over 10,000, or 70 percent, of the controller workforce over the next 10 years. This staffing situation may even be more acute than was first realized since new data shows that the controllers are retiring sooner than estimated.

A similar situation exists for safety inspectors. FAA anticipates losing over 1,100 safety inspectors over the next 5 years. This will represent an average loss of about 200 inspectors per year.

Finally, Mr. Chairman, Mr. Costello, and members of the subcommittee, the early indications from some of the studies that we currently have under way for this subcommittee suggest that the changing aviation landscape would pose additional challenges for FAA. For example, it is expected that within the next few years several hundred very light jets, along with unmanned aerial vehicles and vehicles participating in the emerging space tourism industry, will be operating in the National Airspace System. All of these developments will add to FAA's workload, require additional FAA staff and expertise and possibly put further strains on the system.

Thank you, Mr. Chairman.

Mr. MICA. Thank you.

And now we will hear from Mr. Todd Zinser, Acting Inspector General at the Office of Inspector General, U.S. Department of Transportation.

Welcome, and you are recognized.

STATEMENT OF TODD ZINSER, ACTING INSPECTOR GENERAL, OFFICE OF INSPECTOR GENERAL, U.S. DEPARTMENT OF TRANSPORTATION

Mr. ZINSER. Thank you. Mr. Chairman, Mr. Costello, Mr. Oberstar, members of the subcommittee, we appreciate the opportunity to testify today and offer our observations on how to make a safe system even safer.

Today, I would like to highlight three areas that characterize the current aviation safety landscape and current challenges, and request that my full statement be submitted for the record.

Mr. MICA. Without objection, so ordered.

Mr. ZINSER. First, FAA is making progress in using risk-based systems to carry out its safety oversight mission, but a lot of work remains. Facing a rapidly changing industry, FAA needs effective systems to help target inspector resources to areas of greatest risk and proactively spot problems before they can contribute to accidents.

To its credit, FAA has developed risk-based systems for its oversight of air carriers, repair stations, and manufacturers, but these systems are at different levels of maturity and by no means at an end state. FAA's old inspection system focused more on compliance regardless of risk. For example, FAA inspectors would schedule and conduct hundreds of inspections even where no significant problems were found.

FAA's risk-based systems rely on data analysis to identify where the greatest risks are in an air carrier's operations, for example, and inspectors can then use that analysis to target their inspections to those areas. In our view, FAA is moving in the right direction with risk-based systems, but substantial challenges remain.

This approach requires a significant cultural change because inspectors may not be accustomed to working with data analysts and using data analysis to find safety problems. FAA's risk-based systems need to be flexible enough to adapt to significant changes in the industry, such as the greater use of outside repair stations by air carriers to perform maintenance and the greater use by aircraft manufacturers of outside suppliers, many in foreign countries, for the parts and components for their products.

My second point is that there are several key trends and issues that need FAA's attention. My written statement addresses five issues. I would like to highlight two in particular. The first is noncertificated repair facilities.

Last December, we identified a trend in air carriers' use of external maintenance facilities that FAA was unaware of: the use of repair facilities that have not been certificated by FAA to perform critical and scheduled aircraft maintenance. These facilities are not covered under FAA's routine oversight program because FAA believes this responsibility rests with the air carriers.

Even though the maintenance performed at these facilities is approved by a licensed mechanic, the fact is that noncertificated facilities do not have the same regulatory requirements as FAA-certificated repair stations and yet perform the same type of work.

Air carriers have used these facilities for years, but it was widely believed they only did minor work, for example, checking oil levels or changing tires. However, some of these facilities perform critical maintenance, including engine replacements.

FAA agrees it needs to gather more information on the type of work these facilities actually perform. We think FAA needs to move more quickly to determine the range of actions that will be needed to improve oversight.

Second is inspector staffing. Much attention has been focused on controller staffing, but FAA safety inspectors also face a surge in retirements. By 2010, half the current inspector workforce will be eligible to retire. Right now, FAA does not have a staffing model that would provide an effective means of determining inspector staffing needs or where they are needed. For example, FAA has one inspector assigned to Des Moines, Iowa, where his assigned carrier averages six flights per day, but does not have an inspector assigned to Chicago, Illinois, where the same air carrier averages 298 flights per day.

It will be important for FAA to have a systematic way for allocating inspector resources in response to changes in the industry.

My third point this afternoon is that FAA must continue to emphasize and address the risks of runway incursions and operational errors. To its credit, FAA has taken significant steps to reduce runway incursions. The total number of runway incursions has decreased from a high of 407 in 2001 to 327 in 2005. However, since 2003, the number of runway incursions has flattened out and very serious runway incursions continue to occur. We are currently looking at three airports that have recently experienced higher numbers of runway incursions and will be reporting our findings later this year.

While FAA has reduced the number of runway incursions, it has not had the same success with operational errors. This past year, there were 1,489 operational errors, which is the highest number of these errors reported in the last 6 years. Seventy-three of those errors were serious incidents, compared to only 40 reported in fiscal year 2004.

Operational errors, especially the serious ones, are important safety metrics, but we urge caution in making year-to-year comparisons because, at the vast majority of facilities, FAA relies primarily on self-reporting. As a result, we have reported that the prior-year numbers were subject to underreporting and, in some cases, systematically and deliberately ignored.

FAA is taking actions to improve the reporting of operational errors. For instance, as a result of our recommendations, FAA now requires towers and TRACONs to conduct random audits of radar data to identify operational errors, and FAA is also developing an automated reporting system for TRACONs. The imperatives are to make sure that operational errors are accurately reported at all facilities, to establish a good baseline to measure progress, and to examine root causes.

That concludes my summary, Mr. Chairman. I would be pleased to answer any questions you or other members of the committee may have.

Mr. MICA. OK. We will start with some questions. First, to Mr. Sabatini.

OK, let's get right to a couple of the key questions here. I keep hearing different numbers. I heard Mr. Poe talking about 42 versus 29. We have different air traffic control people running around, giving different figures.

What, before the committee, is your current onboard number of controllers; do you know? I mean, within—I see your target is 14,670 in fiscal year 2006. How many do we have onboard? It says as of September 3, there were 14,537?

Mr. SABATINI. As of this time, Mr. Chairman, we have 14,500; and we had in the pipeline——

Mr. MICA. 14,500?

Mr. SABATINI. Yes.

Mr. MICA. And you are authorized and you are targeted for 14,670; that is your target. So that is 100 different. You have those——

Mr. SABATINI. 14,500 onboard now, and we are in the process——

Mr. MICA. Well, the numbers I am hearing again—is this because folks are using old numbers or——

Mr. SABATINI. Well, let me say, sir, that even with our organization, aviation safety, the numbers are fluid in the sense that while you are hiring people, you are also losing people.

Mr. MICA. But we are within a 100 or 200?

Mr. SABATINI. Absolutely. Absolutely sir.

And I would tell you that the hiring is moving along at a very brisk pace. In fact, we recognized what has been highlighted by some folks in terms of the retirement. In fact, instead of hiring the 930 people that we had originally planned to hire, we are going to hire 1,100 people to accommodate for that change.

Mr. MICA. OK. So that other question was, with the anticipated numbers of retirements, are you preparing—you are prepared for that?

Mr. SABATINI. Oh, absolutely.

Mr. MICA. And you have got those numbers covered?

Mr. SABATINI. Yes.

Mr. MICA. All right.

Just for the record—I don't want to dwell on the Lexington situation, but for the record, I was told we have over 100 airports with commercial flights, that have commercial flights landing in them, without a tower or without an air traffic controller. Is that correct?

Mr. SABATINI. That is correct. The rules——

Mr. MICA. Just for the record, could you just tell me—again, do you know those numbers? Is it over a hundred?

Mr. SABATINI. Well, I don't know the number precisely, Mr. Chairman.

Mr. MICA. But it is over 100, there is no air traffic controller, no tower, and we have planes taking off and landing safely?

Mr. SABATINI. We have air carriers operating into and out of airports where there may not be an air traffic controller, and I have—the actual figure is 145.

Mr. MICA. One hundred forty-five. And I have repeated this to the press and to the public, I have not seen it published one time.

Another question, I have heard a lot about the 9-hours-off requirement. That is for air traffic controllers between shifts?

Mr. SABATINI. They are required to have 8 hours between their shifts.

Mr. MICA. Eight hours?

Mr. SABATINI. Eight hours.

Mr. MICA. Eight hours. How does that compare with pilots?

Mr. SABATINI. Well, it is essentially the same. By regulation, the difference is, we have a regulation which is part of the CFR system for pilots, and they are required to have a prescribed set of hours for rest. The difference is internally; it is an internal order that dictates the amount of time that——

Mr. MICA. So if they made it 16 hours for pilots and air traffic controllers, I mean, could somebody just go out and pull an all-night drunk? I mean, is there a requirement they come to work ready to work?

Mr. SABATINI. There is a requirement that they come fit for duty. However, as you well know, Mr. Chairman, there is no way that we can regulate what people do on their own personal time.

Mr. MICA. Do you recommend a change in that policy for pilots and air traffic controllers?

Mr. SABATINI. A change in what, sir?

Mr. MICA. The hours.

Mr. SABATINI. Well, I believe that the system has provided us with the safest air transportation system in the world. In fact, we are the envy of the world. So I would be very cautious about changing the formula that is already producing a very safe system.

Mr. MICA. OK. We have had some areas where we have had some problems. Business and corporate jets are one, and—do you want to comment on that? Air ambulances, I think, was cited as another.

Mr. SABATINI. Well, there is—as you know, Mr. Chairman, and as has been mentioned by the Inspector General and Mr. Dillingham from GAO, we have moved to a data-driven risk management approach in systems safety. And we target those areas that present as we go through our surveillance, using those systems that present areas of risk.

We have identified an area of risk with emergency medical services, particularly in the helicopter community, and have addressed that in a very effective way. We engaged with the industry, starting back in 2004; and if you look at the data, you will see that having worked with the industry, having identified the number of actions that they voluntarily put in place, which is an expeditious way to deal with requirements that should be regulatory, but—we are going to follow up with the regulations, but the fact is, the industry and FAA work together, and today we have essentially cut in half the number of accidents that that particular category and group of users was experiencing.

Mr. MICA. Well, final question: Mr. Dillingham, we went to a risk-based system, which was something that I supported. People said the sky was going to fall, planes were going to fall out of the air in changing that out.

I think that the evidence that has been shown here today is dramatic, a dramatic safety record. And also using our resources to go after seen risk, should we have any change in that? And I know you have spoken to making certain that we have inspectors, et cetera, but any change in the risk-based approach, Mr. Dillingham?

Mr. DILLINGHAM. Chairman Mica, I don't think at this point we can talk about having change, but we can certainly talk about making sure that it is fully implemented; and part of that implementation should include the ability to have information that will allow FAA to evaluate these systems and determine if they are actually effective.

Mr. MICA. OK.

Mr. ZINSER. Yes, I would agree with Dr. Dillingham that the key is to take the systems that the FAA has developed and make sure that they are implemented.

I think there is more work to be done on suppliers, and there is more work to be done on developing the system for repair stations. The system for air carriers is pretty mature at this point. By the end of next year, FAA should have most air carriers under the system.

Mr. MICA. Mm-hmm. I have serious questions about the incursion, runway incursion issue; also questions about this outsourcing

and the level and how we approach that. I don't have time to get into all that, but I want to get back to that.

And finally, Mr. Haueter, when do you think you will be done, any idea, on that Lexington report?

Mr. HAUETER. We are hoping to have it done within a year of the accident, and we are seeing if we can make it shorter than that.

Mr. MICA. Mr. Costello, you are on until we vote. Incidentally, there are—how many votes are pending, three or four votes?

Three votes. So what we will do is try to let Mr. Costello consume some time. Then we will recess until 4:00—I think it is going to take until then—and then come back and grill, then grill what is left over.

Mr. COSTELLO. So it is clear for members, we are coming back?

Mr. MICA. Yeah, we are, 4:00, and then we will take them, bam, bam, bam.

Mr. COSTELLO. Mr. Chairman, thank you.

[Resuming]

Mr. COSTELLO. Mr. Chairman, thank you. I hope to get some answers as well. In my opening statement, I made it very clear that several concerns that I have that both the inspector general and the GAO addressed and brought up as their concerns about the outsourcing of maintenance and Mr. Sabatini, first question, you, as I indicated in my opening remarks, there is no question that the U.S. air carriers are outsourcing more of their maintenance work than they have in the past. I think the statistic was from 1996 about 37 percent of their expenses for maintenance was outsourced. It is 62 percent and climbing as we speak, and I think we all know why. It is because of the labor costs.

The statistics and numbers I have, and I am not going to quibble over a few, but I understand that your inspectors were foreign repair stations that my understanding is that you have 68 inspectors that have the responsibility of inspecting 688 facilities. I told you of a conversation I had with one of your people out of the Singapore office where they have six inspectors to do 99 facilities.

First question, and we have limited time, although we are coming back. My first question is this: In your opinion, do you have enough inspectors to adequately provide oversight to facilities, both here in the United States, domestic facilities and in foreign countries?

Mr. SABATINI. Mr. Costello, let me first say that the former Inspector General Ken Mead, as well as the acting Inspector General today, has stated emphatically that it is not the quality of maintenance that is of a concern, but rather the ability to provide adequate oversight. That is a significant statement because if you recall, there was a period of time where there was concern about the quality of maintenance, simply because it was being outsourced. Now that we can put that aside, we can address the hard facts of the oversight and how best to do that.

I would also say that we will never compromise safety ever. So what we are doing with the resources that we have is identify priorities. And our number one priority is the continuing oversight of those certificated entities that are already issued authority to perform work.

Mr. COSTELLO. I understand that.

Mr. SABATINI. Yes, sir.

Mr. COSTELLO. But answer my question, if you will. Do you have enough inspectors to adequately inspect domestic maintenance facilities, repair stations and foreign stations as well?

Mr. SABATINI. Well, I have, in the foreign arena, several combinations of oversight.

Mr. COSTELLO. Your people tell me that you don't, so I want to know if you believe that you do.

Mr. SABATINI. Well, when you have to draw comparison, Mr. Costello, in with the foreign repair facilities, those inspectors only have responsibility for the oversight of repair stations, period. That is all they do. And on average, they have about 10 certificates that they need to have that they have responsibility to conduct oversight. Here domestically, our inspectors have more than just 10 certificates. They on average have about 14 to 20 certificates.

So the attention is divided here. But I will tell you that the number is adequate to assure the level of safety where there is a consequence when you prioritize the way we do. There is a consequence in new applicants, and for the past several years, we have informed the industry that we could not process new applications because once a new applicant is issued a certificate, it becomes an ongoing responsibility for oversight.

Mr. COSTELLO. Can you state emphatically that with the foreign repair stations, that every foreign repair station has physically one of our FAA inspectors visit their facilities at least one time during the year.

Mr. SABATINI. There are locations where because we have maintenance implementation agreements with——

Mr. COSTELLO. So there are facilities where we go a whole year without physically sending an inspector to that facility. That is what I have been told by your people.

Mr. SABATINI. That is true, sir.

Mr. COSTELLO. Is that acceptable?

Mr. SABATINI. Yes, it is because we have, through the bilateral aviation's safety agreement with these countries, with whom we have determined are competent authorities, and we have examined those countries up close and personal, so to speak, and have determined that they have the wherewithal to execute, on our behalf, the oversight that we have ordinarily had to exercise.

Mr. COSTELLO. Regarding the report issued in this past December by the IG, air carriers use of non-certificated repair facilities, they were criticized, the FAA, for oversight and they said that the work performed at non-certificated repair facilities, they criticize the agency and said that you are not providing adequate oversight for the non-certificated facilities. I want to know your response to that, and number two, what have you done about that?

Mr. SABATINI. Well, I will tell you that I always welcome the constructive criticism we receive from my colleagues.

Mr. COSTELLO. But you disagree or agree?

Mr. SABATINI. Well, we can certainly improve on the number of surveillance activities. But I want to caution you that this is not a numbers game. It is identifying risk and using system safety principles that will take us to those places where we will have to devote our resources. And having said that, there is no data to sug-

gest that there is an untoward occurrence about to take place because of uncertificated entities.

Mr. COSTELLO. The last before, I think, we have to run vote, the IG has said that 28 percent of the current inspector workforce is eligible to retire this year, and by 2010, half of the inspector work force is eligible for retirement. And when and how is the agency going about hiring inspectors?

Mr. SABATINI. Well, I will tell you this year consider, sir, considering the new growth and the back filling, our organization has hired 4,040 inspectors. But I would caution you when people banty about the term eligible for retirement, our organization is an organization that hires very experienced people and they come generally speaking from an industry where they have already completed one career and starting a new career with us. So you might say that from the day they start with us, they are eligible for retirement that certainly was the case for me. When I joined the FAA, I was eligible for retirement.

Mr. COSTELLO. So let me ask the question. When the IG says 28 percent of eligible for retirement, now you are saying that they are eligible for retirement under a different standard that you are looking at versus the IG. Explain that.

Mr. SABATINI. Well, they may be eligible for retirement but you will find that they have short tenure with the FAA and are planning to stay. These people that we have hired, and I personally talked to these folks. They are here, they have some—many have military and previous government service and they come and they have the age and the period of time necessary for retirement and then can, if they choose to with FERS, which allows you to retire with as little as 5 years, but I can tell you practically speaking Mr. Costello they do not retire. They stay for a long period of time.

Mr. COSTELLO. We will follow up. But I do want to point out for the record, and you can correct me if I am wrong when we come back, that the FAA has seen more retirements in the area of air traffic controllers than they anticipated.

Mr. SABATINI. Well, I was addressing the safety organization.

Mr. COSTELLO. What I was saying if your agency was wrong in anticipating how many traffic controllers would retire, how would we—would be reasonable to assume that when we say 28 percent are eligible for retirement, but you don't anticipate that—that the agency may be wrong again.

Mr. SABATINI. I don't think the agency is wrong. We—I would agree that those are the numbers that represent the number of people eligible for retirement, but they may not necessarily retire, and that is the only point I wish to make.

Mr. MICA. We will stand in recess until 4 o'clock and then we will continue. Thank you.

[recess.]

Mr. MICA. The subcommittee will come back to order. The witnesses will please take their places and see if Mr. Costello had any concluding questions. He got cut a little short. We don't want to deprive him any opportunity to question the witnesses.

Mr. COSTELLO. Thank you. Dr. Dillingham, let me ask you the same question. The same questions, number one about staffing issues, both the GAO and the IG have either criticized or com-

mented or questioned, number one, do we have enough inspectors for the adequate oversight both domestically and at foreign repair stations. So I would ask you, one, do you believe that the FAA at their current staffing level if they have adequate staff to perform adequate oversight?

Mr. DILLINGHAM. Mr. Costello, I think that we haven't done any work on the foreign repair stations, but with regard to inspectors staffing, we can't tell you whether they have enough, and I don't think FAA can tell you whether they have enough either, because there is no staffing standard for that position. I think the National Academy of Sciences has been asked to do some work to sort of help FAA along in developing a staffing standard.

Mr. COSTELLO. I would ask the same question of Mr. Zinser.

Mr. ZINSER. I would say two things. I would agree that a model is needed and the work that the National Academy of Sciences was commissioned to do should help FAA get to such a model and establish some staffing standards, but I would also say that the staffing levels underscore the importance of a risk-based approach here because you are never going to have enough inspectors to be at the repair stations 100 percent of the time and to see everything that is going on.

You really have to target risk areas. And so I think between the staffing model that they are working on and this risk-based approach, FAA will have adequate staffing levels for inspectors.

Mr. COSTELLO. Before we go on to other members, let me give both Dr. Dillingham and you, Mr. Zinser, the opportunity to comment on any of the other either GAO or IG observations concerning staffing foreign repair stations or anything in general that you would like to address at this hearing.

Dr. Dillingham.

Mr. DILLINGHAM. I would just like to reiterate that we, too, agree that we have the safest aviation system in the world. However, again, I want to also agree with Mr. DeFazio when he said that some of the things that we are currently seeing, we need to take them as early warnings of a system in distress in that we need to address those before they become critical issues in our system.

Mr. COSTELLO. Mr. Zinser.

Mr. ZINSER. I would comment on a couple of things, Mr. Costello. One is on the use of repair stations by air carriers, the increasing use of outsourced maintenance. And Mr. Sabatini is correct. We are not saying thatthat, in and of itself, outsourcing poses a safety issue. What we are saying is that you have to provide oversight where the maintenance is performed, and the maintenance is moving to outside repair stations.

And our recommendations on repair stations to FAA included things as simple as finding out where air carriers are sending their planes for repairs and what repairs are being done. Let us get the data and then see what the implications of that are.

So that is a key point for us.

My second issue would be non-certificated repair facilities. If there are 5,000 certificated repair stations and FAA knows where they are and who they are, they cannot say the same thing about non-certificated repair facilities. I think it took everybody by sur-

prise when we went out and found the types of maintenance being performed at these non-certificated facilities.

The common wisdom or the common thinking was that these non-certificated facilities were being used to do emergency repairs or small repairs and, lo and behold, we find that the airlines are using these non-certificated facilities for some major repairs. And our only point there is to find out who they are and what repairs or maintenance they are actually performing because when we went out and looked at 19 carriers, and their maintenance vendor lists, we found the use of non-certificated repair stations ranges from 1 percent of the maintenance vendors these carriers were using up to—to up to 39 percent. We think that this is an area that FAA has to get on top of: who they are using and what they are using them for.

Mr. COSTELLO. Final question, Mr. Chairman. Mr. Haueter, I want to ask you about the May 16th, 2006 letter to the FAA regarding the runway incursion at Chicago O'Hare Airport, and the NTSB referenced the issue of air traffic controller fatigue. In your view, is this controller fatigue an issue that needs to be examined more closely?

Mr. HAUETER. In the event in Chicago, the particular air controller had a sleep disorder and he was fatigued. It was a kind of a different situation than what we normally see. Clearly, in our investigations, if we find fatigue, we will highlight it, make recommendations and so we look into those areas.

Mr. COSTELLO. Very good. Mr. Chairman, thank you.

Mr. MICA. Thank you, and I guess we will hear now from Mr. Hayes. Are you ready?

Mr. HAYES. Yes, sir, Mr. Chairman. Thank you.

Mr. Zinser, you posed an interesting issue. Mr. Sabatini, could you comment on his observation for the sake of the audience and the press, distinguish between certificated and non-certificated repair stations?

Mr. SABATINI. Yes, sir. Actually for precision and accuracy, there is no such thing as an uncertificated repair station. There are facilities that are authorized to be used by an entity such as an air carrier, which is certificated and a repair station can outsource.

So both of those entities can outsource to those facilities that have a capability that those entities, certificated entities do not have. So for example, if an air carrier wishes to have something down, for which they themselves do not wish to take on or wish to farm out, they can go to an organization and let us use, for example, an engine change at a location where they do not have their own facility there.

They can't contract with an organization that has repair men or A&P certificated mechanics and they can arrange under certain conditions under the air carriers quality control program, which means that the air carrier continues to be responsible for its total system. It has already been said. We will never have enough inspectors to be everywhere. But quality management systems, safety management systems, deal with system level design and attributes that assure that no matter where the work is being done, whether it is being done on the property by the air carriers, or it is being done by someone that the air carrier contracted with.

It is then the air carriers' responsibility to ensure that that entity has the wherewithal, the facilities and the knowledge and the appropriate tools to do what it is going to do on behalf of that carrier within that very narrow piece that that carrier is asking it to do.

So we may not be present at every one of those entities that do work for air carriers, but we certainly can improve on that, but it is going to be driven by risk, data that identifies, hazard analysis. Identify the risks and to date, the data does not suggest a significant change in what we are doing today.

But we are always about continuous improvements. System safety is about continuous improvement, and I welcome the constructive criticism that we receive from our colleagues here. But you have got to keep it in perspective.

Mr. HAYES. To follow-up on the question. The public is present here, as is the press. Is it a correct statement to say that when aircraft, airline or any other type maintenance is done, and it is done correctly, then it will be done by certificated mechanics, an A&P, which stands for Air Frame and Power Plant, or A&I, aircraft inspection? Not by boat mechanic or truck mechanic. Is that correct?

Mr. SABATINI. There are circumstances under which certain work must be done under the supervision of a person who is certified by the FAA. So there are circumstances when work that is not critical can be done by someone who is not necessarily certificated by the FAA, but is under the supervision of the carrier's system, but they would not have the responsibility to return, for example, an aircraft to service. That can only be done by a certificated person. So it is low-level work that doesn't—that does not require the knowledge and the skills and the abilities that we expect from a certificated mechanic.

Mr. HAYES. And when that is done, let us say it is a person who is learning, it still has to be inspected and signed off by the station inspectors. Again, I think it is important that people know that various and sundry things in place, again, to address the safety issues. Point for clarification, not to take sides in this very, very important discussion.

Mr. Haueter, has the NTSB ever investigated an aviation accident where the air traffic controller staffing level or air traffic controller fatigue was determined to be a contributing cause of the accident? I think I just heard Mr. Costello's question answered or somebody said there was a sleep disorder issue that there was.

Mr. HAUETER. There was a runway incursion event in Chicago where the controller did have sleep disorder and fatigue was probably part of that event. That wasn't an incident. It was an incursion. Looking at our database, we don't have any accident with a probable cause mentioning controller fatigue.

Mr. HAYES. Now, again for clarification, talk about what an incursion could be. It could be your nose wheel crossing the whole shore line or it could be as serious as entering an active runway when you are not supposed to be there. So distinguish that a little bit.

Mr. HAUETER. That is correct. An incursion can be two aircraft on the same runway at the same time coming in close proximity to each other. It can be an aircraft has gone into the runway of an

aircraft is ready to take off and maybe its only the nose that has gone over the runway. That can count as an incursion. There are different levels of these, obviously.

Mr. HAYES. One more issue on safety again. I think it was Mr. Porter. I am not sure who talked about the situation at Salt Lake City where there was a power interruption. Obviously, bad judgment mistake was made. But again, if one of you all would point out, not me, that in the event of a loss of communication in the eyes of our system, both the controllers, and that is a tough situation for them, but there are provisions in place where every one of those pilots has a clearance.

It may be the landing, but his instructions are to proceed to his last point of clearance and then commence the published approach. So again, I don't want folks to come away thinking the power goes off, it is not the situation you want. You do everything to prevent it, but chaos is not the automatic result because the controllers and their professionalism has set their aircrafts and those pilots up to follow published procedures and the properly trained pilot knows what to do. So if you could clarify that just a little bit.

Mr. SABATINI. Yes, sir, Mr. Hayes. I would say that to be, again, where there is no recorded accident or incident because of communication failure. And the analogy I would share with you is one of a football game. There is a playbook. We all have the same playbook. I am an active pilot. I know my responsibilities in the event of loss of communications, even on—especially under instrument conditions. The world class, hard working professionals, the air traffic controllers have the same playbook.

In the event of a loss of communication, I know what they are going to expect me to do, and they know what I am expected to do. And we can continue to a safe landing under IFR conditions, so it is absolutely not chaos whatsoever.

Mr. HAYES. I think it is a good point and just, again, to endorse the system and I will say, Mr. Chairman, Mr. Pascrell has a little different accent than I. I have trouble understanding him sometimes. And the controllers in the northeast, they talk a lot like him. I am not sure what language it is. But they do a good job. I was flying up to the northeast and the weather was bad, and they had lots of traffic and a lot of things going on, but those guys handled the situation extremely well professionally, they used my knowledge of where I was and what I needed to do and what they had to do and they get it done.

So again, our hats off not to a perfect system, but to a group of professional controllers and professional FAA personnel who are working together.

And the last thing, we put a lot of blame in the air by a lot of things. But it is us, Congress, who funds. If you want to double the number of this, that or the other, then we can do that. But we have a certain responsibility there. So that hadn't been mentioned, or at least I didn't hear it.

Mr. MICA. I thank the gentleman.

Mr. DeFazio has been waiting patiently.

Mr. DEFAZIO. Mr. Sabatini, to continue on the questioning about non-certificated repair. I was a bit, you know, I just harken back to Value Jet. Now remind me whether that was non-certificated or

certificated incompetence of mechanics or unlicensed incompetent mechanics who stowed the loaded air, the oxygen containers that caused a lot of people to die. Now that is out, you know, like subcontracting. I mean, tell me how—what was that setup? Was that non-certificated under the supervision of the airline? A lot of people died.

Mr. SABATINI. I don't recall the particulars, but I can certainly provide you with the fix on that.

Mr. DEFAZIO. But that is the problem we have today. We have airlines that are under tremendous stress trying to make a buck coming out of bankruptcy, in bankruptcy, whatever, and you know they are chasing the cheapest labor around the world around the country. I am just not quite so sanguine about the fact that gee, no one at the airline is going to sign off on this that was done three levels away from the airline and they don't know how incompetent that person really was and they assume the person two levels away from the airline actually checked on what the person did, and the person one level from the airline assumes that the person two levels away did, and the person at the airline assumes the person one level, two levels and three levels away all knew what they were doing, and they did it the way they said they did it, and the piece of paper that the first person signed ends up getting adopted by the airline, and then you have a tragedy.

So I am just not quite so sanguine about all of this outsourcing that is going on here, and the level of supervision or oversight that we are getting. I just—I am not, and I am not sure that the computers provide us with that level of oversight that we lack.

And I would go to another, the designee program. I mean, as I recall testimony here from your folks, they say maybe once every 9 or 10 years they can get around to designees, because their scope is you talked about a scope of 1 in 10 and foreign 1 in 4 to 20 national. What is the scope for people who supervise designees? I think it was—I remember it was one to several hundred was what we heard testimony, it was a huge number.

Mr. SABATINI. Well, I can get you the specific number in terms of ratio inspectors to designees. But I will certainly provide you with that information.

Mr. DEFAZIO. Again, I am not totally saying what the number of people that you have and the level of oversight we are providing in these areas should be. And if any one else has a comment on either designees or level of oversight, I would be happy to hear it. Dr. Dillingham.

Mr. DILLINGHAM. Congressman DeFazio, we did a report that looked at the oversight of designees and the designee program and we concluded that much the same thing that you just discussed. But in fairness to FAA, in response to some of the recommendations that we made, that oversight needed to be tighten up. It needed to be more systematic and it needed to be closer. They are, in fact, developing systems that will increase their ability to oversee what designees do.

Mr. DEFAZIO. OK. Well, I will look forward to a bit of follow-up on that.

Mr. Sabatini, I would congratulate the FAA on standing firm on the A–380 and the actual physical evacuation. I have always been

dubious about the drills as conducted by computer simulation as opposed to the physical approach. The NTSB is against that. Are we going to stick with a new type, or a reconfiguration, stick with the actual evacuation tests?

Mr. SABATINI. Well, the regulation allows a combination of options for the 380. It was new and novel, and certainly, we don't have any airplanes that have two full decks and for those reasons and that kind of logic, we decided the best course of action in the interest of safety was to have an actual full evacuation.

The rules do permit under certain circumstances airplanes that have a history of preceding models where we have demonstrated initially with a full evacuation. We could use computer modeling in a variant of that particular model or similarly situated aircraft.

Mr. DEFAZIO. All right. My final questions go to the issue of, and again, you are the only person from the FAA, so you get all the questions.

The air traffic controllers. I am just, you know, getting bombarded with, and I assume other members of the committee are, too, a number of concerns from air traffic controllers, real folks who work in my district and elsewhere around the country. And what they are saying is that some of the new work rules are very arbitrary, and potentially jeopardize safety, particularly those that relate to you know people who are not feeling up to snuff to work or are ill, and what would be required to be relieved, and whether there are adequate people to relieve them. Other sorts of petty harassment. People who are retiring early. We have a crisis in terms of replacing our qualified controllers.

And I guess I would just ask what the FAA intends to do to try and rebuild a relationship and some morale with the vital link in our air traffic control system.

Mr. SABATINI. Well, sir, I would tell you, Mr. DeFazio, that I don't think that the retirement situation is at crisis situation to date. The numbers that have been projected are not materializing. There have been 463 retirements in 2005. 541 through September 3rd of 2006, and we fully expect to go beyond the numbers that we had originally thought which was 930, and we will have 1,100 people, 1,100 controllers on staff by the end of September.

So we will certainly have addressed the concern and the concern that was basically said has basically not materialized.

Mr. DEFAZIO. Since the arbitrary imposition of a unilateral agreement, you haven't seen any acceleration in retirements?

Mr. SABATINI. Well, let me say that there was approximately 15 to 18 months of negotiations between——

Mr. DEFAZIO. I am familiar with the history. We disagree with the result or history in terms of how long there were material negotiations ongoing. But the point is have you seen any increase in retirement since the arbitrary imposition of this and the new work rules?

Mr. SABATINI. Well, I would say these are the numbers and I can get you——

Mr. DEFAZIO. I know, but they are not since the unilateral imposition of the agreement. So I guess I would like to see numbers since that date, if you could, and how they compared to other months.

Mr. SABATINI. Well, let me say that we can certainly provide you with that information. The numbers that I can tell you that are accurate as of this moment, and that is the 463 in 2005 and you take it from there to 541. That is more than last year. So if you want to consider that an acceleration.

Mr. DEFAZIO. Again, to me, the question is, you know, I can't be getting this many e-mails and contacts to my staff and other members from people who are talking about working conditions, arbitrary things being done by management. I have one photo here provided to me with a guide essentially pulling down his jeans or pulling up his shirt to show the supervisor that those really aren't jeans that he is wearing.

Now I don't care what an air traffic controller wears. They can be sitting there in shorts and Tevas, if they are comfortable and it is hot. That is fine with me. I don't know what bureaucrat has decided to go to this level of harassment. Other things are being imposed and I don't know why that is being done, but it is. I am just concerned about morale, and I believe that there is probably going to be, or has been an acceleration in retirements, which further jeopardize the system. And I look forward to seeing month-by-month statistics.

Thank you, Mr. Chairman.

Mr. MICA. Ms. Kelly.

Mrs. KELLY. Thank you, Mr. Chairman.

I am concerned about the new work rules that have been imposed on our Nation's controllers since September 3rd, 3 months after having this new contract forced on them. There is an article in today's New York Times, with permission and consents, Mr. Chairman, I would like to enter into the record.

Mr. MICA. Without objection.

[The information follows:]

Submitted by Rep. Kelly

The New York Times

Librado Romero/The New York Times

The tower at Stewart Airport near Newburgh, N.Y. Controllers at many sites are demonstrating unhappiness over cuts mandated by the F.A.A.

September 20, 2006

Air Controllers Chafe at Plan to Cut Staff

By MATTHEW L. WALD

DALLAS, Sept. 13 — A drive by the Federal Aviation Administration to cut the number of air traffic controllers nationally by 10 percent below negotiated levels, and even more sharply at places like the busy radar center here, is producing tension, anger and occasional shows of defiance among controllers.

At the radar office that controls planes around Dallas/Fort Worth International Airport and at a cluster of other airports where staffing levels are falling fast, unhappiness is usually not visible in the darkened radar centers where they work, except when it is glaringly obvious.

Like the recent day when a controller here went to work in lime green pants and a clashing brown jacket, along with hair dyed blue, to protest

a new dress code. Elsewhere, male controllers have rebelled by going to work in dresses.

Most controllers here say they are far more concerned with workplace changes that do not involve wardrobe, including salary caps, lower pay for new hires and stricter control of vacation schedules and sick leave.

The F.A.A. imposed the changes on Sept. 3, three months after it declared an impasse in contract talks. Most of the changes have had little effect on the public. But one in particular may have safety implications, controllers and some outside experts said. That is the ending of contractual protection against being kept working on a radar screen controlling traffic for more than two hours without a break.

The agency has been defensive about staffing rules since a plane crash on Sept. 1 in Lexington, Ky., in a case where the workload of the lone controller on duty violated policy.

Having just one controller on duty "degrades the safety net," said Pat Forrey, president of the National Air Traffic Controllers Association, "by not having another set of eyes and ears." Mr. Forrey and others make a similar argument about keeping controllers at their work stations in positions that require intense concentration for extended periods.

The president of the union local here, Michael Conely, said that with the number of controllers now scheduled, "you can't staff all the positions properly."

"You are on position longer, watching more airplanes, and it becomes a tired-eye syndrome," Mr. Conely said.

The aviation agency says that traffic is down in the Dallas region and that the goal is to "staff to traffic" and not to an arbitrary standard.

Controllers, who earn more than $100,000 a year, are too expensive to leave idle, the agency says, and nationally, it has a goal of gradually increasing each controller's workload 10 percent. The manager here,

Dan Gutwein, said controllers spent five and a half hours a day at their radarscopes, up from four hours historically.

In an interview, the administrator of the agency, Marion C. Blakey, said the goal of the changes was to make the agency run more like a business.

"You can't serve an industry that's largely teetering on bankruptcy and ask for a bigger slice of the pie," Ms. Blakey said last month in a speech. Explaining why the dress code matters, Ms. Blakey said there are "folks who push outside the norms of what is professional dress and what's professional behavior."

The dress code bans jeans, as well as T-shirts and shirts with big lettering and requires that controllers not appear "disheveled," rules that are not onerous, she said.

Ms. Blakey is trying to reshape the agency as two-thirds of the controllers face retirement in the next 10 years. That bulge is a result of extensive hiring in the early 1980's to replace thousands of striking controllers whom President Ronald Reagan fired.

The controllers, many with two decades in positions in which they are entrusted with thousands of lives, say the changes make them feel trivialized. A cartoon that controllers circulated by e-mail shows a radar screen with two converging airplanes and a picture of a man's sneaker, banned under the new dress code. The caption asks which should be the priority.

The agency says the controllers' attire must not "erode public confidence," although most work in windowless rooms, out of public view. The lighting in the radar room here is so dim that it is not easy, at a glance, to tell whether controllers are wearing the now-banned sneakers or sandals.

Mr. Conely said in an interview that the dress code was about more than clothes.

"It's absolutely a power thing," he said. "They want to show they're in charge and this is how we're going to do it and if you don't like it quit."

Some controllers are convinced that quitting is what the agency hopes they will do. Under the new rules, their replacements will earn substantially less. By the union count, 86 controllers worked here as of Jan. 1. Ten have retired, the union says, with some leaving early because of the new rules.

In the late 1990's, the controllers and the agency negotiated a national staffing pact that called for 117 controllers here. The agency disagrees on the current count and says many changes that grate on controllers are needed for scheduling flexibility.

The agency says that controllers are no longer guaranteed two consecutive weeks of vacation and that vacations can be canceled at the last minute. Controllers scheduled to work on holidays can be called off a few hours before and lose the holiday pay.

Management also gave itself the flexibility to keep controllers on their scopes for more than two hours. Two hours is still the goal, but controllers can no longer file grievances if they are there longer.

A former controller, Craig Carlson, now a co-director of the Air Traffic Control Program at the University of North Dakota, which provides initial training in air traffic control, said, "When it's really busy, it gets really taxing on you if you are sitting there for a full two hours."

Referring to tougher schedules for controllers, John Cox, an aviation safety expert and a former safety official at the Air Line Pilots Association, said, "This is exactly what the airlines have done with pilots."

"The airline pilots today are flying more hours, flying more days, and they are being more efficiently scheduled, and fatigue is an issue for them," he said.

A longtime controller here said what the agency had done with the changes "feels awfully retaliatory." The controller, who insisted on anonymity because of fears that managers would take offense, and others did say that some people had, in fact, abused sick leave, but that the remedy should not be rules that made everyone's lives miserable.

Nonetheless, the controller said, he loved his work and would not quit despite significant pay cuts and the difficulty in planning vacations.

Mrs. KELLY. If the picture in that looks familiar, it is because it is from the control tower in Stewart Airport in my district, which you visited last month. The article contains details on the fast plans to cut its work force by 10 percent. As many of our control facilities are already understaffed, this goal concerns me and my constituents a great deal. I recently heard a very troubling story regarding a controller at the New York TRACON. The controller was on medical leave and was doing other duties that were assigned. He was told by his supervisor to stay home, but to call every morning to see if the facility needed him. The controller called every morning at 6:00 a.m.

On a day when his supervisor asked him to come in, he arrived at 7:00 a.m., one hour after his call-in time. However, because and you heard that the—he was called at 6:00 a.m., but because he wasn't there at 6:00 a.m., his normal start time, no flight progress strips were being distributed to radar position, and when the radar positions were combined, an aircraft was overlooked and subsequently entered New York air space without a prior coordination.

This story is unfortunately indicative of not only the effect on safety that the new staffing rules have, could potentially have further. But it also shows how lowering staff levels may not necessarily be in the interest of best safety. New imposed work rules, the FAA—at the FAA, mean all of the memorandums of understanding that the controllers had with the FAA before this appeared, to have gone right out the door.

There is no one for the controllers to even talk to to express their concerns.

What I really want to do is talk to you, Mr. Dillingham. If this story is indicative of how many—how managers are using their new authority, and if lowering staff levels is going to mean less safety for our flying public, how do I answer that to my constituents and how do you answer that to me?

Mr. DILLINGHAM. That is a very tough question. I think that, you know, as was mentioned earlier in the hearing, that the negotiations were long and stiff, and there were lots of bad feelings on both sides between labor and management.

Mrs. KELLY. This isn't about bad feelings. It is about an instance where there was a problem.

Mr. DILLINGHAM. Right. I understand that, and what I am getting to is I think that it is going to take some time for labor and management to be able to work through these issues that were the result of the contract. It is early on, and there is still lots of unanswered questions, lots—my understanding is that FAA and the controllers have not fully vetted all of how the work rules are going to be put in place. And usually, when there is a situation that is so widespread as all of the facilities that FAA has, they will be implemented differently at different places, until there is some understanding about exactly how the rules should be implemented.

Mrs. KELLY. Sir, I am flying in and out of—using New York TRACON twice a week. A lot of my constituents are flying in and out more than twice a week out of the New York air space. If you need someone to be there as a controller, you don't call them at 7:00 o'clock in the morning because they are supposed to be there at 6:00 o'clock in the morning. I am very concerned that there is

oversight over this kind of thing. We need our air traffic controllers and we need them there for our safety. This has been acknowledged by the whole panel. But what I am concerned about is that there is some kind of an effective oversight going into place that is going to happen soon, not while we are working on it, because that is not satisfactory if there is a problem.

And so I am challenging you to come back to me with some kind of a plan that is going to focus on what kind of oversight we have to make this thing work. Since the contract was imposed, I think it is up to the FAA to work—to work with the air traffic controllers to make sure we all feel comfortable when we are flying in and out of New York TRACON space.

Mr. DILLINGHAM. I agree with you, and maybe Mr. Sabatini can probably add to whatever processes they have in place to make this contract work and the work rules work better.

Mrs. KELLY. Mr. Sabatini, do you want to address that?

Mr. SABATINI. Yes, ma'am. I will. First, I would like to say that we don't believe this was an arbitrarily imposed contract. There were a fair period of time for the contract to be negotiated, and I will say that over the course of about 5 years, it will save the taxpayers $1.9 billion.

Mrs. KELLY. Excuse me, sir. That is not my question. My question is—goes right to what I am looking for, I have 42 seconds for you to answer my question. So I would really appreciate it if you would talk to me about oversight and what you are going to do to try to make this thing work.

Mr. SABATINI. St. Louis is a perfect example where there was a negotiated agreement that said there had to be an authorized number of controllers at that facility. It had nothing to do with capacity or anything else. American Airlines pulled out of St. Louis and it would be foolhardy to have what would be considered, which are not in place any more, authorized positions. So what we now have in place is the flexibility for the FAA to do its job and put controllers where they are most needed to address safety in the most effective and efficient way.

Mrs. KELLY. Well, would you say that because this man was called at 7 o'clock because he wasn't there at 6:00 a.m. Which would be his normal start time and no flight progress strips were being distributed to the radar positions, would you say that that was an effective use?

Mr. SABATINI. I would—I will tell you that the absence of a flight progress strip is not an unsafe condition. There is information that is available on the aircraft from the transponder and the data block. That information is available. The controllers have the information they need to do the work they need to do.

Mrs. KELLY. My husband was an air traffic controller in the Navy. Never worked as a civilian, and I have been in the TRACON and I have talked to my husband. I watched him control airplanes from his—from his destroyer. And so I have been at this a long time. My husband and I have been married a long time. We talked about air safety. What I am concerned about here is that there was an aircraft that was overlooked and it got into New York air space without a prior coordination. That is worrisome, sir. That is a very congested air space. I need to know, and everyone in the flying

public needs to know that this kind of thing isn't going to happen. And we need oversight.

Do you have any kind of thing to talk to me about or can you come back at me and talk to me about what kind of oversights you are going to put into place so this kind of thing doesn't happen?

Mr. SABATINI. Well, let me clarify what you mean by oversight. You mean oversight by the IG or the GAO or oversight by the FAA?

Mrs. KELLY. You are running this show. The FAA is running this show. You shouldn't have to have us look at this oversight. If there is something like this that could result in an aircraft being overlooked that enters into a busy air space, I mean, some place like the Chicago air space. There ought to be some mechanism in place that the FAA—so that this kind of thing doesn't happen.

Mr. SABATINI. Well, there is a mechanism in place and——

Mrs. KELLY. It didn't work here.

Mr. SABATINI. Well, let me say that as I mentioned earlier in the day, humans make mistakes and what we are doing is building systems to catch errors like that. And that is what we are doing.

So I have the responsibility now for the oversight of the air traffic organization. I can tell you we are aggressively staffing up that organization and it will be fully staffed by the end of 2008, and we have programs in place to address those situations. But I will tell you, I am an active pilot. I fly this system. I can tell you that the system is world class and the effectiveness of our system is demonstrated every single day and when you look at the statistics that exist today, it is the envy of the world in terms of the incredible safe system that we have so there are mechanisms that are in place that address this.

Mrs. KELLY. Well, Mr. Sabatini, in my lifetime, which has been reasonably long, I have never found anything perfect yet. So I would hope that you would come back at us with—and you can just contact my office when you have something in place that will assure me that I can assure my constituents in the greater New York area that we are not going to have this kind of incursion happen.

Mr. SABATINI. I agree with you, and I certainly didn't say that the system is perfect. In fact, I will tell you that we have imposed upon ourselves a rigorous methodology which is a world class third party oversight of our organization, aviation safety and that is the ISO 9001, and it is founded on the basis of continuous improvement. That alone should say and tell everyone that we recognize that we too will hold ourselves to the highest standards and are subject to the rigor and discipline of such a system and such a methodology that will demand continuous improvement. And I will be happy to share more information with you about what we are doing for the oversight of the ATO as well as what we have imposed upon ourselves.

Mrs. KELLY. Thank you, sir. I am not impugning the FAA, because I do think you do a pretty good job. But there are glitches, there are problems and those definitely need to be addressed and this is an example of one.

I thank you for indulging me with a little extra time.

Mr. MICA. Mr. Chandler.

Mr. CHANDLER. Mr. Chairman, thank you. Mr. Sabatini, I am afraid, not surprisingly, I am going to bring you back to the Lexington tragedy. And I would like to ask you, I am a little bit concerned about this whole notion that the tower was not staffed appropriately. There was one controller there when there should have been two, as I understand it. And you all issued a verbal directive that there should have been two rather than one. One thing I would like to know is does the FAA generally issue verbal directives of this sort? Is that your policy?

Mr. SABATINI. The FAA manages its business through orders and other written guidance. Where there is information that needs to be identified to be further explained, it can be done in the moment verbally, and I believe that was what was done in that instance.

But I would also go on to say that even if there had been two persons in that tower, two persons would not have been in the cab. One would have been down in a room without windows looking at radar, radar which does not look at what is on the ground. It was for airborne purposes.

Mr. CHANDLER. I understand that, Mr. Sabatini, and I am not suggesting that this problem caused that accident. We are going to wait for the NTSB to—I want to ask Mr. Haueter some questions, but I know what the answer is: The report isn't done, so we are going to have to wait and we will wait until that gets done, and maybe we will have a shot at you. But I am sure you are going to have do a good job.

But Mr. Sabatini, this directive was put in place for a reason. I assume that you put the directive in place because you thought that it was good policy to have two controllers on that site for safety purposes. And the directive clearly wasn't followed, and what also concerns me is that you didn't know that the directive wasn't being followed until after the crash. So here we get into this same issue about oversight. Do you know whether your directives are being followed and shouldn't directives like this, aren't they important enough to be put in writing?

Mr. SABATINI. Well, it is in writing. In fact, the order 7110——

Mr. CHANDLER. Was it at that time? I mean, it is in writing now, I guess.

Mr. SABATINI. Well, the order has been a standing order and provides guidance on the staffing of those facilities.

Mr. CHANDLER. Then why wasn't that facility staffed?

Mr. SABATINI. Because it provides latitudes to the management to make determinations based on the needs at the time.

Mr. CHANDLER. So it wasn't really a directive. It was up to whoever is in charge there. I mean, it is either a directive or not a directive.

Mr. SABATINI. I want to make clear, sir, there is an order that describes generally how you manage an air traffic control tower. That order—that order is what stands in terms of the guidance for managers to use. There was a follow-up conversation based on an event in Raleigh-Durham and as a result of what that event was in Raleigh-Durham, there was a verbal conversation.

Mr. CHANDLER. With somebody—somebody in Lexington?

Mr. SABATINI. Explaining what was expected in terms of——

Mr. CHANDLER. Telling them to have the two people?

Mr. SABATINI. That the explanation was that there would be a person on radar and a person on—of course, obviously in the tower.

Mr. CHANDLER. And they still didn't do it.

Mr. SABATINI. But it still left room for interpretation.

Mr. CHANDLER. I mean, if you have a written directive and then you find out that that wasn't being followed, you know, that the Raleigh-Durham matter took place. And then you followed that up by saying that you need to follow this directive and they still don't follow it, at what point do you need to interpret that? I mean, that seems pretty clear to me. Were they directed to do it or not?

Mr. SABATINI. Well, I can get back to you with more specifics. As I want to say that I am responsible for this oversight of this safety, the persons who can address that more specifically can certainly be—we can arrange to have them meet with you from the air traffic organization.

Mr. CHANDLER. Do you know who was in charge of making that decision as to whether there were one or two people there in Lexington?

Mr. SABATINI. Well, ultimately, it is the chief operating officer, Russ Chew, is responsible for the air traffic organization.

Mr. CHANDLER. Has there been any discussion with who was responsible that maybe they should have made a different decision and followed the directive? Has anybody been reprimanded for it?

Mr. SABATINI. I don't have that information, sir.

Mr. CHANDLER. Well, could you get back to me with that information, please?

Mr. SABATINI. I certainly will do that.

Mr. CHANDLER. OK.

One other question, if I may, Mr. Chairman. Do you consider Lexington to be adequately staffed at this time?

Mr. SABATINI. We believe that given the requirements there for the traffic that is operating in and out of Lexington, that it is adequately staffed.

Mr. CHANDLER. Well, I understand that we are short three air traffic controllers in Lexington; is that not correct?

Mr. SABATINI. As I said, I can get you the specifics for that tower, sir.

Mr. CHANDLER. Well, I wish you had, given the importance of the Lexington tragedy, I wish that you had come with some of this information, some of this detailed information.

One other question and I will stop. You said that there are 14,500 air traffic controllers. Is that what you said?

Mr. SABATINI. Yes, sir.

Mr. CHANDLER. How many of those are fully trained and serviceable? All of them?

Mr. SABATINI. Well, I can tell you of course that represents people who have recently been hired but if you need a further breakdown with the precision and accuracy that I think you are asking for, we can certainly provide——

Mr. CHANDLER. I understand that it is a moving target but in general, is that number, does that number represent your average staffing level or have you just beefed it up recently with a flurry of new hires?

Mr. SABATINI. Well, it does of course include the 930 and will reflect the difference as we get up to the 1,100. But a percentage of those would be new hires and the larger percentage would be full performance——

Mr. CHANDLER. What percentage will be?

Mr. SABATINI. I can get you that.

Mr. CHANDLER. Can you get me a ballpark?

Mr. SABATINI. I can't, sir. I don't have that information.

Mr. CHANDLER. Thank you.

Mr. MICA. Mr. Pascrell.

Mr. PASCRELL. Thank you, Mr. Chairman.

Mr. Sabatini, thank you for your patience with all of us. And you understand and appreciate our concerns because our concerns are really your concerns. I know that. No one is questioning that whatsoever.

I am looking at your logic though in your testimony, and your logic is puzzling to me because you are almost saying that with less humans and we have humans who make mistakes, we have less humans who will make mistakes, that filters down through a lot of your testimony.

Now, the workforce plan that the FAA has put forth states that new procedures use that term, new procedures. And technology will reduce the number of controllers needed in the future. What are these new procedures and what is this new technology?

Mr. SABATINI. Sir, I will draw an analogy for you that has proven to be very, very successful in our system. If you go back to about the 1960's, we were operating aircraft with as many as five crew members in the cockpit and you had a captain, you had a first officer, you had a flight engineer, you had a radio navigator, and you had a radio operator and the navigator. Five people. Today the most sophisticated, the most sophisticated aircraft that man has been able to design and with greater capability is operated by two people: A captain and a first officer.

Mr. PASCRELL. Mr. Sabatini—I will let you finish but I want to go so I don't lose it. I am a slow learner, so I want to take a little bit at a time. If what you just presented to us is very true, less people in the cockpit and there are more people looking at radar screens. So the state of the art is followed up in the air and also on the ground. There are reasons and you are absolutely correct. So continue, please.

Mr. SABATINI. So continuing with the analogy, we now operate the most sophisticated airplanes with two crew members. The point being that we have used technology to enhance human performance.

Let me give you an example of the technology in Atlanta.

There is a new technology, that we refer to in our performance-based national air space that is called required navigation performance. It provides us with tremendous precision and accuracy for navigation such that with that kind of precision operating out of Atlanta, and we have been doing this now for almost a year. Delta, the major operator out of there, claims because of that precision, $38 million a year savings just in fuel alone. As far as the air traffic controllers are concerned, that technology has enabled the reduction of the voice communications between pilots and controllers

by as much as, and I will be very conservative, 40 percent. That has allowed controllers to do what they prefer to do and that is observe and manage traffic flow and that is the kind of technology that we need to take and bring into place with our next generation air transportation.

Mr. PASCRELL. Thank you. And you do know and you know it better than I do, about the basics of working in the control tower and that is—there is reading and then there is operation. In every place that I have seen in FAA literature, that must be designated and defined so that they are not confused, so that there are carefully deliberated responsibilities. It is an absolute horrific absurdity as Woody Allen would say, that anybody could even hesitate about their only being one person in the control tower in Kentucky.

Now Mr. Dillingham, you responded in your testimony, which you didn't read, you couldn't read the whole thing obviously. You did say that on page 13 that in addition, although general aviation accidents, on a whole, decreased in recent years, general aviation safety is also a concern because the large number of fatal accidents every year, an average of 334 fatal accidents since the year 2000.

So we have reduced the number of accidents and that has still remained the average number of fatal—of fatal accidents. Furthermore, you brought other industry sectors such as cargo operations and on demand air balances have poor safety records as mentioned earlier. So I notice you are double reverse before in reaction to—in response to the gentlelady from New York, and I understand. I—I am a decent human being, and you shouldn't have been asked the question. In fact, isn't that your job, Mr. Zinser, in your position as inspector general, and you know, there is 50 inspector—over 50 inspectors general. Half of them get appointed by the President, and the other half get appointed by whoever the Secretary happens—happens to be within the Department. You have a very specific obligation and responsibility which you already know about.

But in case anybody who doesn't understand it of overseeing what happens in the very department that you are assigned to. And I have got a question to ask you. You state in your testimony that the FAA needs to address the issue of air traffic controller attrition and staffing at each facility. That is what you stated in your testimony, correct——

Mr. ZINSER. Yes, sir.

Mr. PASCRELL. Now it is my understanding that FAA recently released an update of its 2000 air traffic controller workforce plan. In the IGs view, does FAA's current work force plan provide a comprehensive roadmap to ensure that we have a sufficient number of controllers at each facility? If you want me to repeat the question, I will. If you understand the question, I would like a very precise answer.

Mr. ZINSER. Yes, sir. I think I understand the question. You are referring to the workforce plan that FAA just submitted in August.

Mr. PASCRELL. That is correct.

Mr. ZINSER. In our view, it is missing two critical pieces. I think FAA has some explanation for why those pieces are not in the report, but, in our view, it is missing the cost of hiring the number of air traffic controllers necessary to make up for the attrition, and it is also missing facility-by-facility numbers of how many air traf-

fic controllers are necessary. We have been reporting on that for a couple of years now, and I think the numbers are still needed.

Mr. PASCRELL. Mr. Zinser, thank you so much.

There are two things I would like to leave with the committee, if I may, with the Chair; and it is this.

We are not only talking about attrition. Attrition is numbers. I am talking about the experience that leaves the box.

You have a similar situation, Mr. Chairman, right here on Capitol Hill when we force police officers and our bodyguards—whatever you want to call them—when they become 57 years of age to get the heck out of the system. We are losing a tremendous amount of expertise, which is being lost in the control towers when you see the kind of training that perhaps we should be giving but we are not giving.

There is another problem. The amount of overtime of the police officers here on Capitol Hill is astronomical. The problem is no one is being held accountable as we push people out of the system. And there is a reason for it. We push out the higher-paying folks. We bring in those at the basic salary.

I hope that we are going to look very carefully about these so-called, Mr. Sabatini, these so-called new procedures and new technologies. We all appreciate—we are pretty familiar not with all the technology, but we are pretty familiar as to the changes that have occurred in the airline business, in the airplane business and the operations business in the past 5 or 6 years. We have a pretty good, general idea of that. Not as good as you, but, you know, some latitude and longitude.

But, Mr. Sabatini, it has got to be very, very clear that you are going to have to have a reckoning, I am going to have to have a reckoning when we look back at this every year. We have oversight. Mr. Zinser has oversight. GAO will continue to write——

Because there is a lot of other things you said in here, Mr. Dillingham, I don't have time to spend on now. You chose not to read that, and you are going to have to make this situation much better, and we are going to make sure that you do that.

It is unacceptable as far as I am concerned. I can't speak for Mr. Chairman. It is unacceptable, the answers you gave him, about what happened in Kentucky. Either it is a directive or it is not a directive. Who made the decision that there is only one controller? You must answer that question. We have a right to ask that question.

And your response was, I will get back to you? Who are you talking to here? You are talking to those people who have been duly elected—and I know when you said—and you weren't here before when I mentioned the fact—with the great work that you have done, Mr. Chairman, in terms of the explosive detection, I mean, that is on the front page of many of the papers today. And the fact is, if we don't do it, nobody is going to do it, and it is as simple as that.

What he asked is a very basic question, and we got gobbledygook, and you know it just as well as I do.

Mr. MICA. Well, I thank the gentleman.

And did you want to respond? Or Mr. Bishop is waiting patiently.

Mr. SABATINI. I would just add one piece, that we have approved many waivers that allowed folks to stay on beyond age 56—that is, air traffic controllers—and we just use a very reasonable amount of overtime to accommodate the needs as the need arises.

Mr. PASCRELL. Mr. Chairman, we are proud Italian-Americans. We talk straight. You are not talking straight right now. I know you are a straight person. And you didn't answer his question. And you know that in your heart that you did not answer his question. That is unacceptable.

God forbid that today there is another situation in another part of America and there is only one controller there, OK, and there is no waiver, OK, and he has a fatality. If he dies, he can't come up for air. A thousand things can happen when you are a human being. What are we going to do about it? Are we going to say, I will have to look at the circumstances and get back to you, OK?

Mr. MICA. Mr. Bishop, waiting patiently, you are recognized.

Mr. BISHOP. Thank you, Mr. Chairman.

I want to thank you and the ranking member for allowing me to take part in this hearing, even though I am not a member of the subcommittee.

I have several concerns about the relationship between the FAA and the air traffic controllers, but several of my colleagues have addressed those. So I am here to talk about—or ask questions about other issues.

Mr. Sabatini, I would like to ask you about center wing fuel tanks inerting systems. It was off of East Moriches, Long Island, which is in my district, that Flight 800 crashed into the Atlantic in July of 1996, more than 10 years ago.

The NTSB rather quickly determined or at least surmised that the cause of the crash was an explosion in the center wing fuel tank. They made their first recommendation that there be some type of flammability mitigation system installed in December of 1996. They then added that recommendation to their so-called most wanted list in 2002, and then I offered legislation in October of 2005 that has actually attracted a fair number of cosponsors that would require the installation of some flammability mitigation system in fuel tanks.

The FAA offered a proposed rule in November of 2005. So about nine and a half years after the crash and after the initial recommendation from the NTSB. It is now September of 2006.

So I guess my first question to you is, why does it take nine and a half years for the FAA to address a safety issue that has been brought to them both by human tragedy and by an NTSB investigation and recommendation?

Mr. SABATINI. I agree with you, sir. That was a tragic event and a terrible loss of life.

But when you go back in time and look at the actions that the FAA has taken, we immediately introduced a special Federal aviation regulation, S–488, to look at what we thought could be the identification of possible failures in wing tanks in terms of the ignition sources. But we all know that just the identification of ignition sources is not sufficient, and we agree with you that fuel inerting is an important direction to take and a solution that is significant in terms of preventing future types of accidents.

But, at the time, the only technology that existed in terms of inerting was what the military had; and it was very heavy, very expensive and not very reliable for application and commercial aviation. The FAA took it upon itself with some industry help in doing—in research and development at the tech center in Atlantic City and devised a very reliable, very effective and very cost-effective lightweight fuel inerting system; and that is what has taken time.

R&D was very challenging. It was not an easy thing to get to, but the good news is we are there today. We have proposed a rule, as you have acknowledged, and we are dispositioning the comments as we speak, and we expect that to continue forward in the rule-making process.

Mr. BISHOP. Thank you very much for that.

Let me just—the rule-making period or the comment period—pardon me—is now closed.

Mr. SABATINI. Yes.

Mr. BISHOP. I have two questions. One, when do you think you will be issuing a final rule? And, secondly, can you outline for us briefly, because we are going to run out of time, what are the principle arguments against installing these systems that have been—that have come forward in the comment period?

Mr. SABATINI. There are very sophisticated and very knowledgeable organizations that have challenged the FAA on the logic to even go forward. So we are working to address that. And that is not just a simple yes or no kind of an answer. It is a very science-based kind of response which is very challenging. But we are confident that we are going to be successful; and, as I said, the kind of challenges that we are getting are on cost and challenging the science behind what we are saying is an effective system.

Mr. BISHOP. When you say you are confident that you are going to be successful, are you suggesting that you will ultimately issue a rule that will require the installation of these systems both in existing aircraft and in new aircraft?

Mr. SABATINI. I am confident that we will put out a rule that will require a flammability reduction means, and what that really says is that we are not going to specifically mandate that it be fuel tank inerting but the only solution to get you to where we want you to be to meet what we call into rule of these performance standards is only to be achieved by fuel tank inerting. So you can come up and say we have an equivalent means of achieving that same level of protection, and we would accept that. So that is what the rule is going to require.

Mr. BISHOP. OK. And just one last question. Thank you very much for that. About when do you think you will issue that rule?

Mr. SABATINI. September of 2007 we expect to have the final rule.

Mr. BISHOP. OK, so a year from now.

Mr. SABATINI. Yes, sir.

Mr. BISHOP. So that would mean a 2-year period from the time when you began the proposed rule-making process.

Mr. SABATINI. Yes, sir.

Mr. BISHOP. Is that normal or is that a rather extensive period for a proposed rule to alternately become a rule?

Mr. SABATINI. It depends on the complexity of the rule. This is not an easy one, sir.

Mr. BISHOP. OK. Thank you very much, sir.

Thank you, Mr. Chairman.

Mr. MICA. Thank you.

Now waiting patiently, not a member of our panel, but we welcome Ms. Ileana Ros-Lehtinen.

Ms. ROS-LEHTINEN. Thank you very much, Mr. Chairman. I am not a member of the subcommittee nor the full committee, so I greatly appreciate this opportunity.

My local hometown paper, The Miami Herald, recently published a series that they entitled ″Deadly Express;″ and it exposed some very troubling facts and figures regarding the aviation cargo industry, focusing on smaller air cargo planes.

The series exposed many of the problems that are related to this industry, and they reported a staggering 60 crashes and 80 deaths over a 5-year period. It also revealed that cargo pilots are frequently flying very long hours with inadequate flight training themselves. So with less training than commercial air pilots and with tight deadlines imposed upon them by their business entities, they frequently fly in weather that would normally ground commercial aviation. Inspections and maintenance of these smaller air cargo planes are not regulated by the same standards that apply to larger carriers, and this frequently leads to ill-maintained and faulty equipment.

So all of these factors—older planes, tight deadlines, lax inspections, less pilot training, bad equipment, insufficient safety features—all of this combines to create a very dangerous work environment that fails to protect pilots of smaller air cargo carriers.

I would encourage our panelists to closely examine the regulations impacting our small air cargo industry in order to make our skies safe for pilots as well as citizens. As the Department of Transportation Inspector General review points out, there is a large loophole in the inspection of small air cargo planes. Small air cargo planes are not mandated to undergo the same rigorous inspection regimes as other older planes, due to probably monetary concerns.

Air cargo planes that are more likely to crash are 26 years old, three times older than commercial passenger airline planes and had fewer safety features. As the FAA mandate states, there should be one level of safety.

So, with that, I would like to pose three questions to the panelists.

Why don't the same safety standards apply to all air cargo operators? Is it a financial difficulty tied to an inspection? Why is this standard less for small air cargo operators?

Secondly, has the FAA or the National Transportation Safety Board conducted any studies or investigations to determine what can be done to reduce the incidence of accidents among small air cargo operators?

And, thirdly, if air cargo has the highest frequency of crashes among commercial aviation, what is the FAA or the NTSB doing to correct this trend?

I thank the Chairman for the opportunity.

Mr. MICA. Well, did you want to divide—you had questions.

Ms. ROS-LEHTINEN. Whoever would like to.

Mr. MICA. Mr. Sabatini, maybe you could take the first.

Ms. ROS-LEHTINEN. Thank you.

Mr. HAUETER. Certainly we determine probable cause on every accident involving cargo flights. It is a difficult area. One issue is that records aren't kept in terms of number of flight hours, so it is hard to say whether the rate has really increased for this group. Certainly the numbers have gone up. We don't know if the rate has really changed.

We are aware of the standards; and if we see a trend, definitely we would issue recommendations regarding those type of aircraft.

Ms. ROS-LEHTINEN. So what you are saying is that you don't see a trend yet or you haven't done any studies to see if there is a trend? A trend being there are more crashes. The planes are getting older. There are no records that are truly being kept. What is the trend? That it is not there or you haven't done the studies to see it?

Mr. HAUETER. We have not done a specific study on demand part 135 cargo operations. We have looked at a number of accidents, and the number has increased. However, we don't know whether the number of flights have increased.

Taking another look, we have seen that most of the accidents, so far, are not systemic in nature, but operational errors. If these aircraft are driving piston-driven engines and the pilots have lower flight times.

Mr. SABATINI. I would also add that we are working very closely with that community. They are represented, as you well know, by associations—RAACO being one of them, Regional Airline Association for Cargo Operations—and we have devised a number of interventions that can help address that. But I would tell you that what is not sought out is the accuracy with which newspapers report these accidents. It is not all about poor equipment, which I would take issue with, or poor maintenance or lack of oversight.

I would tell you that we can certainly improve. We look at risk areas. This seems to be a risk area. We are going to continue to focus on addressing cargo operators.

But you also need to know that there are instances, and I will use just one, where pilots decide for their own reasons to take an aircraft that is not certificated to fly—not certificated by the FAA to fly into known icing conditions but intentionally conduct an operation with that aircraft in known icing conditions, and that led to a disaster. So you need to sort out those kinds of accidents that are human error, those kinds of things, and you begin to see a slightly different picture.

But I want to assure you that we take any accident very seriously. Any loss of life is a tragic event, and I can assure you that we will follow up with the cargo operators and have been and have put in place a number of interventions.

Ms. ROS-LEHTINEN. And you are working with the agencies and the organizations that these cargo operators belong to in order to have them suggest these more stringent regulations? Or is it something that we are looking at as mandated?

Mr. SABATINI. Well, the regulations already exist. So we have direct responsibility for the oversight of the air carriers, whether they be from the FedEx and UPS level down to the smallest air cargo operator. So we have direct responsibility.

But we also know that we can get very effective introduction of the immediate corrective actions collectively across the board by working with their associations, and they can voluntarily agree, and you can in the moment get the sorts of actions or interventions, you might say, that can be put in place right away, versus going through the rule-making process which in our form of government and our country it is checks and balances and it does take time. So we work quickly and actively with the associations and the operators.

Ms. ROS-LEHTINEN. Did you want to comment?

Mr. ZINSER. Yes, Congresswoman.

The Chalk's Airways crash I think brought a lot of attention to the issue of aging aircraft. In fact, the report that we issued was issued after we received a request from Mr. Oberstar to look at what has transpired on aging aircraft. We did find that there are several categories of aircraft that are exempt from any aging aircraft review or program. There are even categories of aircraft that are required to undergo some inspections but not what is being called supplemental inspections to get a more detailed analysis of fatigue on aircraft.

One thing FAA has done is put out a rulemaking on widespread fatigue on aircraft, and my understanding of what that rule is designed to do is establish life limits for aircraft. You have parts on aircraft that are life limited. You can only use them so long. But there really are not any aircraft that are life-limited. We can keep flying them, you know, for a long time.

So I think part of the design of this rule is to try to get to what is the life-limitation on an aircraft and sort of address the issue. The Chalk's Airways aircraft was 58 years old. How long are we going to fly some of these aircraft? The manufacturer was long gone. The airline was making its own parts to keep the plane going. So I think the FAA is trying to address some of those issues.

In terms of the exemptions on the current requirements, I think that FAA should do some more research on exactly what aircraft and what operations are exempt. The preliminary recommendation coming out of the NTSB on the Chalk's Airways crash is for FAA to expand their rule to cover some of these aircraft, and I think that deserves a pretty close examination.

Ms. ROS-LEHTINEN. Thank you so much.

Thank you, Mr. Chairman.

Mr. MICA. Well, thank you.

I have some questions I want to go back to. Some of the issues that have been raised here have also raised some questions with me.

Mr. Sabatini, we have been working under an old FAA air traffic controller contract. In the new contract—and some of that has just been released; I really don't know all the details of what has come into play—but does anything come to mind, specifics come to mind in the new contract that would give better flexibility and placement

of personnel, utilization of personnel, in staffing or any of the issues that have been raised here today?

Mr. SABATINI. I think one of the greatest benefits, not only the reduction of costs but—is the flexibility to bring controllers where they need to be. The example I used earlier, St. Louis, where American Airlines pulled out of there to stay with what was a negotiated agreement of authorized—that had no relationship to what is actually in terms of activity at that airport, authorizations no longer in place, but rather staffing standards that address the need for that particular activity at that airport. So it is a very powerful tool.

Mr. MICA. So you think that you will have more flexibility to get people—can you get them there quicker, too, under this new contract?

Mr. SABATINI. You can easily move them about the countryside. You can be responsive to the changes.

Mr. MICA. So that is a change.

You know, Lexington raised a bunch of issues. I don't want to get into the specifics of the crash, but FAA did raise this specter publicly, or issue publicly, of putting another air traffic controller at that location. And I heard several things. One was that the position had been approved in January or a year earlier. Do you have that—you said you didn't have all the time frame. Do you know?

Mr. SABATINI. I don't have the details from——

Mr. MICA. But it had been that a position had been approved earlier.

Mr. SABATINI. Yes, it was.

Mr. MICA. And I was told at one point that a trainee had appeared on the scene because—and that was sometime in April or May or—what I am trying to get here is we were cooperating under an old contract, tough to move people around. I am wondering, is it an inordinate amount of time—you heard the question occur over here that, you know, you did not have that position filled or you gave the discretion to a manager and it wasn't filled or was somebody coming or on their way there to fill the position. I had heard that.

Mr. SABATINI. I need to preface that by saying I need to be accurate in what I say, and I will follow up to you with precision with that information, but I believe a new person was——

Mr. MICA. Obviously, it had been approved, the position, earlier. It wasn't totally filled at the time of this incident, or was it?

Mr. SABATINI. I will turn to someone who may have that information, if you will just bear with me for a moment.

Mr. MICA. OK. A developmental was on site and had arrived in the summer. That was an individual—see, now that is what I had heard. An individual had arrived, was on site in the summer but wasn't fully—full-fledged air traffic——

Mr. SABATINI. Full performance.

Mr. MICA. What?

Mr. SABATINI. Full performance.

Mr. MICA. Full performance, OK. Again, I go back to the contract, the provisions of the contract. You are saying that was the old contract we are operating. The new contract went into effect what a few weeks ago or what?

Mr. SABATINI. Yes, sir.

Mr. MICA. So things could change in that regard as far as us being us able to place people on an expedited list.

Lexington also got me to think about—and maybe we should—I might ask GAO, I might ask the Inspector General or other people to look at this. But when we put someone at an air traffic control tower like Lexington, and the reports I got was the average traffic on a weekend night was six to eight flights, is that the best utilization of staff?

Now I know FAA had looked at closing down some towers from—or not having them manned from midnight to, say, 5:00 a.m. or something like that. Then at Lexington, like on a Sunday night—but Monday morning traffic picks up at 5:30, 6:00—or I guess 6:00 is when they had a couple start taking off.

Would it be better to go back and look at the staffing on the model of not having somebody there—and I know you tried that and some of that was rejected. Is that the case?

Tell me again where we went with that program. You looked at—I know Russell did, and we got a lot of pushback. So we put people in some places where we may not have needed people because of pressure.

Mr. SABATINI. As you know, Mr. Mica, I am responsible for the aviation safety organization, and I am not the person to get into that kind of detail. We can certainly arrange to get you a briefing.

Mr. MICA. But, again, from a safety standpoint, would it be better to utilize your person out where you have the volume and the traffic or should we—is this something we should be looking at from a safety standpoint?

Mr. SABATINI. Well, from a safety perspective, sir, I would say that the flexibility we have in this contract will enable us to be responsive to changes in the system and put the appropriate number of people where they need to be.

Mr. MICA. This raised another question of safety and utilization of personnel. If I put one person at Lexington downstairs, as was described here, he is not really a reliever for the guy upstairs, is he? Is that part of his responsibility? Do you know?

Mr. SABATINI. That would not be part of his responsibility.

Mr. MICA. Now if I am putting somebody downstairs and that guy's responsibility is to look at a radar screen and he is not looking at it, this made me think we need to be looking more at consolidations where I can put that—if that person doesn't have to be in that location but could be in a location where we could have a consolidation, it seems like you would have redundancy and backup in human personnel to be on that screen. This guy has to go potty or he has to excuse himself for something, and I got one guy—that is not—I don't have a lot of redundancy in the system. Wouldn't it be safer for some consolidations where you can have that redundancy?

Mr. SABATINI. I believe it would be, sir, and that you would have the leverage of using resources in the way that they combined and you get a synergy out of that.

Mr. MICA. I think we are going to have to find a way—and people have come to me about a base closure type or BRAC kind of thing to do some of this. Because every time we want to move one air traffic controller, it is like we are changing the world as we

know it. You get the political pressure to call on Members of Congress. It doesn't seem like a very efficient way to run the railroad or the air traffic control system.

OK, now, in April of 2000, before I became chairman, we had a GAO study done—was it GAO? I am sorry—IG study done. It said contract towers continue to provide services that are comparable to the quality and safety of FAA-operated towers. Users remain supportive of the program. The program has been successful in providing air traffic control services at low activity airports at lower cost than the agency could otherwise provide.

Now that showed that—and low activity—I guess with Lexington or that kind of airport—be a low activity or—a contract tower—and I haven't heard a lot of problems with staffing. It seems like the private sector is able to staff people in a little bit more expedited fashion. But I will give you the discretion you have under the new contract to do some of that to see how that works.

But that was 2000, and when I cited this I got hammered by folks that this was, oh, they didn't ask the right questions. So when I was chairman in September of 2003, we had GAO ask more questions that were wanted to—folks said needed to be asked. And they said this is, quote, in terms of safety of operations as measured by operational errors slash deviations, both the contract towers and the FAA staff VFR towers fell well below FAA's 2002 overall average of 6.7 operational errors for every 1 million operations handled. We found that the contract controllers met qualification requirements, received regular training, and users were satisfied with the services they received at contract locations.

Mr. Zinser, so they said they were safer, at least from an operational standpoint to operational errors and deviation. And, actually, I think we also found they cost a lot less. Is that correct?

Mr. ZINSER. Yes, sir. Each time we looked at that program, the results would be the same.

Mr. MICA. So you would recommend, too, from that study some 60 towers be converted to that where we could save money, probably hire more air traffic controllers someplace else, probably have more management, flexibility in meeting the needs of a small airport. So it seems like we are playing a little bit of a game where we have facts and statistics that we could better utilize our personnel from a safety standpoint. And this hasn't been measured once. It has been measured several times. Mr. Zinser, am I reading—taking something from this I shouldn't?

Mr. ZINSER. No, sir. I think you are reading it correctly.

Mr. MICA. Mr. Sabatini?

Mr. SABATINI. I would agree with that as well.

Mr. MICA. So I think we really need to look at what we are doing. I mean, this has raised—you know, it is horrible. Forty-nine people lost their life in Lexington, but Lexington may send a message that we need to look at the safety and application of our personnel and utilization of personnel with systems and programs that make us safer; and the ironic thing is the thing even costs less for the taxpayers when instituted and we get that management flexibility. Then the consolidation of some of these locations we need to look at for redundancies in the system.

We also had—I heard the outage issue, and that does concern me. We did have a briefing before, and I don't—that was an accidental power outage that was raised by one of the members. That was a safety concern.

Now redundancy was mentioned by both Mr. Sabatini and Mr. Hayes and also training and protocols that the pilots should know. That, however, still could pose a risk, having some of these facilities down, maybe in our larger locations. Is anybody on the panel aware of where we may stand in power redundancy? I mean, nice to have air traffic controllers sitting in front of screens and directing traffic and all this electronic equipment, but the failure to have power redundancy, what have you got on that, Mr. Sabatini?

Mr. SABATINI. I would tell you that there are backup systems throughout the ATO in their structure. What happened there was human error again. It was a mistake. It was accidental.

Mr. MICA. But there was no backup for that human error.

Mr. SABATINI. No, because they actually switched over to the backup.

Mr. MICA. OK. OK. Mr. Zinser, did you have something?

Mr. ZINSER. Sir, I do not think we have a lot of data on how many outages occur in situations similar to what was reported here this afternoon. I think there have been some locations in the recent past where there have been outages but I do not think there are data where it is a widespread issue.

Mr. MICA. OK. Well, that concerns me from some of the incidents I have heard, and I think that is something we need to keep an eye on to make certain we have that capability.

Anybody recommend—OK, based on what you see, what you have heard, you are all experts on safety, is there any change that we need to make in statute for any reason that you are aware of at this point in time and space that would improve safety? Is there something, a legislative change, something you can't do by rule or your action that you already have with your current authority?

Mr. Sabatini, anything you think we need to address legislatively?

Mr. SABATINI. Sir, as you know, we are going through reauthorization; and we certainly have been thinking——

Mr. MICA. Anything you can think of in safety you are lacking? You have all the jurisdiction, the tools you need to proceed.

Mr. SABATINI. Yes, sir. Yes, sir, we do. There are some minor things.

Mr. MICA. Dollars that are missing, but you don't get into that business.

Anything you can think of Mr. Haueter?

Mr. HAUETER. Well, we don't have regulatory authority, obviously, but we continue to have your support of our recommendations to help push them.

Mr. MICA. We changed where we used to put so many recommendations on the shelf that they are no longer just left on the shelf. They are brought back up.

Mr. HAUETER. We appreciate that, sir.

Mr. MICA. Is there anything—now you are—and we apologize. I have tried to move your reauthorization. I am hoping we can get

it next week. That would be real fun. I would have an NTSB—but anything there in the wrong direction, right direction, missing?

Mr. HAUETER. From the NTSB point of view?

Mr. MICA. Yeah.

Mr. HAUETER. Well, certainly we could use more staff, sir.

Mr. MICA. Oh, OK. I am just teasing. Anything else legislatively?

Mr. HAUETER. No, sir.

Mr. MICA. Mr. Dillingham?

Mr. DILLINGHAM. No, sir.

I agree with Mr. Sabatini. I think we have adequate tools. Those tools need to be played out at this point in time before additional legislation should be considered, we believe.

Mr. MICA. Mr. Zinser?

Mr. ZINSER. Mr. Chairman, we prepared a lot for this hearing, but we did not prepare for that question. To be honest with you, I really cannot think of a specific issue where legislation is needed. I think there are a lot of rulemakings under way that if they do not move, you may want to consider legislating them, but, at this point, I would have to say I do not have a specific item.

Mr. MICA. Now, one question that was raised by several members was this new—this new trend towards outsourcing repairs, maintenance. It appears, of course, that is going to continue; and everybody believes we have the current authority to handle that if we want to, OK? Nothing has to be legislated as far as the standards or requirements for aircraft that fly in U.S. airspace and carry domestic U.S. passengers? No?

OK, I think I have covered all the remaining—not all. I have additional questions that we will be submitting for the record. So Mr. Costello moves that we keep the record open for a period of what?

Mr. COSTELLO. I do indeed.

Mr. MICA. I will give you all the time I want.

Mr. COSTELLO. I so move for a period of 2 weeks.

Mr. MICA. Without objection, so ordered.

One other question. I should know the answer to this as Chairman, but, actually, we don't do the—the FTEs, are there FTEs for air traffic controllers set by Congress, by the appropriators? Does anybody know?

Mr. SABATINI. I will ask.

Mr. MICA. FTEs.

Mr. SABATINI. We don't believe so, sir. I will get you that information.

Mr. MICA. See, because I want to know—now, you told me—and the other question we have—we have got to look at here is the determination of how many air traffic controllers are sufficient, how many inspect—I think the inspection function is very critical to this whole process. And there are a number of other positions, professional positions, that must be staffed. And you know that some of the downsizing we have done, how I have expressed my concern that we can't even get near the margins on these things.

This brings up the question of how do we decide what is enough as far as coverage for air traffic controllers, inspectors, other key positions? Tell me how we do that now within this regime, and then if FTEs are mandated by Congress, then—and I guess they are for the rest of FAA, I would imagine.

Mr. SABATINI. They certainly are for the safety organization, Mr. Chairman.

I would tell you that, as I mentioned earlier, our first priority is continued operational safety. We will never compromise safety. But as we assure that we deploy our personnel to address the number one priority, it shows up in terms of not being as responsive to the applicants who wish to receive the services of the FAA for the certification of an engine, a component or to be certificated as an air carrier. So that is where it shows up, and what you see is a delay in getting to those folks.

Mr. Costello brought up the foreign repair stations. I can tell you that we have a pending list of applicants, as many—I believe the last figure was about 94 pending applicants for certification, which we will not certificate because we know we cannot add 94. So what shows up is the inability to be responsive to those who wish to be certificated.

Mr. MICA. Again, how—are you, Russell and Marian sitting in a dark room somewhere and saying—you have a formula in all of that to say, 14,670 controllers, that is your—that was your target. How did you reach that? Maybe you could just elaborate a minute on that process. How much is adequate? Who is making that decision?

Mr. SABATINI. Well, we respond to what we can anticipate. There isn't a barometer for us to say, well, this year we can expect X more people applying for what we would provide as a service for certification. In fact, during bad economic times you will find that that decreases; during good economic times, as we see today, we have an increase in the number of applicants.

But specifically for our organization, Mr. Chairman, as you know, we are working with the National Academies of Science who are working with us to develop a staffing standard for the ABS organization. I do know that there is a staffing standard that has been developed on behalf of the ATO, and while I don't have that document here, and I am certainly not the person with the kind of detail to address the ATO in that kind of detail, we certainly can——

Mr. MICA. —responsibility in charge of safety? Again, I am trying to get a handle on how we say that 14,670 is the adequate number to service all of our towers and responsibilities.

Mr. SABATINI. Well, sir, I would say that the evidence is quite clear. We will acknowledge today that this is the safest system in the world, and that is the objective evidence of good work being done. So we are in the throes of, as I said, addressing the staffing standard.

And I would also say that the air carriers today are providing us with one of the safest systems in the world, and we don't regulate them in terms of how many people they need to have to conduct safe operations, except in those areas where it is obvious. Well, if it is a crew of two in an airplane, you have to have two flight crew members or where flight attendants are required for a certain number of seating capacity. But as far as how to operate the air carrier, we do not specify how many people they need to have to safely conduct the operation. The output is the objective evidence, and that is what we look at.

And it is the same with us. Right now, we don't have a formula. It is a complicated formula. It is no different than what you have heard about the air traffic organization.

Mr. MICA. Drafting—again, you have got a whole new set—new contract. Are you telling me this is in transition and you are feeling your way, so to speak? But I mean—or is there some formula I can address? Is it requests from the managers of towers across the country?

Mr. SABATINI. Well, I think the transit organization—that formula already exists. As I said, I can provide that to you, but I don't have it myself personally today.

Mr. MICA. Anybody else want to comment on the adequacy of the current——

Mr. ZINSER. Sir, your question is a central question that FAA has to deal with. What we have been recommending is that FAA come up with a standard, facility by facility. There are facilities out there right now, for example, where the allocation from FAA headquarters is a hundred controllers more than what they have on staff right now, and they are operating fine. And the overtime is not exaggerated or inordinate either.

So what we are recommending is that they narrow that gap—even if it is just a range at each facility of how many controllers they need. What I was just told today is that FAA managers have done a facility-by-facility bottom up estimation of how many controllers they need at each facility. Those are not published, but they have them. They have asked the MITRE Corporation to come in and validate those numbers and help them come up with a facility——

Mr. MICA. Do we know where we are on MITRE's validation? And, again, all this would be new, because we are in a new contract, sort of a new year.

Mr. ZINSER. My understanding is that they have begun with the enroute centers, but I don't think that is completed.

Mr. MICA. The other thing, too—and I think Mrs. Kelly is gone—but as I recall when I visited there—now she said there is a reduction in air traffic controllers, but there is also reduction in air traffic. Which means you have sort of a floating requirement.

I mean, if you have somebody like Independence pull out of Dulles—I don't know how many they had at Dulles, but you take out—what did they have? 350 flights a day or something? It was just a phenomenal amount. They chopped that in half.

Under this contract, you have the ability now to move those people to someplace else or——

Mr. SABATINI. That is absolutely correct.

Mr. MICA. —they just sit there and collect the salary.

Mr. SABATINI. They are. You are absolutely correct. With this contract, we have the flexibility to move people where they are needed.

Mr. MICA. I want to see the MITRE——

Mr. ZINSER. I am told that it is expected in draft in the enroute centers by the end of the year.

Mr. MICA. I hope to be here as a member.

Mr. Costello.

Mr. COSTELLO. Thank you, Mr. Chairman. I hope you are here, too, sitting where I am.

I don't have any further questions, but let me just make a point that in September of 2003 the GAO made some observations concerning the issue of contract towers and looked at the issue of safety, and I would ask unanimous consent Mr. Chairman that we enter that GAO report into the record.

Mr. MICA. Without objection.

[The information follows:]

United States General Accounting Office
Washington, DC 20548

September 23, 2003

The Honorable James L. Oberstar
Ranking Democratic Member
Committee on Transportation and Infrastructure
U.S. House of Representatives

Subject: *Aviation Safety: Information on FAA's Data on Operational Errors at Air Traffic Control Towers*

A fundamental principle of aviation safety is the need to maintain adequate separation between aircraft and to ensure that aircraft maintain a safe distance from terrain, obstructions, and airspace that is not designated for routine air travel. Air traffic controllers employ separation rules and procedures that define safe separation in the air and on the ground.[1] An operational error occurs when the separation rules and procedures are not followed due to equipment or human error. Data maintained by the Federal Aviation Administration (FAA) indicate that a very small number of operational errors occur in any given year—on average about three operational errors per day occurred in fiscal year 2002. However, some of these occurrences can pose safety risks by directing aircraft onto converging courses and, potentially, midair collisions.

You asked us to provide information on FAA's data on operational errors and whether this data can be used to identify types of air traffic control facilities with greater safety risks. Specifically, you asked us to (1) determine what is known about the reliability and validity[2] of the data that FAA maintains on operational errors and (2) identify whether comparisons of operational errors among air traffic control facilities can be used to determine the facilities' relative safety record.

[1] The Federal Aviation Administration (FAA) has established a separation standard in the en route environment of 5 nautical miles horizontally and either 1,000 or 2,000 feet vertically depending on altitude. In the terminal environment, horizontal separation is generally between 3 and 5 nautical miles depending on the type of aircraft.

[2] Data reliability refers to the accuracy and completeness of data. We define data as reliable when they are (1) complete and (2) accurate. Reliability does not mean that data are error free, but that the data is sufficient for the intended purposes. Validity refers to whether the data actually represent what one thinks is being measured. See U.S. General Accounting Office, *Assessing the Reliability of Computer-Processed Data*, GAO-02-15G (Washington, D.C.: Sept. 2002).

To answer these objectives, we reviewed past GAO studies[3] and reports by the Department of Transportation (DOT) and DOT's Inspector General (IG) that pertain to FAA's data on operational errors and applied standard methodological practices for data reliability, validity, and analysis.[4]

Data Has Reliability and Validity Limitations

We identified several potential limitations with FAA's data on operational errors based on our review of issued GAO and DOT reports and application of best methodological practices. First, it is very difficult to determine the completeness of the data. FAA collects data on operational errors from two sources—self-reporting by air traffic controllers and automatic reports of errors detected on the en route portion of a flight. The possibility exists for underreporting by air traffic controllers, since some errors are self-reported and some air traffic controllers may not self-report every incident. Second, due to the way the data are recorded, the severity of many errors cannot be determined or is misleading. Prior to 2001, minor errors, such as establishing a 4.5-mile rather than a 5-mile separation, were counted in the same way as more serious errors, according to DOT.[5] In 2001, DOT began to address this issue by establishing a rating system to identify the severity of, or collision hazard posed by, operational errors. The system uses a 100-point scale to rate and categorize operational errors as high, moderate, or low severity. However, in 2003, DOT's IG reported continuing concerns with FAA's data on operational errors.[6] The IG noted that the new rating system provides misleading information and that FAA needs to modify the system to more accurately identify the most serious operational errors. The DOT IG found that in one instance FAA rated an operational error as moderate that was less than 12 seconds from becoming a midair collision. The IG believed that this operational error should have been rated as high severity. The IG also reported that FAA cannot be sure that air traffic controllers report all operational errors.

Comparison of Operational Errors Alone Does Not Provide Valid Conclusions About Safety of Air Traffic Control Facilities

Comparisons of operational errors among types of air traffic control facilities, such as FAA-staffed facilities versus contractor-staffed facilities, cannot be used alone to provide valid conclusions about safety due to three factors that we identified based on standard methodological practices and our understanding of FAA's data. First, such problems as the completeness and specificity of data on operational errors are likely to affect the validity of comparisons among air traffic control facilities because operational errors may not be comparably reported at the types of facilities being compared. For example, as we mentioned above, FAA cannot be sure that all operational errors at either FAA-staffed or

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[3]See, for example, U.S. General Accounting Office, *Air Traffic Control: FAA Enhanced the Controller-in-Charge Program, but More Comprehensive Evaluation Is Needed*, GAO-02-55 (Washington, D.C.: Oct. 31, 2001).

[4]See GAO-02-15G; U.S. General Accounting Office, *Government Auditing Standards*, GAO-03-673G (Washington, D.C.: June 2003); and *GAO Policy and Procedures Manual*, Factors Affecting a Design's Credibility.

[5] U.S. Department of Transportation, *Performance Report Fiscal Year 2000, Performance Plan, Fiscal Year 2002* (Washington, D.C.: April 2001).

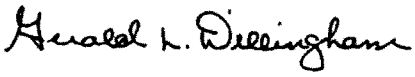
[6] U.S. Department of Transportation, Office of Inspector General, *Top Management Challenges, Department of Transportation*, PT-2003-012 (Washington, D.C.: Jan. 21, 2003) and *Safety, Cost, and Operational Metrics of the Federal Aviation Administration's Visual Flight Rule Towers*, AV-2003-057 (Washington, D.C.: Sept. 4, 2003).

contractor-staffed towers were reported. When such a situation exists, it is difficult, if not impossible, to determine whether the comparative results are valid or are an artifact of under-reporting at one or both types of air traffic control facilities. Second, in order to make valid comparisons a number of factors that might affect the rate of operational errors would need to be accounted for in an analysis. For example, air traffic density, other operating conditions such as the number of flights, age and experience of air traffic controllers, and weather conditions at the time the error occurred all might influence operational errors. These factors would have to be accounted for in any analysis comparing operational errors among different types of facilities in order to determine if the errors are associated with something other than the type of air traffic control facility. Finally, as previously mentioned, a very small number of operational errors occur in any given year (6.7 operational errors per million operations, on average, across all FAA towers in fiscal year 2002), which may make it difficult to detect any real differences in the error rates among facilities.

Because of these factors, the determination of real differences in the rate of operational errors between different types of air traffic control facilities is difficult, and comparisons of operational error rates alone are not sufficient to draw conclusions about the relative safety records of air traffic control facilities. At a minimum, the additional factors mentioned above would need to be considered and analyzed with a technique that models the occurrence of rare events and looks at these events over time. This approach, however, is not without risk and would depend upon the existence of proper and reliable data on operational error rates, operating conditions at the towers at the time the error occurred, and other factors that may be associated with operational errors. Such an approach would allow for a more meaningful comparison of facilities' operational errors through ascertaining and accounting for the multiple factors that may be associated with such errors.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until seven days after the date of this report. At that time, we will send copies of this report to interested congressional committees. The report will also be available on GAO's home page at http://www.gao.gov. If you have any questions about this report, please contact me at (202) 512-2834 or by e-mail at dillinghamg@gao.gov. Key contributors to this assignment are Isidro Gomez, Brandon Haller, Teresa Spisak, and Alwynne Wilbur.

Sincerely yours,



Gerald L. Dillingham
Director, Civil Aviation Issues

(540075)

Mr. COSTELLO. With that, Mr. Chairman, I appreciate your calling this hearing. I think that in the coming months that we need to come back and examine some other issues concerning safety.

Mr. MICA. And I want to compliment you because, you know, we have been so focused on security, security, ATO—or ATC modernization, we got back into it, but we have not paid enough attention. I appreciate Mr. Costello's request for this hearing, and I think we will do a follow-up. We may need to bring in some other players, because we have a great record and those probably—out of sight, out of mind. Maybe Lexington is a little bit of a wake-up call or a reminder, but we do need to see whatever we can do.

I will also submit a question asking your recommendation on R&D for technology. Of course, we are getting into—and I have seen the price tag on the end gas, the next generation air traffic control system, but also things we can do in the short term, either R&D or deployment of existing technology on a cost-effective basis to enhance safety, and we can spend the rest of the night talking about some of that. So I look forward to your recommendations on that.

Finally, we did have at least one member from another panel and from the full committee ask a question. I have a question from Congressman Tom Reynolds. He is not on the committee, but we also granted him the courtesy of submitting a question. That will be submitted for Mr. Sabatini, I believe; and we will ask for a response. It is on a specific incident.

There being no further business, I ought to just break for a few minutes and then call you back for a few more hours. No, I'm just kidding.

There being no business to come before the subcommittee, I want to thank our panel of witnesses and those who participated here today. This hearing is adjourned.

[Whereupon, at 5:53 p.m., the subcommittee was adjourned.]

OPENING STATEMENT OF
THE HONORABLE RUSS CARNAHAN (MO-03)
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON AVIATION
U.S. HOUSE OF REPRESENTATIVES

Hearing On
Oversight of Federal Aviation Administration Safety Programs

Wednesday, September 20, 2006 at 2:00 PM
2167 Rayburn House Office Building

Chairman Mica and Ranking Member Costello, thank you for holding this subcommittee hearing today.

The Federal Aviation Administration's (FAA's) internationally lauded standards in safety have resulted in over 50 million successful flights carrying 2.7 billion passengers in the United States since 2001. We need to evaluate and support the FAA in their efforts to reach their goal of improving the fatality rate in commercial air travel. Although fatality rates are currently at an unprecedented low, we must continue to update equipment, personnel, and safety measures until we have eliminated air travel fatalities. The only acceptable number is zero.

Lambert International Airport, located in my district, has recently undergone a runway expansion project that will increase safety in our airport. The program revisions discussed today will help further our efforts. Runway safety is an area in need of continued improvement. The National Transportation Safety Board (NTSB) tells us that the potential for serious runway accidents will remain high until we can give immediate warnings directly to flight crews in the cockpit.

I would like to welcome Mr. Sabatini, Mr. Haueter, Mr. Dillingham, and Mr. Zinser to our subcommittee. Thank you for your dedication to making our airlines the safest in the world.

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OPENING STATEMENT OF
THE HONORABLE JERRY F. COSTELLO
AVIATION SUBCOMMITTEE
OVERSIGHT OF FAA SAFETY PROGRAMS
SEPTEMBER 20, 2006

- I want to thank Chairman Mica for calling today's hearing on *the Oversight of the FAA Safety Programs.* I requested this hearing because it is my belief that aviation safety is the number one issue for the Aviation Subcommittee.

- The United States has the safest air transportation system in the world, with a fatal accident rate of about 1 in every 16 million flights. However, we must not become complacent about our past success.

- The recent crash of Comair Flight 5191 has once again placed aviation safety in the spotlight. It is the responsibility of this Subcommittee to ensure that FAA is fulfilling its duties to provide effective safety oversight in every aspect of the aviation system, from aircraft maintenance to air traffic control to runway safety.

- Both the Government Accountability Office (GAO) and the DOT Inspector General's Office (DOT IG) have highlighted numerous safety issues of concern including: the use of non-certificated repair stations and maintenance outsourcing in general, runway incursions, inspector staffing and the general concern about the FAA's ability to meet the changing needs of the airline industry.

- We must make sure that we are meeting the new challenges for maintaining the highest level of safety.

- Of particular concern to me is the increased use of aircraft maintenance, both foreign and domestic repair stations. Airlines continue to look for ways to trim costs by outsourcing maintenance of their airplanes. For example, a January 2005 Wall Street Journal article states that US carriers pay wages of $65-$70 per employee hour including wages and benefits, while outside repair stations in

North America, Europe and Asia pay only $40-$50/hour and Latin American repair stations pay as little as $20 to $26. As a result, US airlines are relying more heavily on outside contractors to perform everything from routine maintenance to major overhauls.

- According to the DOT IG, U.S. air carriers now outsource 62 percent of their maintenance expense, compared to just 37 percent in 1996. The IG noted in a June 2005 report that FAA safety oversight has not kept pace with the changes in the aviation industry, including increased maintenance outsourcing.

- This was evident in the 2003 crash of Air Midwest flight 5481 in Charlotte, North Carolina, which killed 21 people. The NTSB found that deficient maintenance by a domestic third party repair facility and lack of oversight by both the FAA and the air carrier of the work being performed by the repair facility contributed to the crash.

- As I have side time and again, safety must not be compromised in an effort to save money or for a lack of resources and attention.

- Another area of concern for me is personnel. The FAA is well below the safety staff necessary to fulfill its critical safety mission, including the oversight of our air carriers, as well as foreign and domestic repair stations. When I visited Singapore, I was told by the FAA that it has only six inspectors for 99 repair facilities. The commercial aviation industry is constantly changing and FAA's ability to change and adapt with that is questionable.

- As this Subcommittee moves toward FAA reauthorization, we must ensure that the FAA is able to meet its mission of safety first and foremost!

- One final point – I have real concerns with the speed and completion of FAA rulemaking. For example, the DOT compiles a list of significant rulemaking, giving the status of each. For the FAA, 22

significant rulemakings are listed -- only three are "on schedule" and 17 are either "behind schedule or have no schedule." I am not impressed by those statistics.

- Many of these rulemakings deal with important safety issues, like fuel tank inerting which has been debated and discussed for over 10 years with no resolution. In December 1996, not even six months after the TWA 800 tragedy, the NTSB strongly recommended the installation of a nitrogen safety system to reduce fuel-tank flammability across the fleet of U.S. commercial aircraft. Yet, we still do not have a final rule.

- Aviation safety is extremely important to me. As a result, we must continue to ask the tough questions, issue the even tougher and sometimes costly rules, and push forward in order to ensure the highest level of safety for the traveling public.

- Again, thank you Mr. Chairman for holding this hearing. I look forward to hearing from our witnesses.

United States Government Accountability Office

GAO

Testimony

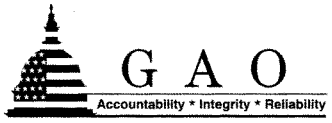
Before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

For Release on Delivery
Expected at 2:00 p.m. EDT
Wednesday, September 20, 2006

AVIATION SAFETY

FAA's Safety Efforts Generally Strong but Face Challenges

Statement of Gerald L. Dillingham, Ph.D.
Director, Physical Infrastructure Issues



GAO-06-1091T

September 20, 2006

GAO
Accountability·Integrity·Reliability
Highlights

Highlights of GAO-06-1091T, a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

AVIATION SAFETY

FAA's Safety Efforts Generally Strong but Face Challenges

Why GAO Did This Study

The U.S. commercial aviation industry has had an extraordinary safety record in recent years. However, expected increases in air traffic—including the introduction of new vehicles into the national air space, such as unmanned vehicles and very light jets—and human resource issues, present challenges that have the potential to strain the existing safety oversight system. GAO's testimony focuses on these questions: (1) How is the Federal Aviation Administration (FAA) ensuring that the areas of highest safety risk are addressed? (2) How is FAA ensuring that its staff maintain the skills and knowledge to consistently carry out the agency's oversight programs? and (3) What are the key safety challenges facing FAA? This statement is based on our recent reports on FAA's inspection oversight programs, industry partnership programs, and enforcement and training programs. It is also based on interviews with FAA and relevant industry officials.

What GAO Recommends

To help FAA fully realize the benefits of its safety oversight system, GAO has made several recommendations to address the weaknesses identified in GAO's reviews. Although FAA has begun addressing the recommendations, many have not been fully implemented.

www.gao.gov/cgi-bin/getrpt?GAO-06-1091T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Gerald L. Dillingham, Ph.D., at (202) 512-2834 or dillinghamg@gao.gov.

What GAO Found

FAA's aviation safety oversight system includes programs that focus on identifying and mitigating risks through a system safety approach and by leveraging resources, but as FAA is still developing evaluations for some of these programs, it remains unclear the extent to which they are achieving their intended effects. FAA's system safety approach for overseeing airlines—through the Air Transportation Oversight System (ATOS) and Surveillance and Evaluation Program (SEP)—uses inspection staff efficiently by prioritizing workload based on areas of highest risk and ensuring that corrective actions have been taken. However, recent and planned changes that would move inspections of about 100 airlines from SEP to ATOS will shift inspector workload and might affect FAA's capability to oversee the industry. FAA also concentrates its limited staff resources on the most safety-critical functions and through its designee programs delegates other, less critical activities to designees. Designees perform about 90 percent of certification-related activities, and thus allow FAA to better leverage resources. GAO's recent work found some weaknesses in FAA's system safety approach and recommended that FAA develop effective evaluative processes and accurate nationwide data on its safety oversight programs to address these weaknesses so that program managers and other officials have assurance that the programs attain their intended effect. FAA has begun implementing those recommendations but does not plan to evaluate SEP, which it intends to discontinue after December 2007.

Training—including mandatory training requirements for FAA's workforce as well as designees—is an integral part of FAA's safety oversight system. GAO has 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. However, several actions could improve the results of its training efforts. For example, 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 to improve its training program in this and other areas.

FAA faces several key safety challenges, including not meeting its performance target for commercial air carrier safety this year because of recent fatal accidents. Further, FAA's ability to oversee aviation safety will be affected by recent and anticipated trends in inspector and air traffic controller attrition. Also, FAA intends to enhance runway safety by relying on new technologies that are expected to reduce runway accidents. However, schedule delays and cost increases challenge FAA's ability to deploy this technology. Finally, new types of aviation vehicles are changing the aviation industry and will require new areas of expertise for FAA's inspectors and controllers.

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to testify today on issues related to aviation safety. The U.S. commercial aviation industry has had an extraordinary safety record in recent years. In order to maintain a high level of safety, it is important for the Federal Aviation Administration (FAA) 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. However, expected increases in air traffic—including the introduction of new vehicles into the national air space, such as unmanned vehicles and very light jets—and human resource issues present challenges that have the potential to strain the existing safety oversight system. My testimony today focuses on these questions: (1) How is FAA ensuring that the areas of highest safety risk are addressed? (2) How is FAA ensuring that its staff maintain the skills and knowledge to consistently carry out the agency's oversight programs? and (3) What are the key safety challenges facing FAA? We will also discuss our related recommendations that FAA has not fully addressed. This statement is based on our recent reports on FAA's inspection oversight programs, industry partnership programs, and enforcement and training programs. Additionally, we met with FAA officials and relevant industry groups and reviewed their documentation to obtain information on challenges facing FAA. We conducted this work in accordance with generally accepted government auditing standards.

Following is a summary of our findings:

- FAA's safety oversight system has programs that focus on identifying and mitigating risk through a system safety approach, leveraging resources, and enforcing safety regulations, but concerns exist with each aspect of the system. FAA's system safety approach for overseeing airlines—through the Air Transportation Oversight System (ATOS) and Surveillance and Evaluation Program (SEP)—has many strengths. Both programs, for example, use inspection staff efficiently by prioritizing workload based on areas of highest risk and ensuring that corrective actions have been taken. However, the full potential of SEP is not being realized because the inspection workload for the 81 airlines included in SEP is heavily oriented to nonrisk based activities. Of additional concern is that recent and planned changes to transfer about 100 airlines from SEP to ATOS will affect inspector workload that may affect FAA's capability to oversee the aviation industry. FAA leverages resources and saves money through its "designee" programs, in which individuals and organizations have been delegated to act on FAA's behalf to perform about 90 percent of certification-related activities. The designee program allows FAA to better concentrate its limited staff resources on the most safety-critical functions. However, planned changes to some designee programs that would create a new "organizational designation authorization" will result in FAA focusing on the performance of organizations rather than the individuals within the organization who carry out the delegated functions. As FAA moves from direct oversight of the individuals performing delegated activities, it will be important for the agency to have valid and reliable data and strong evaluative processes to monitor any program changes that have implications for safety. 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. A key objective of FAA's policy of assessing legal sanctions against entities or individuals that do not comply with aviation safety regulations is 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. For fiscal years 1993 through 2003, we found that civil monetary penalties were reduced by 52 percent from a total of $334 million to $152 million. It is important for FAA to have effective evaluative processes and relevant data on its numerous safety programs so that the agency has assurance the programs are having their intended effect, especially as FAA's oversight becomes more indirect and as significant program changes are made. Our most recent work has shown the lack of evaluative processes and limitations with data for FAA's SEP program, designee programs, industry partnership programs, and enforcement program.

- FAA has made training an integral part of its safety oversight system and has established mandatory training requirements for its workforce as well as designees, but several actions could improve the results of its training efforts. 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 are still early in the implementation phase. 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 and has begun taking some action to address these and other training issues.

- FAA faces a number of key safety challenges, including meeting its performance target for commercial air carrier safety, which it will not meet in fiscal year 2006 because of recent fatal accidents. The challenge of meeting its performance target will be exacerbated by other challenges in human capital management, the acquisition and operation of new safety enhancing technologies, and new types of vehicles, such as very light jets (VLJ), that may place additional workload strains on FAA inspectors and air traffic controllers. FAA's ability to oversee aviation safety will be affected by recent and anticipated trends in inspector and air traffic controller attrition. For example, FAA estimates it will lose 10,291, or about 70 percent of the controller workforce, over the next 10 years, primarily due to retirements. FAA intends to enhance runway safety by relying on new advanced technologies that are expected to reduce runway accidents. However, schedule delays and cost increases have affected FAA's ability to deploy this technology. Finally, if predictions about

new types of aviation vehicles are borne out, it will change the aviation landscape and will require new areas of expertise for FAA's inspectors and controllers. For example, the industry predicts there may be as many as 5,000 to 10,000 VLJs operating in the national airspace by 2020, which would further congest the national airspace system especially at and near smaller airports, where VLJs are expected to be prevalent because of their smaller size.

Background

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. However, when passenger airlines have accidents or serious incidents, regardless of their rarity, the consequences can be tragic. In addition, according to Bureau of Transportation Statistics data, flight arrival delays have increased from 15 percent in 2003 to 22 percent in 2006. Increases in flight delays can be viewed as evidence of strain in the aviation system, as a loss of efficiency in the air system is a symptom of increased strain. Losses of efficiency and the corresponding strain on the system could potentially result in hazards that decrease safety. In order to maintain a high level of aviation safety, it is critical to have well-established, efficient, and effective systems in place to provide an early warning of hazards that can lead to accidents.

FAA has established a number of systems and processes to inspect and oversee various aspects of passenger airline safety, such as aircraft maintenance and flight operations. In 1998, the agency implemented the Air Transportation Oversight System (ATOS), which currently oversees 35 commercial airlines and cargo carriers; the goal is for ATOS to oversee all commercial passenger and cargo airlines. ATOS emphasizes a system safety approach that extends beyond periodically checking airlines for compliance with regulations to using 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 risk assessment, and adjust the plans periodically based on inspection results. Our review of ATOS's early implementation found weaknesses, which FAA addressed by improving guidance to inspectors and increasing data usefulness.

FAA's inspection process for the 81 commercial airlines not covered by ATOS has two components. The National Work Program Guidelines (NPG) is the original oversight program for these airlines. Under NPG, an FAA-wide committee of managers identifies an annual minimum set of required inspections to ensure that airlines comply with their operating certificates; this process is not risk-based. In 2002, FAA added another component, the Surveillance and Evaluation Program (SEP), to the inspection process to incorporate principles of ATOS into its oversight of commercial airlines. The two components are used together to establish the number and types of annual inspections for airlines. Inspections can encompass many different activities, such as visually spot-checking an airplane at a gate, monitoring procedures on a scheduled flight, or observing maintenance performed on an aircraft. Each year, FAA headquarters establishes a baseline number and type of inspections for each airline through NPG. Through SEP, teams of FAA inspectors analyze the results of an airline's prior inspections at periodic

meetings and, based on their assessment of specific risks, establish other inspections that may be needed.

Since 1990, FAA has emphasized industry partnership programs 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.[1]

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

The achievement of FAA's mission is dependent in large part on the skills and expertise of its workforce, whose aviation safety activities include air traffic control, maintenance of air traffic control equipment, and certification and inspection of various industry participants. As of 2006, 714 of FAA's approximately 3,400 inspectors were dedicated to overseeing the 35 airlines in ATOS. Approximately 1,100 inspectors[2] oversee other entities and individuals, including the remaining 81 commercial airlines that are included in the SEP inspection program, about 5,200 aircraft repair stations, and approximately 625,000 pilots. 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 218 organizations (called "designees") to act as its representatives to conduct many safety certification activities that FAA considers to be nonsafety critical, 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. In addition, FAA's Air Traffic Organization (ATO) includes the approximately 16,700 air traffic controller workforce[3] and nearly 7,200 field maintenance technicians responsible for maintaining

[1]Other industry partnership programs include the Aviation Safety Action Program, which allows for the self-reporting of safety incidents by employees of air carriers and repair stations; the Aviation Safety Reporting Program, which allows any participant in the national airspace system, such as air traffic controllers, pilots, and flight attendants, to self-report safety incidents; and the Flight Operation Quality Assurance Program, whose participant airlines equip their aircraft to record flight data, which the airlines analyze for safety trends that are provided to FAA.
[2]The remaining approximately 1,500 inspectors oversee general aviation.
[3]As of June 2006. This number includes about 2,380 traffic management coordinators and operations supervisors.

ATO's equipment and facilities, which include 21 air traffic control centers, 518 airport control towers, and 76 flight service facilities.

While overall commercial aviation safety trends have been generally positive over the last several years, recent safety trends may warrant scrutiny. On the positive side, the number of serious runway incursions[4] has decreased since fiscal year 2002. Specifically, in fiscal year 2002, there were 37 serious runway incursions, compared with 29 in fiscal year 2005. Recent fiscal year 2006 data also continue the downward trend, with 25 serious runway incursions as of August 1, 2006—fewer than at the same time in the previous fiscal year. However, with four fatal accidents in fiscal year 2006,[5] FAA will not meet its performance target for fiscal year 2006 for commercial air carrier safety.[6] Although general aviation accidents have decreased from 1,715 in 2002 to 1,669 in 2005, general aviation safety continues to be a concern because it represents a significant number of fatal accidents every year. (See fig. 1.) For example, 321 of the 1,669 general aviation accidents in 2005 were fatal. Additionally, the poorer safety records of cargo and air ambulances services, compared with the commercial passenger airline accident rate, point out the safety vulnerabilities in this area. According to FAA, from 1998 through 2005, the accident rate for scheduled air cargo operators declined significantly, but was still about 2.5 times higher than the accident rate for scheduled passenger operators. Further, in instances where there was not an isolated injury to a single individual, the accident rate for cargo was about 6.3 times higher than for commercial passenger aviation.[7] In addition, from January 2002 to January 2005, there were 55 emergency medical services or air ambulance accidents, with 54 fatalities, the highest number of accidents since the 1980s.[8] In addition, FAA did not meet its performance target with regard to operational errors[9] for fiscal years 2003 through 2005. While operational errors continued an upward trend in 2006, FAA was below the fiscal year 2006 target of 4.27 operational errors per million activities as of June 2006.

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[4]A runway incursion is any occurrence at an airport involving an aircraft, vehicle, person or object on the ground that creates a collision hazard or results in a loss of separation with an aircraft taking off, intending to take off, landing, or intending to land.

[5]In December 2005, a Southwest Airlines airplane slid off a runway at Chicago's Midway Airport, went through a barrier fence and onto a roadway, killing a passenger in a passing automobile. Also in December 2005, a Chalk's Ocean Airways aircraft experienced an in-flight breakup shortly after takeoff in Miami, resulting in 20 fatalities. On January 16, 2006, a Continental Airlines ground worker was fatally injured in El Paso, Texas. In August 2006, a Comair flight crashed while attempting take-off from the Lexington, Kentucky airport, resulting in 49 fatalities.

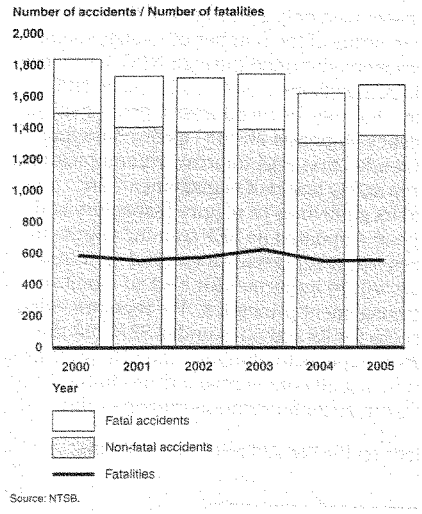
[6]FAA's performance target for fiscal year 2006 is 0.022 fatal accidents per 100,000 departures over the last 3 years.

[7]According to FAA, accidents impacting a single person, although they may be serious, are isolated to ground workers or a single passenger who may walk into a propeller or who may fall while boarding or deplaning. Removing these isolated risk accidents from the data helps achieve a more informative comparison of accident data, according to the agency.

[8]Comprehensive activity data regarding emergency medical services operations (for example, exposure rates and missions flown) are limited because the sources for these data are generally poor. Therefore, accident rates cannot be calculated.

[9]An operational error is a violation of FAA separation standards that define minimum safe distances between aircraft, between aircraft and other physical structures, and between aircraft and otherwise restricted airspace.

Figure 1: Number of General Aviation Accidents and Fatalities, 2000 through 2005



Source: NTSB.

FAA's Safety Oversight System Includes Programs That Focus on Risk Management and Leveraging Resources, But System Is Hindered by Data Limitations and Lack of Evaluations

FAA's safety oversight system has programs that focus on identifying and mitigating risk through a system safety approach, leveraging resources, and enforcing safety regulations, but the programs lack fully developed evaluative processes. As mentioned previously, FAA oversees commercial airlines by one of two programs—ATOS, which includes 35 airlines, and SEP, which includes the remaining 81 airlines. Both programs emphasize a system safety approach of using risk analysis techniques, which allow for the efficient use of inspection staff and resources by prioritizing workload based on areas of highest risk and require that inspectors verify that corrective actions are taken. For example, FAA has developed risk assessment worksheets for both programs that guide inspectors through identifying and prioritizing risks associated with key airline areas, such as flight operations and personnel training. Information from the worksheets is then used to target resources to mitigating those risks.

In recent work we found that the benefits of FAA's system safety approach for the inspection of airlines covered under SEP could be enhanced if FAA more completely implemented the program and addressed other challenges.[10] Most of FAA's inspections

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

of those airlines were not risk-based. For example, as shown in table 1 from fiscal years 2002 through 2004, SEP—a risk-based approach—guided only 23 percent of the inspection activities for the top 25 SEP airlines in terms of the number of enplanements. The remaining 77 percent of inspection activities were identified through NPG, a process that is not risk-based or system safety oriented. Although inspectors can replace NPG-identified activities with SEP-identified activities that they deem address a greater safety risk, we found that FAA inspectors interpret agency emphasis on NPG as discouraging this practice. To address this issue, we recommended that FAA improve communication with and training of inspectors in areas of system safety and risk management. In response to our recommendations, FAA revised its guidelines to require inspectors and managers to ensure that risk information is used and updated its SEP training course to reflect that change. Since FAA's focus on system safety represents a cultural shift in the way the agency oversees the aviation industry, it will be important for FAA to monitor the implementation of system safety and risk management principles. We recommended that FAA establish a continuous evaluative process for its activities under SEP, but the agency does not intend to set up a process since it expects to eliminate the SEP program after December 2007, which is its deadline for moving all commercial airlines to the ATOS program. If the deadline slips, we believe our recommendation remains valid.

Table 1: SEP- and NPG-Initiated Required Inspections for the Top Airlines Covered By the Programs, 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.
Note: Top airlines ranked in terms of number of enplanements.

Furthermore, FAA's plans to dissolve the SEP program after moving all commercial airlines to ATOS will shift the inspectors workloads and present a challenge to FAA's inspection oversight process. As FAA shifts airlines to ATOS, it will also move inspectors to the program. Unlike SEP inspectors, ATOS inspectors are dedicated to an airline and generally cannot be used to inspect other entities. SEP inspectors, on the other hand, have other duties in addition to overseeing airlines—such as certifying and approving aircraft types; overseeing repair stations, designees, and aviation schools; and investigating accidents. For example, our analysis of FAA data indicated that, for fiscal years 2002 through 2004, about 75 percent of SEP inspectors had responsibility for more than 3 entities, and about half had responsibility for more than 15. As inspectors are transitioned to ATOS, the remaining SEP inspector workforce will have to add those other entities to their workload. Furthermore, ATOS requires more inspectors per airline than SEP. For example, when FAA recently transitioned four airlines to ATOS,[11] the total size of the four inspection teams increased 30 percent, from 73 to 95 inspectors. With the expansion of the ATOS program, it will be important to monitor the magnitude of the shift in resources and the effect it may have on FAA's overall capability to oversee the

[11]The airlines are Champion, American Eagle, ExpressJet, and SkyWest.

industry as well as any changes to the current ATOS program that may be required by the expansion.[12]

FAA's Oversight Focuses on Leveraging Inspector Resources, Which Results in Less Direct Oversight of the Industry

An important part of FAA's safety oversight system are designee programs, through which FAA authorizes about 13,400 private individuals and 218 organizations to act on its behalf to conduct safety certification activities that FAA considers to be non-safety critical. We reported that designees perform about 90 percent of certification-related activities, thus greatly leveraging the agency's resources and enabling inspectors to concentrate on what FAA considers the most safety-critical activities.[13] However, concerns about the consistency and adequacy of designee oversight by FAA 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, the primary goal of which is the safety of U.S. aviation. 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. In response to our recommendations, FAA has, among other things, established a designee quality assurance office to address inconsistent and nonstandard oversight issues among offices. FAA has also developed a survey that will collect information from individuals who recently worked with designees, such as pilots who recently received their license through a designee, to gather information that can be used to continually improve designee programs.

To increase FAA's assurance that its designees are meeting FAA's safety standards, it will be important for FAA to continue these activities, which are in the early stages of development or implementation, especially as the agency moves to replace certain designee programs with an organizational designation authorization (ODA). ODA would expand the number and types of organizational designees and further transform FAA's role to that of monitoring the performance of others. In October 2005, FAA issued a final rule that established the ODA program and provides for the phasing out of organizational designees by November 2009. By that time, the current 218 organizational designees will have to apply for and be granted status as an ODA.[14] In August 2006, FAA issued an order that establishes procedures for the ODA program, including the capability to expand the activities that may be delegated out. Under the program, FAA will focus on the performance of organizations rather than the individuals within the organization who

[12]For example, we found that when Champion Airlines became part of ATOS in January 2005, FAA has, in this one case, revised its procedures to allow the Northwest Airlines inspection team to share its data analyst and manager with the Champion inspection team.
[13]GAO, *Aviation Safety: FAA Needs to Strengthen the Management of Its Designee Programs,* GAO-05-40 (Washington, D.C.: Oct. 8, 2004).
[14]Examples of companies that are organizational designees include Boeing, Gulfstream, United Airlines, and Continental Airlines, as well as smaller companies.

carry out the delegated functions. As FAA makes these changes to its designee programs that remove FAA from direct oversight of the individuals performing the delegated activities, it will be important for the agency to adhere to its policy of using designees only for less safety-critical work. It will also be important for FAA to have the data and evaluative processes, which we discuss later in this testimony, to effectively monitor the new program.

FAA is also becoming increasingly removed from overseeing airline maintenance. In recent years, in an attempt to reduce costs, airlines have increasingly contracted out maintenance. For example in 2000, 44 percent of major air carriers' maintenance expenses were attributable to outsourcing; in 2004, it had increased to 54 percent. However, FAA's inspection activities have remained focused on air carriers' in-house maintenance, according to DOT's Inspector General.[15]

Enforcement Is an Important Element of FAA's Safety Oversight System, but Deterrent Effect of Sanctions Is Unclear

FAA's enforcement process, which is intended to ensure industry compliance with safety regulations, is another important element of its safety oversight system. FAA assesses legal sanctions against entities or individuals that do not comply with aviation safety regulations. Such sanctions are intended to deter future violations. 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 not associated with the merits of the case.[16] For 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 the agency sometimes negotiate lower fines, thereby reducing sanctions to close cases more quickly and reduce FAA attorneys' caseloads. Economic literature on deterrence suggests that although negative sanctions (such as fines and certificate suspensions) can deter violations, if violators expect sanctions to be reduced, they may have less incentive to comply with regulations. In effect, it becomes more difficult to achieve the goal of preventing future violations when the penalties for present violations are lowered for reasons not related to the merits of the case.

Recent changes that FAA has made to its enforcement program may lead to more uniformly set fines and, thus, potentially less need to revise fines. Prior to September 2005, the initial recommendation to use administrative actions (such as warning notices and letter of correction) or legal sanctions (such as fines or suspension of operating certificates) was based on the judgment of the inspectors. If inspectors recommended a legal sanction, they then consulted FAA's sanction guidance policy to determine the amount of the proposed penalty. In September 2005, FAA adopted changes to its enforcement program that incorporated system safety risk management principles and established explicit criteria for inspectors to use in making an initial enforcement

[15]DOT Inspector General, *Air Carriers' Use of Aircraft Repair Stations* (Washington, D.C.; July 8, 2003).
[16]GAO, *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).

recommendation. As soon as FAA investigators have gathered sufficient information to categorize the safety risk and the conduct (i.e., whether it was intentional, reckless, or systemic), they prepare a risk statement that describes the hazard created by the act and the potential consequence of that hazard. An example of a risk statement is "an aircraft that operates in Class B airspace without a clearance providing separation from other aircraft could cause a mid-air collision." The investigators then review the risk statement to determine the severity of the hazard (using a scale of catastrophic, critical, marginal, or negligible) and the likelihood of the worst credible outcome (using a scale of frequent, occasional, or remote). Based on these assessments, investigators apply a decision tool that determines the type of action (legal or administrative) to take against an individual or business. Inspectors no longer have the responsibility of recommending a specific fine level. It is too early to determine if these changes to the enforcement program have resulted in a more uniform application of penalties and fewer penalty reductions.

Data Limitations and Lack of Evaluations Limit FAA's Ability to Manage Risk and Are Particularly Critical as FAA's Oversight Becomes More Indirect

Effective processes for evaluating FAA's safety oversight programs, along with accurate nationwide data on those programs would provide FAA's program managers and other officials with assurance that the programs are having their intended effect, especially as FAA's oversight becomes more indirect. Such processes and data are also important because FAA's workforce is dispersed worldwide—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. The experiences of successful transformations and change management initiatives in large public and private organizations suggest that it can take 5 to 7 years or more until such initiatives are fully implemented and cultures are transformed in a sustainable manner. As a result, evaluation is important to understanding if the cultural shift has effectively occurred. Our most recent work has shown that FAA had not evaluated its safety programs, and we recommended that the agency establish continuous evaluative processes for the SEP program, designee programs, industry partnership programs, and enforcement program. FAA has made recent progress in implementing some of these recommendations. For example, FAA has scheduled audits of all its designee programs, to be completed by the end of fiscal year 2009, and established a delegation steering group that first met in August 2006 and will be responsible for agencywide monitoring of the designee programs for compliance with program policies and evaluating the effectiveness of the designee programs. Additionally, as FAA implements its new enforcement policy, it has established procedures to monitor the new policy on a quarterly basis and to recommend process improvements based on the information collected. However, FAA does not plan to evaluate the SEP program because it intends to discontinue the program after December 2007.

Yet, FAA's ability to evaluate its programs is hindered by its lack of useful nationwide data. For example, we found that FAA's oversight of designees was hampered, in part, by the limited information of designee's performance contained in the various designee

databases.[17] 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 improve the consistency and completeness of information in the designee databases. To address this recommendation, FAA has established the Designee Integration User Group, which expects to begin work in September 2006 on an automated information tool that will track data on all designees. We also found problems with the accuracy or completeness of data in the SEP and enforcement programs, which FAA has recently taken steps to begin addressing.

Training Is an Integral Part of FAA's 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. To effectively identify safety risks, inspectors must be well-trained in the system-safety approach and have sufficient knowledge of increasingly complex aircraft, aircraft parts, and systems. 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 by establishing mandatory training requirements for its workforce as well as designees. Although FAA provides inspectors with extensive training in federal aviation regulations; inspection and investigative techniques; and technical skills, such as flight training for operations inspectors, we have identified weaknesses with the training program. The agency provides 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[18] for safety inspectors, although some practices have yet to be fully implemented.[19] Appendix I describes the extent to which FAA follows effective management practices in each of these four areas. Some examples follow:

- In developing its training curriculum for inspectors, FAA has developed courses that support changes in inspection procedures resulting from regulatory change or agency

[17]These databases are the Program Tracking and Reporting Subsystem, National Vital Information Subsystem, Designee Information Network, and Airmen Medical Certification Information Subsystem.
[18]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.
[19]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 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).

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.

- In delivering training, FAA has established clear accountability for ensuring that inspectors have access to technical training, has 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.

To address some of these issues, we recommended, among other things, that FAA ensure that inspector technical training needs are identified and met in a timely manner by systematically assessing inspectors' technical training needs and better aligning the timeliness of training to when inspectors need the training to do their jobs. In addition, we have identified gaps in the training provided to SEP inspectors, 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 policies in these areas. We identified similar competency gaps related to designee oversight. For example, FAA does not require refresher training on how to oversee designees, which increases the risk that inspectors 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.

FAA has begun to address these recommendations. For example, FAA plans to release five Web-based courses by the end of 2006, which will allow the agency to provide training closer to the time that employees need it. Also, FAA has instituted an electronic learning management system that provides for employee input to their own learning plans. FAA has also updated the SEP training course to reflect recent policy changes that emphasize the importance of risk management. Finally, FAA has begun developing a new designee oversight training course that is planned to be ready by the summer of 2007.

It is important that FAA's inspection workforce, designees, and FAA-certified aviation mechanics are knowledgeable about the latest technology changes. 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. Similarly, we did not identify any specific gaps in the competencies of designees. 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.[20] We recommended that FAA review the curriculum and certification requirements and update both. In response to this recommendation, Vision 100—Century of Aviation Reauthorization Act, which was passed December 12, 2003, required FAA to update the standards 1 year after enactment of the law and to conduct reviews and updates every 3 years after the initial update. FAA issued an Advisory Circular in January 2005 that described suggested curriculum changes; however, the agency has not updated the certification requirements for mechanics.

FAA Faces a Number of Challenges in Overseeing Aviation Safety

FAA faces a number of key safety challenges, including meeting its performance target for commercial air carrier safety, which it will not meet in fiscal year 2006 because of recent fatal accidents. With four fatal commercial air carrier accidents in fiscal year 2006, the agency will not meet its target of 0.018 fatal accidents per 100,000 departures.[21] Moreover, for the past 3 years, FAA did not meet its performance target for severe operational errors, which occur when aircraft do not maintain safe distances in the air; as of June 2006, the agency was slightly below its target level of 4.27 severe operational errors per million activities. In addition, although general aviation accidents have, on the whole, decreased in recent years, general aviation safety is also a concern because of the large number of fatal accidents every year—an average of 334 fatal accidents have occurred annually since 2000. Furthermore, other industry sectors, such as cargo operations[22] and on-demand air ambulances,[23] have poor safety records, as mentioned earlier. It will be important for FAA to develop the appropriate strategies to deal with the challenges posed by these safety records and to continuously monitor safety information to identify trends and early warnings of other safety problems.

Also as described earlier, FAA also faces a number of challenges to several of its oversight programs. Specifically, FAA's rapid expansion of ATOS, by transferring about 100 airlines and additional inspectors to the program over about 2 years, will cause shifts in inspector workload that may affect the agency's ability to oversee other parts of the industry. Furthermore, some activities, such as FAA's creation of ODAs and the trend for airlines to outsource maintenance, will remove FAA from direct oversight. It will be important for FAA to have robust data and continuous evaluative processes to monitor such activities and program changes in order to ensure they are not having a negative effect on safety.

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

[21]After a fourth fatal accident occurred in August 2006, FAA estimated that 0.023 fatal accidents per 100,000 departures had occurred over the last 3 years. Since the fatal accident rate is small and could significantly fluctuate from year to year due to a single accident, FAA's performance measure is a 3-year average, which helps to smooth the fluctuation that may occur in any given year.

[22]The risk factors that may affect the safety record of cargo carriers include operating a large number of flights at night and the age of cargo aircraft. FAA estimates the median age of in-service passenger jets was 6.25 years, compared with the median age of cargo jets of over 25 years.

[23]We have ongoing work for this subcommittee that is examining in detail FAA's oversight of air ambulances.

Meeting the challenges posed by recent safety trends and program changes will be exacerbated by other challenges in human capital management; the acquisition and operation of new safety enhancing technologies; and new types of vehicles, such as very light jets (VLJ), that may place additional workload strains on FAA inspectors and air traffic controllers.

FAA Faces Challenges in Human Resources

FAA's ability to oversee aviation safety will be affected by recent and anticipated trends in attrition of its inspectors compounded, in some cases, by delays in hiring and increased workload. For example, for fiscal years 2005 through 2010, FAA estimated that over 1,100 safety inspectors who oversee commercial airlines and general aviation will leave the agency, with an average loss due to attrition of about 195 inspectors per year. However, FAA's efforts to hire more inspectors have been hindered by a budget situation in 2005 that resulted in a hiring freeze during part of that year. During the hiring freeze, FAA filled safety-critical positions, such as principal inspectors, through internal appointments. As other safety inspectors left, they were not replaced and their workload was divided among the remaining inspectors.

Concerned about the need for additional safety inspectors, for fiscal year 2006, Congress provided additional funding over the budget request to FAA with the expectation that the funding would increase the safety staff by 248. This increase in funding would allow for hiring an additional 182 safety inspectors in Aviation Flight Standards (AFS) and an additional 66 inspectors and engineers in Aircraft Certification Service (AIR). However, as a result of a rescission and unfunded pay raises for fiscal year 2006, FAA lacks the funds to hire 67 staff of the expected 248 new staff. As a result, FAA's revised hiring target is 139 AFS staff and 42 AIR staff. As of August 2006, FAA has hired an additional 25 AFS and 28 AIR staff. (See table 2.) According to FAA, it has a pipeline of applicants and expects to reach its goal of filling the 181 slots by the end of the fiscal year. However, the actual number of aviation safety inspector slots needed is unknown, because FAA lacks staffing standards for safety inspectors. The National Academy of Sciences, under a congressional mandate, has just completed a study for FAA to estimate staffing standards for inspectors to ensure proper oversight over the aviation industry.

Table 2: Number of Additional Staff for AFS and AIR, Fiscal Year 2006

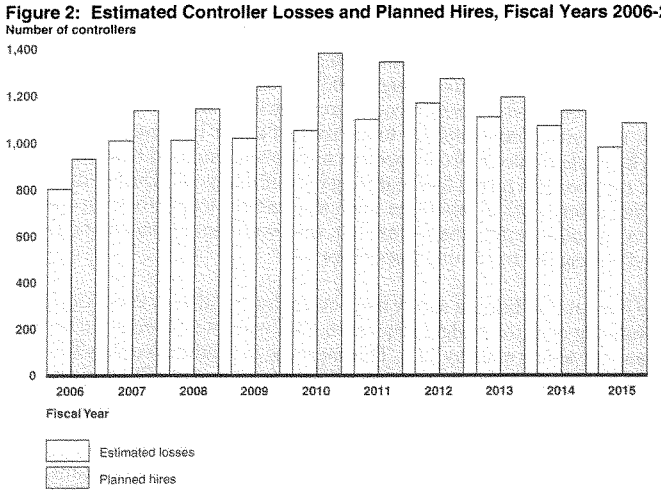
Office	Additional staff funded by Congress	FAA revised target	Hired as of August 2006
AFS	182	139	25
AIR	66	42	28
Total	**248**	**181**	**53**

Source: GAO analysis of FAA information.

During the coming decade, FAA will need to hire and train thousands of air traffic controllers to replace those who will retire and leave for other reasons. FAA estimates it will lose 10,291 controllers, or about 70 percent of the controller workforce, for fiscal

years 2006 through 2015, primarily due to retirements.[24] To replace these controllers and to accommodate forecasted increases in air traffic and expected productivity increases, FAA plans to hire a total of 11,800 new controllers over the next 10 years, or 1,180 per year, on average.[25] By the end of fiscal year 2006, FAA expects to hire 930 controllers. As of August 2006, FAA had hired 920. Figure 2 shows the estimated losses each year as well as the number of planned hires.

Figure 2: Estimated Controller Losses and Planned Hires, Fiscal Years 2006-2015



Source: FAA.

Recent events may exacerbate the staffing situation. New data indicate that controllers are retiring at a faster rate than FAA anticipated. In its 2004 workforce report, FAA projected 341 retirements for fiscal year 2005; 465 controllers actually retired—36 percent more than FAA's estimate. In addition, a new contract with the air traffic controllers union was recently implemented by FAA after lengthy negotiations. Under this new contract, most current air traffic controllers would continue to receive their existing base salaries and benefits, which may remove a financial incentive to continue working past their retirement eligibility date, while newly hired controllers would be hired at lower wage rates, which may affect FAA's ability to hire new controllers. FAA has maintained that this contract will result in significant cost savings, freeing up resources for other critical agency needs. It is too soon to know what effect, if any, the new contract may have on retirement decisions.

[24]The high percentage of retirements is attributable to the 1981 controller strike, when President Ronald Reagan fired over 10,000 air traffic controllers, and the consequent need to quickly rebuild the controller workforce. From 1982 through 1991, FAA hired an average of 2,655 controllers per year. These controllers will become eligible for retirement during the next decade.

[25]FAA, *A Plan for the Future, 2006-2015* (Washington, D.C.: June 2006).

In addition to the challenge of hiring large numbers of controllers, FAA will face a challenge in training its new hires expeditiously so that it can plan to have the right number of controllers in the right facilities when they are needed. According to FAA, its ability to train the new controllers depends upon several factors, including hiring a relatively even number of controllers each year, reducing the time it takes to hire a controller, and reducing the duration of training. FAA estimates that because of the long training time, it must hire enroute controllers[26] an average of 3 to 5 years in advance of when they are needed. FAA is taking actions to address these issues. For example, in line with our recommendation, a recent change to the training program allows individuals who complete collegiate requirements under the Air Traffic Collegiate Training Initiative[27] to bypass the first 5 weeks of initial FAA Academy training required for controllers.

FAA also faces the challenge of ensuring that control facilities have adequate staffing based on their unique traffic demands and the accuracy of FAA's retirement forecast. Historically, FAA has computed staffing standards, which are the number of controllers needed on a system-wide basis, but distribution of these totals to the facility level was a negotiated process. The staffing standards did not take into account the significant differences in complexity and workload among FAA's 300 terminal and enroute control facilities, which can lead to staffing imbalances. FAA has begun developing and implementing new staffing standards that use an algorithm that incorporates traffic levels and complexity of traffic at the facility level to determine the number of controllers needed, according to an FAA officials. As FAA further refines its process for determining controller staffing needs, the ultimate objective is to assess the traffic level and complexity on a sector-by-sector basis to develop more accurate controller staffing requirements.

FAA Faces Challenges in Implementing Advanced Technology to Increase Air Traffic Safety

To enhance runway safety, FAA intends to rely on new technologies—beginning with the Airport Movement Area Safety System (AMASS) and Airport Surface Detection Equipment Model X (ASDE-X)—that are expected to reduce runway accidents.[28] AMASS and ASDE-X are instrumental in mitigating runway incursions and operational errors. However, FAA faces challenges—such as a reduced number of airports scheduled to receive the equipment, schedule delays, and cost increases—that affect its reliance on the technologies.

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[26]Enroute air traffic controllers issue clearances and instructions for airborne aircraft.

[27]To bypass initial Academy training, individuals must have successfully completed an aviation-related program of study from a school under FAA's collegiate training initiative program. FAA has agreements with 13 schools for this program.

[28]AMASS processes data from Airport Surface Detection Equipment Model 3 (ASDE-3) systems and uses visual and sound signals to warn controllers of potential conflicts between arriving aircraft, and aircraft and vehicles on the ground. ASDE-X is the upgraded digitally based technology that enables air traffic controllers to detect potential runway conflicts by providing detailed coverage of movement on runways and taxiways. Both systems warn the controllers of potential incursions. Among the systems, only ASDE-X works in poor weather conditions.

FAA's original plans called for 34 airports to receive AMASS[29] and 35 airports to receive ASDE-X (see app. II).[30] In total, 59 airports were to receive one or both technologies, but this number was reduced to 44 in August 2006 after FAA canceled plans to deploy ASDE-X at 15 of the originally scheduled airports. FAA plans to take these 15 systems and upgrade certain airports that already have AMASS based on the rationale that maximum benefit is achieved by deploying ASDE-X to airports with larger traffic counts or more complex operations. This decision leaves 15 airports (see table 3) that were supposed to receive ASDE-X without either advanced technology system. Since the anticipated future increase in air traffic from commuter airlines and very light jets are likely to be at smaller airports that lack the advanced technologies, it will be important for FAA to periodically re-evaluate its deployment strategy.

Table 3: Airports Scheduled to Receive ASDE-X before Deployment was Canceled by FAA

Airport
Albuquerque International Sunport Airport
Austin-Bergstrom International Airport
Burbank-Glendale-Pasadena Airport
Port Columbus International Airport (Columbus, OH)
Colorado Springs Municipal Airport
Indianapolis International Airport
Metropolitan Oakland International Airport
Ontario International Airport (Ontario, CA)
Raleigh-Durham International Airport
Reno/Tahoe International Airport
San Antonio International Airport
San Jose International Airport
San Juan International Airport
Sacramento International Airport
Tampa International Airport

Source: FAA

In addition to reducing the number of facilities selected to receive the newer technology, FAA has amended the cost and extended the implementation dates for the ASDE-X program (see table 4). The 35 ASDE-X systems were originally scheduled to be implemented by 2007. As of August 2006, FAA had moved that date to 2011. FAA estimates the total facilities and equipment cost of the ASDE-X program at about $550 million, which is approximately $40 million more than we reported in 2005.[31] The costs of these new technologies mean that they may never be deployed at all airports; therefore, it will be important for FAA to continue prioritizing and maximizing its resources.

[29]By December 2003, FAA had installed AMASS at the 34 airports.
[30]Ten airports that were scheduled to receive ASDE-X already had AMASS.
[31]GAO, *National Airspace System: FAA Has Made Progress but Continues to Face Challenges in Acquiring Major Air Traffic Control Systems*, GAO-05-331 (Washington, D.C.: June 10, 2005).

Table 4: Changes in Cost and Schedule Targets for ASDE-X
Dollars in millions

	2001 estimate	2005 estimate	Current estimate, 2006
Cost targets	$424.3	$510.2	$549.8
Last-site implementation targets	2007	2009	2011

Source: GAO analysis of FAA information.

FAA Faces Challenges in Having Controllers Prepared for the Next Generation Air Transportation System

To ensure a national airspace system that is safe, efficient, and capable of meeting a growing demand of air transportation that is expected to triple by 2025, the Joint Planning and Development Office (JPDO) was created within FAA to plan for and coordinate the longer-term transformation to the "next generation air transportation system" (NGATS). JPDO was created in 2003 to develop an integrated plan for NGATS and to include in the plan, among other things, a description of the demand and required performance characteristics of the future system, as well as a high-level, multiagency road map and concept of operations for the future system.

FAA and JPDO face the challenge of adequately involving stakeholders in the development of NGATS to ensure that the system meets users' needs, especially air traffic controllers who will be end users of the new technology and responsible for using it to maximize safety and efficiency. In the past, air traffic controllers were permanently assigned to FAA's major system acquisition program offices and provided input into air traffic control modernization projects. In June 2005, FAA terminated this arrangement because of budget constraints. According to FAA, it now plans to obtain the subject-matter expertise of air traffic controllers or other stakeholders as needed in major system acquisitions. It remains to be seen whether this approach will be sufficient to avoid problems such as FAA experienced when inadequate stakeholder involvement in the development of new air traffic controller workstations (known as the Standard Terminal Automation Replacement System (STARS)) contributed to unplanned work, significant cost growth, and schedule delays.[32]

FAA's Inspector and Controller Workload Will Be Challenged by Emerging Industries and Established Sectors That May Need More Safety Oversight

The changing aviation landscape poses further challenges for FAA. It is expected that within the next few years several hundred VLJs[33] will be in operation. FAA estimates that

[32]GAO-05-331.

[33]Very light jets are jet aircraft weighing 10,000 pounds or less maximum certificated take-off weight and certificated for single pilot operations. Aircraft possess at least some of the following features: (1) advanced cockpit automation, such as moving map GPS and multifunction displays; (2) automated engine and systems management; and (3) integrated auto-flight, autopilot and flight-guidance systems.

if 2 percent of airline passengers switch to VLJs, air traffic controllers will have to handle three times more take-offs and landings than currently. Additionally, the industry predicts there may be as many as 5,000 to 10,000 VLJs operating in the national airspace system by 2020. VLJ manufacturers are reporting advance sales of thousands of these new jets, their customers include air taxis, charter operators, and private owners. In July 2006, FAA granted the first provisional certificate for a VLJ to Eclipse Aviation Corporation. The provisional certificate allows existing planes to be flown, but new ones cannot be delivered to customers until the FAA grants a type certificate. According to Eclipse Aviation, it has orders for over 2,350 aircrafts. DayJet, which provides on-demand jet service, expects to be operating 50 Eclipse VLJs by the end of 2007. In September 2006, FAA granted the first type certificate to Cessna Aircraft Company. (See fig. 3.) Five other companies are in the process of being issued certificates by FAA. If this sector expands as quickly as expected, FAA inspectors could face workload challenges to expeditiously issue and monitor certificates. In addition, air traffic controllers could face the challenge of further congested air space, especially at and near smaller airports, where VLJs are expected to be prevalent because of their smaller size and shorter runway requirements.

Figure 3: Cessna's Citation Mustang VLJ

Source: FAA.

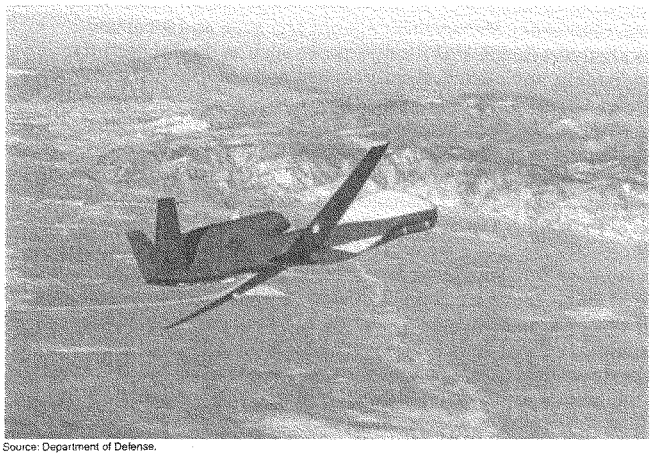
Unmanned aerial vehicles[34] (UAV) are another emerging sector that will add to FAA's workload and may require additional FAA expertise. While historically UAVs have been

[34]Unmanned aerial vehicles do not carry a human operator; they are either programmed for autonomous flight (called a "drone") or are flown remotely by a ground operator.

used primarily by the Department of Defense in military settings outside the United States, there is growing demand to operate UAVs domestically in the national airspace system. (See fig. 4.) Federal agencies such as the Customs and Border Protection Service and the Federal Emergency Management Agency and state and local law enforcement agencies are interested in UAVs for purposes such as border security, search and rescue, firefighting, and other law enforcement and homeland security initiatives. Some of these activities are taking place today. For example, Customs conducts surveillance along the border with Mexico. UAVs are also an emerging sector of the commercial aviation industry, and possible commercial uses include fire detection and firefighting management, digital mapping, communications and broadcast services, and environmental research and air quality management control. Currently, few regulations or guidelines exist for UAVs or UAV-related technology. FAA issues a certificate of authorization for the operation of a UAV and the airspace is restricted during the period of operation.[35] In 2006, FAA has issue 62 certificates of authorization for UAVs and another 35 applications are pending review. FAA is receiving numerous inquiries from federal agencies, and from local, county, and state governments about how to operate UAVs in the national airspace system. FAA has established an Unmanned Aircraft Program Office, responsible for developing the regulatory framework and plan for the safe integration of UAVs into the national airspace system. FAA faces the challenge of working with industry to develop consensus standards for command and control redundancies in case there is a disruption in communication with the UAV, and detect and avoid capabilities so that UAVs can sense and avoid other aircraft. Such standards will be necessary before UAVs can be routinely integrated into the national airspace system. Until UAVs are completely integrated into the national airspace system, FAA will continue to evaluate each flight on a case-by-case basis, adding to the agency's workload.

[35]A certificate of authorization allows an operator to use defined airspace for a specified time (up to one year, in some cases) and includes special provisions unique to each operation. For instance, a certificate may include a requirement to operate only under visual flight rules.

Figure 4: U.S. Air Force's Global Hawk UAV

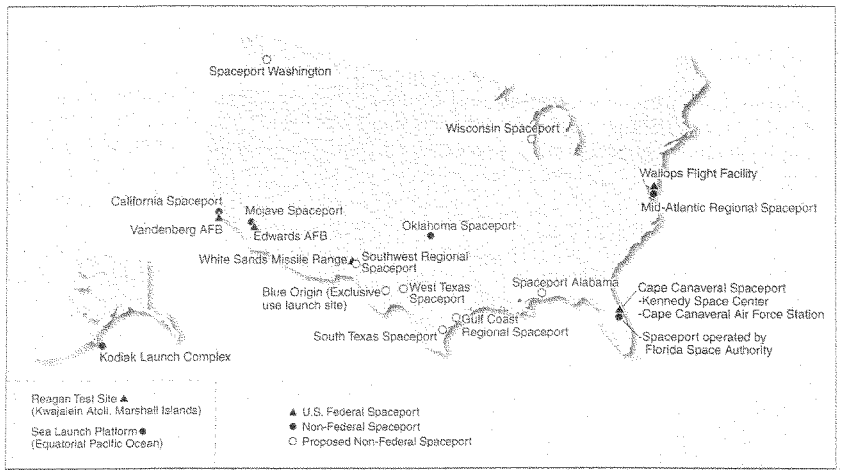


Source: Department of Defense.

Space tourism is an additional emerging sector that FAA is beginning to respond to. Tourist launches are expected to take place at inland locations and may have more impact on the national airspace system than previous unmanned commercial space launches, which occurred at federal launch sites near or over oceans. While UAVs pose a learning curve for safety inspectors, engineers, and air traffic controllers, space tourism launches pose a learning curve for FAA's commercial space engineers who are responsible for licensing and monitoring commercial space launches and nonfederal launch sites (called spaceports). The prospect for commercial space tourism materialized in 2004 when SpaceShipOne, developed by Scaled Composites, flew to space twice, achieving a peak altitude of about 70 miles to win the Ansari X Prize.[36] Several entrepreneurial launch companies are planning to start taking paying passengers on suborbital flights within the next few years. Virgin Galactic intends to enter commercial suborbital space flight service around 2008, launching from a spaceport in New Mexico, and according to the company, plans to carry 3,000 passengers over 5 years, with 100 individuals having already paid the full fare of $200,000. Several other companies, including former Ansari X Prize competitors, continue to develop their vehicles for space tourism. Several spaceports are being developed to accommodate anticipated commercial space tourism flights and are expanding the nation's launch capacity. As of August 2006, the United States had seven federal launch sites, and seven spaceports, and an additional eight spaceports have been proposed (see fig. 5). We will be issuing a report later this year on FAA's oversight of commercial space launches.

[36]The X Prize Foundation was established in 1995 to award $10 million to the first team to launch a suborbital reusable launch vehicle capable of carrying three people to an altitude of 70 miles, return safely to Earth, and repeat the exercise within 2 weeks using the same vehicle. Twenty-seven teams from seven countries competed.

Figure 5: Existing and Proposed Federal and Nonfederal Spaceports in the United States, April 2006



Source: FAA; GAO.

FAA Needs to Retain Its Leadership Role in International Safety Standard Setting

Maintaining U.S. position as a global leader in aviation safety calls for robust participation in the setting of international safety standards. The International Civil Aviation Organization (ICAO), a United Nations organization, develops standards and recommended practices for aviation safety and security for 188 member states.[37] In 2002, the Commission on the Future of the United States Aerospace Industry[38] reported that the United States had not devoted enough resources to ICAO and was, therefore, losing its position as the de facto standard setter. Furthermore, the position of U.S. ambassador to ICAO, which was filled earlier this year, had been vacant for more than a year, which may have affected the U.S. impact on international aviation issues. To ensure that qualified U.S. applicants apply for U.S. positions at ICAO, FAA has supported a number of activities, including outreach efforts, incentive pay programs, and a fellowship program that sends FAA employees to work at ICAO for up to 12 months. However, as of December 2005, FAA had filled only 13 of the 31 positions allocated to the United States at ICAO. FAA faces difficulty in filling the allocated positions for reasons beyond its control. For example, while FAA can recruit applicants, it does not make the final hiring decisions. With unfilled positions at ICAO, it will remain important

[37]ICAO also addresses issues such as air navigation, airspace capacity, and environmental concerns such as engine noise and emissions.
[38]*Final Report of the Commission on the Future of the United States Aerospace Industry* (Arlington, Va.; November 2002).

for FAA to continue these efforts to enhance the presence of the United States in the international aviation community.

GAO Contact and Staff Acknowledgements

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Extent to Which FAA Follows Effective Management Practices for Inspector Training

Figure 6: 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

Figure 7: 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

Source: GAO

[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.

Figure 8: 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

Figure 9: Extent That FAA Followed 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

Deployment of Surface Detection Equipment at Airports

Table 5: Airports with Airport Movement Area Safety System (AMASS)

Airport
Camp Springs Andrews AFB
Ted Stevens Anchorage International
Hartsfield Jackson Atlanta International Airport
Boston Logan International Airport
Baltimore Washington International Airport
Cleveland Hopkins International
Charlotte Douglas International Airport
Covington/Cincinnati Northern Kentucky International
Ronald Reagan Washington National Airport
Denver International Airport
Dallas / Ft. Worth International Airport
Detroit Metro Wayne County
Newark International Airport
Washington Dulles International Airport
George Bush Intercontinental Airport
John F. Kennedy International Airport
Las Vegas McCarran International Airport
Los Angeles International Airport
New York La Guardia Airport
Kansas City International
Memphis International Airport
Miami International Airport
Minneapolis-St. Paul International Airport
Louis Armstrong New Orleans International
Chicago O'Hare International Airport
Portland International
Philadelphia International Airport
Pittsburgh International
San Diego International Airport
Louisville International Airport-Standiford Field
Seattle-Tacoma International Airport
San Francisco International
Salt Lake City International Airport
Lambert-St. Louis International Airport

Source: FAA.

Table 6: Airport Surface Detection Equipment Model X (ASDE-X) Deployment Sites

Airport
Hartsfield-Jackson Atlanta International Airport ⊙ R
Bradley International Airport (Hartford, CT) ⊙
Boston Logan International Airport R
Baltimore Washington International Airport R
Charlotte Douglas International Airport R
Ronald Reagan Washington National Airport R
Denver International Airport R
Dallas/Ft. Worth International Airport R
Detroit Metro Wayne County Airport R
Newark International Airport R
Ft. Lauderdale/Hollywood Airport
Honolulu International - Hickam AFB Airport
William P. Hobby Airport (Houston, TX) ⊙
Washington Dulles International Airport R
George Bush Intercontinental Airport R
John F. Kennedy International Airport R
Las Vegas McCarran International Airport R
Los Angeles International Airport R
New York LaGuardia Airport R
Orlando International Airport ⊙
Chicago Midway Airport
Memphis International Airport R
Miami International Airport R
General Mitchell International Airport (Milwaukee, WI) ⊙
Minneapolis-St. Paul International Airport R
Chicago O'Hare International Airport
Philadelphia International Airport R
Phoenix Sky Harbor International Airport
Theodore Francis Green State Airport (Providence, RI) ⊙
San Diego International Airport R
Louisville International Airport-Standiford Field R
Seattle-Tacoma International Airport ⊙ R
Salt Lake City International Airport R
John Wayne-Orange County Airport
Lambert-St. Louis International Airport ⊙ R

⊙ ASDE-X is operational at these sites as of July 2006

R Locations where ASDE-X is replacing ASDE-3 and AMASS

Source: FAA.

Related GAO Products

Aviation Safety: FAA's Safety Oversight System Is Effective but Could Benefit from Better Evaluation of Its Programs' Performance. GAO-06-266T. Washington, D.C.: November 17, 2005.

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.

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.

(540136)

National Transportation Safety Board

Thomas Haueter
Deputy Director
Office of Aviation Safety

Testimony of Thomas Haueter, Deputy Director
Office of Aviation Safety
National Transportation Safety Board
before the
U.S. House of Representatives
Committee on Transportation and Infrastructure
Subcommittee on Aviation
September 20, 2006

Good afternoon Chairman Mica, Ranking Member Costello, and Members of the Subcommittee. My name is Tom Haueter. I am the Deputy Director of the National Transportation Safety Board's Office of Aviation Safety. The Safety Board's Chairman, Mark Rosenker, asked me to represent the Board today to discuss issues in Aviation Safety.

Since becoming an independent agency, the Safety Board has issued over 3,500 aviation safety recommendations. Eighty-two percent of these recommendations have been adopted by the Federal Aviation Administration (FAA) or the aviation industry. We believe that in part through the Safety Board's accident investigations and recommendations, the United States enjoys the safest commercial air transportation system in the world. However, as the recent accident in Lexington, Kentucky shows, we must maintain our vigilance and need to continuously seek ways to make this very safe system even safer.

I would like to highlight a few areas where we believe additional efforts are required to reduce the potential for serious aviation accidents and some of the successes that we have seen in recent investigations.

Runway Incursions

In March 1977, in what remains the world's deadliest aviation accident, two passenger jumbo jets collided on a runway at Tenerife, Canary Islands. That accident resulted in the deaths of 583 passengers and crew. The deadliest U.S. runway incursion accident was a collision between a USAir 737 and a Skywest Metroliner commuter airplane at Los Angeles International Airport (LAX) in February 1991, killing 34.

Most recently, in July 2006, at O'Hare International Airport, a United 737 passenger jet and an Atlas Air 747 cargo airplane nearly collided. The 747 had been cleared to land and was taxiing on the runway towards the cargo area when the 737 was cleared to take off on the intersecting runway, over the 747. The pilot of the United 737 passenger jet took evasive action by taking off early. A collision was avoided by less than 200 feet.

The FAA has taken action to inform pilots and controllers of potential runway incursions, improve airport markings, and install the Airport Movement Area Safety System (AMASS) and Airport Surface Detection Equipment Model X (ASDE-X). These systems are an improvement, but are not sufficient as designed to prevent all runway incursions. The runway incursion rate in

the United States has not appreciably changed over the past 4 years, and stands at about 5.2 runway incursions per 1,000,000 tower operations, despite these improvements.

Runway incursion prevention has been on the Safety Board's "Most Wanted List" since the list's inception in 1990. A total of 21 runway incursion recommendations have been on the list over the years; currently, only one recommendation remains open. That recommendation urges the FAA to "require, at all airports with scheduled passenger service, a ground movement safety system that will prevent runway incursions; the system should provide a direct warning capability to flight crews. In addition, demonstrate through computer simulations or other means that the system will, in fact, prevent incursions." This recommendation is currently classified "Open—Unacceptable Response."

As indicated in this recommendation, information needs to be provided directly to the flight crews as expeditiously as possible to prevent incursions. The issue is one of reaction time. Safety Board investigations have found that AMASS is not adequate to prevent serious runway collisions, because too much time is lost routing valuable information through air traffic control. After an AMASS alert, the controller must determine the nature of the problem, determine the location, identify the aircraft involved, and determine what action to take. Only after all of these determinations are made can appropriate warnings or instructions be issued. The flight crew must then respond to the situation and take action. Simulations of AMASS performance using data from actual incursions show that alerts may occur as little as 8 to 11 seconds before a potential collision. In recent incidents, AMASS did not alert controllers in time to be effective, and the situations were instead resolved by flight crew actions that sometimes bordered on heroics or just plain luck.

The FAA is developing several technologies to further reduce the potential for runway incursions, such as runway occupancy signals that will flash the approach path lights when another aircraft or vehicle is on the runway, enhance the visibility of hold lines, and runway status lights to warn pilots that it is unsafe to enter a runway.

Aircraft Fuel Tank Flammability

Since 1989, aircraft fuel tank explosions have resulted in 346 fatalities. On July 17, 1996, Trans World Airlines, Inc. (TWA) flight 800, a Boeing 747-131, crashed in the Atlantic Ocean near East Moriches, New York. All 230 people on board were killed. The Safety Board found that the cause of the accident was an explosion of the center wing fuel tank, resulting from ignition of the flammable fuel/air mixture inside the tank. The source of ignition energy for the explosion could not be determined with certainty; however, the source of the ignition was most likely a short circuit of electrical wiring associated with the fuel quantity indication system.

Most recently, in May 2006, a fuel vapor explosion occurred in the left wing of a Transmile Airlines 727 in Banglore, India, resulting in substantial damage to the wing structure. The explosion occurred while the airplane was being towed, and fortunately, there were no injuries. The investigation found that the ignition source was the chafing of fuel pump wires inside a conduit that traversed the interior of the fuel tank, even though the fuel pump wires had been inspected and inserted into a protective sleeve to prevent chafing.

The investigation of the TWA flight 800 accident and subsequent fuel tank explosions found that a fuel tank design and certification philosophy that relies solely on the elimination of every ignition source, while accepting the existence of fuel tank flammability, is fundamentally flawed because experience has demonstrated that it is impossible to eliminate all ignition sources. Further, the risk of explosion exists for all fuel tanks, not just center, or fuselage, fuel tanks. The Safety Board believes that operating transport-category airplanes with flammable fuel/air vapors in fuel tanks presents an avoidable risk of explosion.

One recommendation regarding fuel tank flammability is currently on the Board's Most Wanted List and is classified "Open—Acceptable Response." That recommendation asks the FAA to give significant consideration "to the development of airplane design modification, such as nitrogen-inerting systems and the addition of insulation between heat-generating equipment and fuel tanks. Appropriate modifications should apply to newly certificated airplanes and, where feasible, to existing airplanes."

In 2002, the FAA developed a prototype inerting system that could be retrofitted into existing airplanes. The system has been flight tested by the FAA, Boeing, and Airbus, and the results indicate that fuel tank inerting is practical and effective.

The comment period on the FAA's notice of proposed rulemaking (NPRM) for the flammability reduction installation is now closed and the Board is awaiting a final rule from the FAA. The Safety Board hopes that the lessons learned from TWA 800 and other fuel tank explosions will result in the installation of systems to preclude the operation of transport-category airplanes with flammable fuel/air vapors in all fuel tanks on both passenger and cargo aircraft.

Aircraft Icing

Aircraft icing safety issues cover two different types of icing events: in-flight icing and icing that occurs on the ground, more commonly called upper-wing icing. In-flight icing occurred in the 1994 accident of an American Eagle ATR-72 commuter airplane in Indiana, which took 68 lives. Another accident occurred in Michigan in 1997 involving a Comair Embraer 120RT, which took 29 lives.

Aircraft icing issues have been on the Safety Board's "Most Wanted List" since 1997. Currently, four recommendations are on the list and all four are classified "Open—Unacceptable Response." These recommendations to the FAA address the need to expand the icing certification envelope to include freezing drizzle/freezing rain and mixed water/ice crystal conditions; as necessary; revise regulations to ensure that airplanes are properly tested for all conditions in which they are authorized to operate, or are otherwise shown to be capable of safe flight into such conditions; conduct additional research with NASA to identify realistic acceptable ice accumulations; and ensure turbopropeller-driven airplanes fulfill the requirements of the revised icing certification standards. The Safety Board has issued additional recommendations regarding icing that are not on the Most Wanted List.

More recently, on January 2, 2006, an American Eagle Saab-Scania SF340 encountered icing conditions during the en route climb after departure from San Luis Obispo, California. The airplane departed controlled flight at an altitude of about 11,500 feet mean sea level (msl), and the flight crew recovered control of the airplane at about 6,500 feet. There were no injuries to the 29 persons on board and the airplane did not sustain any damage. The digital flight data recorder (DFDR) showed that the upset began at 130 knots indicated airspeed and before the stall warning activated. The airplane rolled to 86° left wing down and then 140° right wing down. The loss of control lasted about 50 seconds, and the airplane lost 4,000 feet.

Following the accident near San Luis Obispo, the Safety Board recommended that the FAA require Saab SF340 series airplanes to maintain a minimum operating speed during icing encounters, to exit icing conditions if this speed cannot be maintained, to modify the stall protection logic in the SF340 series for flight into known icing conditions, to require the installation of an icing detection system on Saab 340 series, and to require all operators of turbopropeller-driven airplanes to disengage the autopilot and fly the airplane manually when operating in icing conditions.

Unfortunately, these high-risk upsets, such as that which occurred in the Saab SF340, continue to occur and mitigating actions are imposed on a case-by-case basis rather than a comprehensive upgrade of certification requirements and retrofit of the existing fleet as recommended in 1997.

From 1987 to 2003, 26 icing-related accidents and incidents occurred involving Cessna 208 series airplanes that involved both in-flight and ground accumulations of ice, fatally injuring 36 people. Fifteen of the 26 icing-related events resulted from ice that had accumulated while the airplane was in flight.

The investigation of an October 6, 2005, accident in Canada found that the pilot conducted a preflight inspection that included a tactile examination of the wings for ice and frost contamination. The entire accident flight, from takeoff to a near immediate attempt to return to the airport, lasted only about 5 minutes. The airplane was not equipped with flight recorders. Based on the circumstances of the accident, the Safety Board become concerned that the airplane, which was certified for flight into known icing, did not maintain flight in moderate icing conditions long enough to successfully land the airplane.

On November 19, 2005, a Cessna 208B was destroyed when it impacted terrain while on approach to Moscow, Russia. The two Russian certificated pilots and six passengers were killed. The accident is the first time that the Safety Board has investigated an accident in which a Cessna 208B was equipped with a cockpit voice recorder (CVR) and flight data recorder (FDR). The recorders were installed to comply with Russian certification requirements. The data from these recorders provided a significant amount of information that greatly aided investigators in determining the sequence of events in the accident and quantifying the effects of icing on the airplane's performance. The data showed that the airplane departed controlled flight at a speed only 3 knots lower that the published minimum operating icing airspeed and that no stall warning was provided to the pilots.

The Safety Board issued three urgent recommendations to the FAA asking that all operators of Cessna 208 series airplanes be required to maintain a minimum operating airspeed of 120 knots during flight in icing conditions, that the operation of Cessna 208 airplanes be prohibited in more than light icing conditions, and that the autopilot be disengaged and the airplane flown manually when operating in icing conditions. These far reaching recommendations would not have been possible without the recorded voice and flight data provided by the Russian accident.

In addition to in-flight icing, the Safety Board found that 10 of the 26 Cessna 208 accidents and incidents involved inadequate ice removal that had accumulated while the airplane was on the ground before takeoff. The Safety Board recommended that all pilots and operators of Cessna 208 series airplanes needed to conduct a visual and tactile examination of the wing and horizontal stabilizer leading edges and upper surfaces to ensure that those surfaces are free of ice and/or frost contamination before any flight from a location at which the temperatures are conducive to frost or ground icing.

Another example of ground icing is the November 28, 2004, accident involving an Air Castle Corporation Canadair CL-600, which crashed shortly after takeoff at Montrose, Colorado, resulting in three persons being killed and three with serious injuries. The flight crew failed to ensure that the airplane's wings were free of ice or snow contamination that accumulated while the airplane was on the ground. Of particular concern to the Safety Board is that a 14 *Code of Federal Regulations* (CFR) Part 135-qualified captain and first officer, both of whom received winter weather operations training in accordance with the company's FAA-approved winter operations procedures, could fail to understand the insidious nature of upper wing surface contamination and its threat to the safety of the flight. As a result of the investigation, the Safety Board recommended that the FAA "develop visual and tactile training aids to accurately depict small amounts of upper wing surface contamination and require all commercial airplane operators to incorporate these training aids into their initial and recurrent training."

Fatigue

The safety issue of operator fatigue has been on the Safety Board's Most Wanted List since the list's inception. Currently, the aviation area of the Most Wanted List includes three recommendations concerning pilot fatigue and one recommendation concerning maintenance crew fatigue. In December 1995, the FAA issued an NPRM to update flight and duty regulations for airline pilots; however, in the intervening 10 years, the regulations have not been revised. Three of the recommendations on the Most Wanted List are classified "Open—Unacceptable Response" due to a lack of progress.

In response to the Safety Board's recommendation to modify and simplify flight crew hours-of-service regulations to take into consideration factors shown by research, scientific evidence, and industry experience to affect crew alertness, the FAA indicated that an aviation rulemaking advisory committee (ARAC) had produced some promising work that would simplify hours-of-service practices for Part 135 operations. However, the Safety Board has not seen this work, nor has the FAA decided whether to make explicit regulatory changes based on the ARAC's work. The Board is aware that the FAA has attempted on three occasions to reach

consensus with the industry on a proposed rule but has been unsuccessful. The Board also notes that the ARAC only focused on Part 135 pilots, not all airline pilots, including those that fly commercial passenger airplanes.

At this time, the Safety Board is not aware of any current FAA activity to address fatigue issues in aviation safety, yet we continue to be concerned about the potential for accidents as a result of errors made by fatigued pilots or maintenance crews.

Landing Distance Calculation

On December 8, 2005, Southwest Airlines flight 1248, a Boeing 737, departed the end of a snow-contaminated runway (runway 31C) at Chicago Midway Airport (MDW), Chicago, Illinois, after landing. The airplane then rolled through a blast fence and a perimeter fence and then into traffic on an off-airport street. The airplane came to a stop after colliding with two cars, which resulted in the death of a child passenger in one of the vehicles. The investigation found that the flight crew used an on-board laptop performance computer (OPC) provided in the cockpit of Southwest Airlines' airplanes by the company to calculate the landing distance for the existing tailwind and contaminated runway. The OPC calculations provided little safety margin for stopping distance. The FDR data revealed that about 18 seconds passed from the time the airplane touched down to the time the thrust reversers were deployed.

Further, the investigation found that in permitting thrust reverser consideration, the FAA provisions left very little safety margin should thrust reversers fail or are inadvertently not utilized when landing on contaminated runways. The FAA allows operators to take credit for thrust reversers when landing on short contaminated runways. For example, the required runway length for 737-700 model airplanes is about 1,000 feet less with thrust reversers than the required runway length without the reverse thrust credit. In the Midway accident, the accident airplane could not be stopped on the runway because of the delay in thrust reverser deployment combined with the absence of an extra safety margin.

On January 27, 2006, the Safety Board issued an urgent recommendation for the FAA to "immediately prohibit all 14 CFR Part 121 operators from using the reverse thrust credit in landing performance calculations." On June 7, 2006, the FAA announced that it would issue operational requirements for air carriers requiring that, by October 1, 2006, jet operators include a 15 percent safety factor in landing distance calculation. The Safety Board indicated its support for this approach. In late August, the FAA indicated that, based on the large number of negative comments that it received in response to the announcement, it would start a more formal rulemaking process that will take considerably longer to implement. However, to spur faster action, on August 31, 2006, the FAA issued a Safety Alert For Operators (SAFO) recommending the landing distance calculation procedures in the June 7 announcement, including the 15 percent safety factor. The Safety Board is concerned that, because SAFOs are advisory only and operators are not required to comply with these alerts, operators will not take this important safety action; the Board is also concerned that the FAA's rulemaking will require considerable additional time to implement the intent of our recommendation.

Emergency Medical Services (EMS)

Between January 2002 and January 2005, 55 EMS aircraft (both airplanes and helicopters) accidents occurred in the United States (this number of EMS accidents had not been seen since the 1980s). These accidents resulted in 54 fatalities and 18 serious injuries. As a result, the Safety Board initiated a special investigation of these 55 accidents and identified the following recurring safety issues: less stringent requirements for EMS operations conducted without patients onboard; a lack of aviation flight risk evaluation programs for EMS operations; a lack of consistent, comprehensive flight dispatch procedures for EMS operations; and no requirements to use technologies such as terrain awareness and warning systems (TAWS) to enhance EMS flight safety.

The Safety Board examined similar safety issues after the occurrence of 59 EMS accidents between May 1978 and December 1986, and concluded in a 1988 safety study that many areas of EMS operations needed improvement; those included weather forecasting, operations during instrument meteorological conditions, personnel training requirements, design standards, crashworthiness, and EMS operations management. As a result of its findings, the Board issued 19 safety recommendations to the FAA and others, which have since been closed. Most of the recommendations to the FAA were closed as a result of the June 20, 1991, issuance of Advisory Circular (AC) 135-14A "Emergency Medical Services/Helicopter (EMS/H)." Although the Safety Board expressed concern at the time that the FAA chose to issue an AC instead of mandatory regulations, the number of EMS accidents was decreasing, thus the recommendations were closed. Despite the guidance provided in AC 135-14A and AC 135-15, EMS aircraft accidents have continued to occur in significant numbers.

Although the FAA took positive steps to improve EMS operation safety, the Safety Board was concerned that the FAA had not imposed any requirements for all aircraft EMS operators regarding the safety issues identified during the Board's special investigation. The Board is concerned that, without more rigorous standards, some EMS operators will continue to operate in an unsafe manner, which could lead to further accidents. Consequently, on February 7, 2006, the Safety Board recommended that the FAA: require all emergency medical services operators to comply with 14 CFR Part 135 operations specifications during the conduct of all flights with medical personnel onboard; develop and implement flight risk evaluation programs; use formalized dispatch and flight-following procedures that include up-to-date weather information and assistance with in flight risk assessment decisions; to install terrain awareness and warning systems on their aircraft; and to provide adequate training to ensure that flight crews are capable of using the systems to safely conduct EMS operations.

The FAA responded on May 30, 2006, that it was still evaluating these recommendations.

Since January 1, 2006, 14 additional EMS accidents have occurred with a total of 5 fatalities.

Turbine Engine Disk Failure

On June 2, 2006, an American Airlines Boeing 767-223(ER) equipped with General Electric (GE) CF6-80A engines experienced an uncontained failure of the high pressure turbine (HPT) stage 1 disk in the No. 1 (left) engine during a high-power ground run for maintenance at Los Angeles International Airport, Los Angeles, California. There were no injuries, but the airplane sustained substantial damage.

The HPT stage 1 disk had ruptured and was completely missing from the engine. The pieces of the ruptured disk revealed that it had broken into four pieces. One piece of the disk, which initially bounced off of the ground before penetrating the airplane, completely severed the airplane's left-hand keel beam and partially severed the right-hand keel beam before exiting the airplane and becoming lodged in the No. 2 engine's exhaust duct. A second piece of the disk was found in the airplane embedded in an air duct. A third piece of the disk was found about 2,500 feet away from the airplane against an airport perimeter fence after crossing two active runways and taxiways. The fourth triangular-shaped piece of the disk was found embedded in the engine pylon. There were numerous holes in the left and right wing fuel tanks where fuel leaked out, feeding the ground fire that burned the left wing and the fuselage aft of the wing.

Metallurgical examination of the pieces of the disk at the Safety Board's materials laboratory revealed that the disk ruptured from a rim-to-bore radial fracture that had originated at a small dent at a blade slot, bottom aft corner. The examination also revealed that the aft corner in two other slot bottoms each contained a crack that coincided with a small dent. It was not possible to determine how fast the fatigue fracture propagated before the disk ruptured. The American Airlines incident raises serious safety concerns because, if the disk had ruptured during flight rather than on the ground during maintenance, the airplane quite possibly would not have been able to maintain safe flight.

Similarly, on September 22, 2000, a US Airways Boeing 767-2B7(ER) airplane, equipped with GE CF6-80C2B2 engines, experienced an uncontained failure of the HPT stage 1 disk in the No. 1 engine during a high-power ground run for maintenance at Philadelphia International Airport, Philadelphia, Pennsylvania. The uncontained failure caused a fire under the left wing of the airplane. The mechanics were not injured, and the No. 1 engine and the airplane sustained substantial damage. At the time of the failure, the disk had accumulated 7,547 cycles (or flights) since new (CSN). The Board is also aware of an uncontained HPT stage 1 disk rupture that occurred on an Air New Zealand Boeing 767-219(ER) equipped with GE CF6-80A engines while the airplane was climbing through 11,000 feet on a flight from Brisbane, Australia, to Auckland, New Zealand, on December 8, 2002. A section of the disk's rim and web separated and, after penetrating the engine's case and nacelle, damaged the left wing's leading edge. The airplane was able to return to Brisbane for a safe landing, and none of the 10 crewmembers and 190 passengers onboard were injured. At the time of the incident, the ruptured Air Zealand HPT stage 1 disk had accumulated 12,485 CSN.

Although some of the issues identified thus far in the Board's investigation of the American Airlines event were previously addressed by recommendations resulting from the US Airways investigation, the FAA's corrective actions appear inadequate. Based on the fact that an

uncontained failure of an HPT stage 1 disk has now recurred, we believe more stringent inspection requirements would be justified.

The Safety Board is concerned that disks that have not yet been inspected or reworked present a significant risk for another uncontained HPT stage 1 disk rupture. Historically, establishing an inspection or rework schedule would require using a factor of two or three below the time to failure. However, in this case, it is unknown when the cracks initiated or how many cycles elapsed from crack initiation to failure. Therefore, to establish a conservative margin for these disks, inspection and rework should occur well before the 5,144 CSN thresholds where fatigue cracks were found or the 7,547 CSN thresholds where the US Airways disk failed.

Because the Safety Board is concerned that another failure may be imminent if immediate action is not taken, on August 28, 2006, the Safety Board issued one urgent and five other recommendations to the FAA. These recommendations focused on lowering the inspections requirement to 3,000 CSN and to review the stress analysis of the disks.

Helicopters

Servo Actuators

On August 10, 2005, a Sikorsky S-76C+ helicopter, operated by Copterline under Finland registration, departed Tallinn, Estonia, for Helsinki, Finland. The helicopter experienced an upset and crashed into the Baltic Sea, killing all 12 passengers and two pilots. The FDR showed that the helicopter suddenly pitched up and rolled to the left, followed by a series of rotations to the right until striking the water. The Safety Board is assisting the Aircraft Accident Investigation Commission (AAIC) of Estonia in the investigating the accident under the provisions of Annex 13 to the International Convention on Civil Aviation.

This accident was unique in that it was the first time the Safety Board had examined FDR information from a helicopter accident. FDR data and aerodynamic simulations are consistent with an uncommanded extension of the forward actuator that would result in a large nose-up pitch upset, a large roll to the left, an aft movement of the cyclic control, and an upward movement of the collective control.

During postaccident testing, the accident helicopter's forward actuator failed a manufacturer's acceptance test. The actuator would extend on command, but the retraction time to the neutral position was much slower than the test protocol specified. Subsequent disassembly of the actuator revealed several discrepancies including: large pieces of coating material had flaked; the piston head and balance tube seals had excessive wear and pieces of the coating were embedded in the seals and control valve, all of which contributed to internal hydraulic fluid leakage; pieces of the coating had blocked one of the return ports in the control valve; and numerous pieces of coating were found throughout the actuator.

Because proper operation of main rotor actuators is critical to safe flight, on November 17, 2005, the Safety Board urged the FAA to take immediate action to ensure the continuing airworthiness of the S-76 fleet.

On April 21, 2006, the FAA issued an NPRM for the detection of high leakage rate servo actuators and the reduction of the time-in-service interval for overhauling the servo actuators. Additionally, the Safety Board's recommendation letter resulted in many operators conducting leakage tests of their servos without a regulatory requirement. To date, the FAA has not mandated corrective action.

Terrain Awareness

The prompt safety actions taken as a result of the Estonia investigation were, to a large extent, due to the availability of the FDR data; however, the investigation of another S-76 accident was hampered by the lack of recorded data. On March 23, 2004, an Era Aviation Sikorsky S-76A++ helicopter crashed into the Gulf of Mexico about 70 nautical miles south-southeast of Galveston, Texas. The captain, copilot, and eight passengers aboard the helicopter were killed, and the helicopter was destroyed by impact forces. The Safety Board determined that the probable cause of this accident was the flight crew's failure to identify and arrest the helicopter's descent for undetermined reasons, which resulted in controlled flight into terrain (CFIT).

Although the investigation was hampered by the fact that there was no recorded flight data information, the Safety Board concluded that if TAWS had been installed aboard the accident helicopter, the system's aural and visual warnings should have provided the flight crew with ample time to recognize that the helicopter was descending toward the water, initiate the necessary corrective actions, and recover from the descent. Therefore, the Safety Board recommended that the FAA require all existing and new U.S.-registered turbine-powered rotorcraft certificated for six or more passenger seats to be equipped with a TAWS.

Automatic Dependent Surveillance-Broadcast (ADS-B)

The Era Aviation investigation also found that the FAA cannot provide flight-tracking services for low-flying aircraft in the Gulf of Mexico beyond the capabilities of existing FAA land-based radar sites.

The FAA's Safe Flight 21 Gulf of Mexico initiative was developed to determine whether automatic dependent surveillance–broadcast (ADS-B) technology would be effective in providing pilots with navigation, air traffic, terrain, and weather information in the cockpit and enabling air traffic controllers and operators to provide surveillance (including position and altitude) of low-flying aircraft in those areas with limited or no radar coverage.

ADS-B technology has already been successfully deployed in Alaska as part of the Safe Flight 21 Capstone program. The FAA's Capstone website indicates that, according to a 2004 safety study by the University of Alaska, the accident rate for aircraft under the Capstone program had decreased by 47 percent from 2000 to 2004. Also, according to a 2003 safety study contracted by the Capstone program, the ADS-B technology used in the Capstone program would have been effective in preventing about 80 percent of the en route CFIT accidents that occurred in southwest Alaska (the Phase I Capstone area) between 1990 and 1999.

ADS-B technology has many potential benefits for flight operations in the Gulf of Mexico. For example, if the ADS-B infrastructure had been operational in the Gulf of Mexico at the time of the accident, (1) the Era Aviation dispatcher would have had better flight-tracking and communication capabilities and thus could have monitored the accident helicopter's flightpath and provided an alert to the flight crew about the descent, and (2) the pilots would have received a warning in the cockpit about the descent. Also, ADS-B technology has many potential benefits for search and rescue operations in the Gulf of Mexico. For example, in September 2005, a Houston Helicopters S-76A helicopter was ditched in the Gulf of Mexico after an in-flight fire. The 2 pilots and 10 passengers escaped from the helicopter but remained in the water for about 7 hours until they were located by U.S. Coast Guard personnel using night vision goggles. ADS-B technology would have facilitated the search and expedited the rescue of the helicopter occupants. In addition, ADS-B technology would benefit accident investigations because information on an aircraft's airspeed, altitude, and position (that is, whether the aircraft was turning, climbing, or descending) would be available to investigators.

On March 1, 2006, the FAA informed the Safety Board verbally that the Gulf of Mexico would be among those areas in the first segment of ADS-B infrastructure deployment.

It would be an enormous contribution to flight safety if the milestones for the National ADS-B Program in the Gulf of Mexico are achieved or ahead of schedule and that the fiscal year 2010 completion date for ADS-B deployment in the Gulf of Mexico does not slip. This matter is especially important given the number of passengers and flights in the region (in 2004, more than 2.3 million passengers were transported aboard 1.3 million flights) and the inherent risks of offshore helicopter operations.

Boeing 777 Latent Software Deficiency

On August 1, 2005, a Malaysian Airlines 777-200 aircraft, being operated on scheduled passenger service from Perth, Australia, to Kuala Lumpur, Malaysia, experienced a severe uncontrollable pitch-up event while passing through approximately 36,000 feet with the autopilot engaged. The pitch-up continued, causing the airplane's speed to decrease to the point where the airplane's stickshaker activated, signalling approach into airplane stall conditions. The flight crew recovered the airplane to normal controlled flight at approximately 38,000 feet and returned to Perth for an uneventful landing. The Safety Board is participating in the investigation led by the Australian Transport Safety Bureau (ATSB) in accordance with Annex 13 to the Convention on International Civil Aviation.

Safety Board investigators conducted examinations and testing of the hardware and software components of the Fault Tolerant Air Data and Inertial Reference Unit (F-T ADIRU) box at the manufacturer's facility with technical assistance provided by the Boeing Company and the box manufacturer, Honeywell. This testing and examination revealed that multiple accelerometer sensor outputs had failed inside the unit and that the onset of the pitch-up event coincided almost exactly with the failure of the second accelerometer device output. This occurrence in the presence of other operating conditions could have been catastrophic. As a result and in response to the Safety Board's investigation, the FAA directed interim safety action

be taken to immediately install a version of the software that was not subject to the deficiency until such time as a revised, permanent software fix could be installed.

Both Honeywell and the Boeing Company performed extensive internal process audits to validate the Air Data Inertial Reference System and F-T ADIRU designs and review all of the safety issues raised by both the ATSB and the Safety Board as a result of the investigation. Five hundred thirty 777 aircraft have been delivered to 34 operators worldwide since 1995. Up until the time of this incident, the 777 fleet had accumulated in excess of 10 million flight hours without a related event.

This investigation represented a textbook case in which cooperation between two investigation authorities, the ATSB and the Safety Board, working with the FAA and industry, were able to determine the cause of a serious upset event and rapidly implement corrective actions before there was an accident.

Air Cargo Accident Investigations

On February 7, 2006, a Douglas DC-8, operated by United Parcel Service Company (UPS) as flight 1307, landed at Philadelphia International Airport (PHL), Philadelphia, Pennsylvania, after the crew reported a cargo smoke indication. Ground personnel reported flames shooting through the crown of the airplane after it touched down. The three flight crewmembers were able to evacuate with minor injuries; however, the aircraft was essentially destroyed.

The Safety Board held a public hearing on this accident July 12-13, 2006. Issues addressed at the hearing included: airport rescue and firefighting response; design, testing, and failure modes of lithium batteries; regulations concerning the shipment of lithium batteries on aircraft; and airplane fire suppression systems.

Previously, the Safety Board held a public forum on air cargo safety from March 23 to 24, 2004. The forum was attended by over 160 participants representing industry associations such as the FAA, Cargo Airlines Association, Airline Pilots Association, National Air Carrier Association and the Regional Airline Association, as well as major cargo carriers like Federal Express and Hawaiian Airlines. Panel discussions addressed operational, human factors, and regulatory issues associated with cargo operations.

Other recent Safety Board investigations involving cargo aircraft include the December 2003, hard landing accident involving a Federal Express MD-10 in Memphis, Tennessee, and the July 2002, accident involving a Federal Express Boeing 727 that landed short in Tallahassee, Florida. Both of these accidents resulted in hull losses.

Unmanned Aerial Vehicles/Systems (UAV/S)

On April 25, 2006, the Safety Board launched a regional team to the Nogales, Arizona, crash site of a General Atomics Predator B unmanned aerial vehicle.

The aircraft crashed near a house in a lightly populated residential community. There were no injuries and the aircraft was substantially damaged. Equipment failures and operational failures led to the loss of command control of the airplane, engine stoppage, and a gliding descent to a crash landing. The accident, which is still under investigation, will include review of areas such as training, mission planning, systems/software reliability, design of operator consoles, system operation, and management of the UAV.

This was the Safety Board's first launch to a UAV accident. This was a public-use aircraft operating in the national airspace by the Department of Homeland Security, U.S. Customs and Border Protection agency. We expect to be investigating more UAV accidents as the numbers of operations increase in the United States.

Flight Recorders

Since January 2000, the Safety Board has investigated numerous accidents involving turbine-powered aircraft not required to operate with either a CVR or an FDR. Included among these accidents was the October 25, 2002, accident involving a Raytheon (Beech) King Air that crashed on approach to Eveleth-Virginia Municipal Airport, Eveleth, Minnesota, killing all eight persons on board, including Senator Paul Wellstone. The airplane was not equipped with either a CVR or an FDR at the time of the accident, nor did Federal regulations require it to be so equipped.

The Safety Board has investigated several cases in which the aircraft was not required to be equipped with a flight recorder, but a CVR was installed voluntarily on the aircraft. The Board has found that data from these CVRs provided invaluable information during its investigations. Specifically, in the beginning phases of an investigation, CVR data may reveal operational issues that are not readily apparent from the physical evidence found at an accident site, enabling the Safety Board to immediately narrow the focus of its investigation and issue safety recommendations quickly to prevent similar accidents. In some instances, CVR data may be the sole source of evidence for a probable cause.

In addition, Safety Board investigators have repeatedly found that CVRs installed in conjunction with FDRs provide data instrumental in reconstructing events leading to the accidents. Specifically, CVRs have provided insight into the operational environment within the cockpit and FDRs have provided information regarding the aircraft's performance. Using data from both recorders, investigators have been able to determine the aircraft's motion and crewmember response to it, or conversely, how crewmember actions affected the airplane's performance. The CVR and the FDR each provide a different but complementary perspective on the events leading to an accident.

Although CVRs and FDRs are required on most larger passenger-carrying aircraft, the Safety Board is concerned because two categories of smaller aircraft that have experienced numerous accidents are excluded by the current regulations and are not required to be equipped with any crash-protected recorder: single-pilot certificated turbine-powered aircraft and dual-certificated cargo/passenger aircraft. As discussed earlier, the CVRs and FDRs installed on the Cessna 208B involved in the Russian icing accident and the S-76 helicopter involved in the

Tallinn, Estonia accident provided remarkable insight into the causes of those accidents, revealing safety issues that may not have been recognized without those recorders. When neither CVR nor FDR data are available, Safety Board investigators can sometimes compensate in part with radar data or air traffic control recordings. However, these data do not provide the same level of detail about the aircraft's flight path, flight conditions, or operations as that provided by CVR and FDR data. Furthermore, when accidents occur in areas outside radar coverage, these data are not available.

Considering the number of accidents occurring in these smaller aircraft, the Safety Board has identified the need to install crash-protected recording devices on all turbine-powered aircraft. The Board recognizes the economic impact of requiring both a CVR and an FDR on smaller aircraft and consequently proposes that all smaller turbine-powered aircraft be equipped with a single crash-protected recorder, the video image recorder. Such recorders obtain not only audio information like that from CVRs and event data like that from FDRs, but also information about the environment outside the cockpit window.

An image recording system, estimated to cost less than $8,000 installed, typically consists of a camera and microphone located in the cockpit to continuously record cockpit instrumentation, the outside viewing area, engine sounds, radio communications, and ambient cockpit noises. Like the data on conventional FDRs or CVRs, image recorder data can be stored in a crash-protected unit to ensure survivability.

Air Tours

In 1995, the Safety Board issued a special investigation report on air tour accidents. Despite the numerous recommendations made in this report, the number of air tour accidents has not decreased. From January 1, 1996 to December 31, 2005, 148 air tour accidents occurred, involving 113 fatalities. In response to a recent spike of air tour accidents in Hawaii, the Grand Canyon, and other areas of the country, Safety Board staff initiated a Safety Assessment Team to study air tour safety issues. The team's task has been to research all of the recent air tour accidents, fatal and nonfatal and fixed and rotary-wing aircraft, to identify common factors in these accidents, to identify areas of safety deficiencies, and to propose recommendations to prevent future accidents.

The team has interviewed FAA inspectors and air tour operators and is evaluating the effectiveness of Special Federal Air Regulations 71 in Hawaii and 50-2 in the Grand Canyon. The majority of the team's work is complete, and several issues have been identified for additional scrutiny. These issues include FAA oversight of air tour operators in Hawaii and the Grand Canyon, specialized air tour pilot training, reporting of air tour activity data, efficacy of current air tour rules, adequacy of Part 91 air tour flights, the use of ADS-B, and actions that air tour operators can take to enhance the safety of their own operations.

The Safety Board has been informed that the FAA plans to issue a comprehensive final rule concerning air tours this fall. Although the Board has not seen the details of the final rule, it appears to address many concerns previously addressed in recommendations; however, some issues may remain. We are awaiting the final rule to see if there are additional areas in need of

attention based on some of the recent air tour accidents staff has investigated. Based on discussions with FAA staff, we are concerned that the FAA may not require operators to submit data on the number of flights or passengers carried and continue to allow the 25 nm exemption allowing commercial air tour companies to operate under Part 91.

Summary

The above cases illustrate the scope of the investigations conducted and issues addressed in recent years by the Safety Board's Office of Aviation Safety. I have also identified some of the open recommendation areas that remain of great concern to the Safety Board and that directly relate to the safety of the traveling public. The addition of very light jets, UAVs, privately launched space vehicles, and light sport aircraft may present new and potentially significant challenges to the aviation safety community. As I previously mentioned, the United States enjoys a very safe air transportation system and the Safety Board and its staff are dedicated to continuing to find ways to make aviation travel even safer.

Mr. Chairman, this completes my statement, and I will be happy to respond to any questions you may have.

OPENING STATEMENT OF
HONORABLE JAMES L. OBERSTAR, M.C.

BEFORE THE HOUSE AVIATION SUBCOMMITTEE
OVERSIGHT OF FEDERAL AVIATION ADMINISTRATION
SAFETY PROGRAMS

SEPTEMBER 20, 2006

- I want to thank Chairman Mica and Ranking Member Costello for calling today's hearing on *Oversight of Federal Aviation Administration Safety Programs.* In recent years, U.S. aviation has had a remarkable safety record. The rate of fatal airline accidents involving passengers is about .007 per 100,000 departures -- about 1 every 16 million flights. This is laudable, especially in these tough economic times. Even with U.S. airlines having lost approximately $38 billion since the beginning of 2001, safety has not been compromised.

- However, while we have made great strides in aviation safety in the last several years, our work is not yet finished. The August 27, 2006 crash of Comair Flight 5191 at the Blue Grass Airport in Lexington, Kentucky quickly focused our attention again on safety. While we will not know the probable cause of the Comair crash until the National Transportation Safety Board (NTSB) completes its investigation, serious questions have been raised regarding the Federal Aviation Administration's (FAA) air traffic control staffing policies, and we should waste no time in evaluating those questions to ensure that FAA applies its controller staffing policies consistently across our nation's air traffic control towers.

Maintenance Outsourcing

- I have long been concerned about the systematic outsourcing of a highly skilled, technical workforce in the U.S. -- aviation mechanics.

- To stay competitive and avoid bankruptcy, or recover from bankruptcy in this post September 11th era, network airlines are looking into all areas of their operations to cut costs. Many of the airline industry's legacy carriers have resorted to closing their own maintenance bases and have increased their use of outside maintenance providers to perform critical long term maintenance, including: airframe repairs, aging aircraft modifications, engine overhauls, and advanced avionics maintenance.

- This systemic outsourcing has contributed to the elimination of over 27,000 maintenance jobs at mainline carriers since 2001. At the end of calendar year 2005, nine of the major airlines were spending 62% of their approximately $5.5 billion maintenance dollars on outsourced maintenance providers. Based on data from nine carriers whose maintenance practices are currently being reviewed by the Department of Transportation Inspector General (DOT IG), approximately 58% of all heavy maintenance checks were outsourced in 2005, with twenty three percent of those checks being conducted at foreign facilities.

- This increased use of outside maintenance vendors creates several challenges for the FAA, not the least of which is ensuring that it has adequate resources to oversee those organizations that are actually conducting the maintenance work. For example, the DOT IG found in a December 2005 audit that more scheduled airline maintenance work is being done at non-certificated repair facilities, and that FAA was unaware of the types of maintenance activities these facilities are providing airlines. The DOT IG also noted, in a June 2005 audit, that the FAA is not keeping pace with the rapidly occurring changes in the aviation industry and stated that it is "important to maintain a safety inspector workforce that is sufficient to achieve its mission of safety oversight."

- It is my understanding that because of budget cuts, the FAA is well below the safety staff needed to complete its critical safety mission. In FY 2005, FAA lost 175 aviation critical positions in its Flight Standards office. While FAA's FY 2007 budget called for an increase of 111 safety inspectors, this minimal staffing gain would not be sufficient to offset recent inspector losses or the potential attrition in the coming years. Moreover, inspector workload demands could dramatically increase with the introduction of microjets, unmanned aerial vehicles and the expansion of its risk-based air carrier oversight system to all 116 air carriers.

- If these staffing shortages are allowed to continue, FAA will be at an increased risk of not being able to provide safety oversight of air carrier and repair station maintenance, as well as new and emerging aviation operators. Both the DOT IG and the Government Accountability Office (GAO) have completed several reports in the last few years on a range of safety issues for me, including several on maintenance oversight. I look forward to hearing from both witnesses on FAA's implementation of the myriad of recommendations that have accompanied their respective reports.

Fatigue

- Another of the most critical issues facing aviation today is fatigue, especially in this economic downturn and with the air carrier's emphasis on increasing productivity and driving down labor costs. Working long hours on an irregular schedule can have a deleterious effect on a flight crew's decision-making abilities. As I have repeatedly said: Fatigue does not show up in autopsies! Our nation's flight crews must be provided adequate rest to perform their critical safety functions. Anything less is simply not acceptable!

- This is not just an aviation issue however-- it is an issue that cuts across all transportation modes. Vince Lombardi was well known for his comment "Fatigue makes cowards of us all." What he meant was it weakens all of your senses, all of your reaction times, all of your ability to perform at the highest level. Fatigue is a constant challenge facing all aviation safety professionals, from pilots and flight attendants to controllers.

- Seventeen years ago, the National Transportation Safety Board called upon the DOT – including the FAA – to review its current hours-of-service regulatory schemes to ensure that the latest scientific research on fatigue and research had been incorporated. Progress on FAA's proposed 1995 overhaul to its flight and duty regulations has essentially stopped under the Bush Administration.

- Having a well-rested flight crew is critical to aviation safety – whether they are flying passengers or cargo. It is time to refocus our efforts and press the FAA to resolve these very significant and complex flight and duty issues.

Aging Aircraft

- Despite recent efforts by U.S. air carriers to retire and replace older aircraft, the average age of the commercial airplane fleet is increasing and many airplanes are being operated well beyond the amount of time anticipated when they were originally manufactured. Ensuring the integrity of aging aircraft is an issue that must remain on the forefront if we are to continue to maintain the safest aviation system in the world. Last December, a 58-year old seaplane operated by Chalk's Ocean Airways lost its right wing during flight and crashed off the coast of Miami, killing all 20 people on board. Preliminary reports indicate that NTSB investigators found evidence of age-related fatigue cracking in the right wing of the accident aircraft.

- I have long been an advocate for higher inspections standards for aging aircraft, and was the principle author of the *Aging Airplane Safety Act of 1991* (the "Act"). The Act required the FAA to perform special inspections of aircraft after approximately 14 years of service, with attention directed to possible problems associated with the aging process. In February 2005 – almost 14 years after the Act was passed -- FAA finalized its Aging Airplane Safety Rule to address the safety of aging airplane structures.

- I asked the DOT IG to review the FAA's implementation of the Aging Airplane Safety Rule. In its September 7 response, the IG informed me that there continues to be weaknesses in FAA's inspection and records review processes, including gaps in the coverage of certain entities. I look forward to hearing more from the DOT IG in this regard.

- Mr. Chairman, this Subcommittee must continue to be vigilant in overseeing FAA's safety programs so that neither the Congress nor the FAA becomes complacent. The American traveling public deserves no less.

Oversight of Federal Aviation Administration Safety Programs
September 20, 2006
Mr. Reynolds

Mr. Chairman, thank you for giving me the opportunity to share my thoughts and opinions regarding the Federal Aviation Administration's Safety Programs.

Today's hearing focuses on oversight of the FAA's safety programs and in particular on the safety record achieved in the last several years.

I understand that safety is the number one priority of the FAA, and certainly for the users of our aviation system. This is why the U.S. aviation system is the safest in the world.

It is said that aviation is by far the safest form of transportation in the United States. According to FAA, you are about 40 times safer in an airliner than on the safest highway system in the country.

But despite the high level of aviation safety we enjoy here in the United States, we must ensure that FAA maintains the most up to date safety practices by relying on new science and technology.

And that is why I am here today on behalf of my constituent, Dr. Richard T. Sarkin. Dr. Sarkin was a passenger on the fatal flight of Corporate Airlines Flight 5966 on October 19, 2004.

We are all aware that the risks associated with flight cannot be eliminated completely. However, the Corporate Airlines Flight 5966 accident in Kirksville, Missouri in October 2004 is a sobering reminder of the need for the utmost safety in the aviation industry.

Back in February, I sent a letter to the Federal Aviation Administration asking for a response to the January 24, 2006 Aviation Accident report issued by the National Transportation Safety Board (NTSB) on the Corporate Airlines accident.

The NTSB report indicated that pilot fatigue was a contributing factor in the Corporate Airlines accident. As a result of its investigation, the NTSB

recommended that FAA revise its 1940s-era flight-and-duty time rules for pilots.

The fact that two-crew members were trying to land their sixth flight of the day after more than 14 hours on the job was apparently a major contributing factor to a valuable loss in my constituency. We lost the popular Dr. Sarkin, a resident of the Town of Amherst, NY, pediatrician, husband, father of two children and a strong member of the Amherst community.

I understand and appreciate the complexity of this issue, which requires the FAA to take into account recent research, scientific evidence and current industry experience. I also understand that no clear consensus emerged from the thousands of comments the FAA received in response to new rules for pilot on-duty time and rest periods that the agency proposed in 1995 and 1998.

Nevertheless, it is disturbing to learn that if 20-year-old British pilot duty-time rules had been applied to the Corporate Airlines flight, the pilots would have concluded their day about four hours before the scheduled take off of Flight 5966 and twelve people, including Dr. Sarkin, would still have their lives.

Existing FAA pilot duty regulations do not reflect recent research on pilot fatigue and sleep issues, increasing the possibility that pilots will fly in a fatigued condition. Providing pilots with additional fatigue-related training, such as that being developed by the U.S. Department of Transportation's Operator Fatigue Management Program, may increase their awareness and use of fatigue avoidance techniques and thus improve safety margins.

Pilot flight and duty time requirements are a critical component of aviation safety. I urge you to consider new regulations that employ the latest scientific data to address pilot fatigue, which continues to be a significant factor in many fatal aviation crashes.

The safety of air passengers from Western New York to California are depending on this, and I look forward to working with my colleagues and the FAA to ensure the best regulations are in place to avoid another tragedy like the one that befell Dr. Sarkin.

Ileana Ros-Lehtinen
September 20, 2006

Transportation and Infrastructure Committee
Aviation Subcommittee
Federal Aviation Administration Safety Programs Hearing

Submission for the record –

Aviation safety has come to the forefront of initiatives to increase the security and safety among our citizens.

In recent years we have focused heavily in updating our security measures and standards for commercial aviation safety.

However air cargo safety has fallen by the wayside.

Air cargo safety, specifically relating to small air cargo carriers has not been reviewed with the same zeal that civilian air transportation has received.

This past July the *Miami Herald* published a series entitled "Deadly Express" which exposed some troubling facts and figures regarding the aviation cargo industry focusing on smaller air cargo planes.

This series reported a staggering 60 crashes and 80 deaths in a five-year period.

It also revealed that aviation cargo pilots are frequently flying long hours with inadequate flight training.

With less training than commercial pilots air cargo pilots must fly in weather that would ground commercial aviation in order to meet tight deadlines.

Inspections and maintenance of these smaller air cargo planes are not regulated by the same standards that apply to larger carriers, which frequently leads to ill maintained and faulty equipment.

All of these factors combine to create a very dangerous work environment that fails to protect pilots of smaller air cargo carriers.

I would encourage our panelists to closely examine the regulations affecting our small air cargo industry in order to make our skies safe for all our pilots and citizens.

As the Department of Transportation Inspector General review points out there is a large loophole in the inspection of small air cargo planes.

Small air cargo planes are not mandated to undergo the same rigorous inspection regimes as the other older planes.

Air cargo planes that crashed were 26 years old – 3 times older than commercial passenger airline planes, and had fewer safety features.

Thank you Mr. Chairman

STATEMENT OF NICHOLAS A. SABATINI, ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY, FEDERAL AVIATION ADMINISTRATION, BEFORE THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION, ON FAA SAFETY OVERSIGHT, SEPTEMBER 20, 2006.

Chairman Mica, Congressman Costello, Members of the Subcommittee:

I am pleased to appear before you today to discuss the current state of Federal Aviation Administration (FAA) aviation safety oversight. My primary message to you today is that despite the tragic accident that took place in Lexington, Kentucky last month, the safety record of aviation in the United States (U.S.) is extraordinary. And while the Kentucky accident serves as an important reminder that our work as safety professionals is never done, we remain in the midst of the safest period in aviation history. Since 2001, U.S. scheduled air carriers have transported approximately 2.2 billion passengers, or seven times the population of our country. Over that time period we have had a total of seventy-eight passenger fatalities.

All of us who work for or with aviation professionals can take pride in the results of our collective efforts, especially given the economic turbulence that has been experienced by U.S. carriers in recent years. I am here today to commit to you that, while I take great pride in the current state of aviation safety, the FAA has no intention of becoming complacent. Aviation is extremely dynamic and FAA must be prepared to not only keep pace with, but stay ahead of changes in the industry. It is in that context that I would like to share with you where we are in terms of aviation safety today, the challenges we face now and in the future, and how we intend to address them.

In the early 1990's, the Boeing Company projected that if the aviation industry did not take strong preventive measures in safety initiatives in commercial aviation, the projected growth in operations over the next 20 years would increase the number of hull loss accidents worldwide to approximately one every week. This was a wake up call to all who worked in and cared about aviation. Because of work done collectively by government, industry, and operators, today a fatal accident occurs about every 15 to 16 commercial million flights. This is a far cry from what Boeing predicted, and is an accomplishment for which we can all be proud. Today, commercial airline accidents are so rare that when they do occur, they are big news, as we recently experienced. In the glare of all the media, it is sometimes hard to fully appreciate the magnitude of the achievement that our safety record reflects. By no means do I want to downplay the Kentucky accident, but it must be put into context so the flying public understands that our system is extremely safe. In fact, pilots are actually safer on the job than when they are not at work.

It is also important to understand that FAA's commitment to aviation safety is not limited to commercial operations, and that we are meeting our safety goals in general aviation as well. We are in the midst of a major revitalization in that segment of the industry that is due, in large part, to legislation Congress passed in 1994 - the General Aviation Revitalization Act. The General Aviation Manufacturers Association (GAMA) recently announced record breaking shipment and billing figures. Over the past year, FAA issued approvals for new general aviation airplane designs, such as Sino Swearingen's SJ-30,

Cessna's Mustang, and Eclipse's 500 model. These new aircraft, and the introduction of the light sport classification of aircraft and pilots last year, represent growing segments of general aviation and the continued evolution of our system. FAA sets tough safety improvement targets for general aviation expressed as a "not-to-exceed" number of fatal accidents, which decreases every year. With 10 days left in the fiscal year, we are on target to come in about 10% below our not-to-exceed number. Put more simply, this has been the safest year in general aviation since we started keeping records. General aviation is a vital part of the industry and we are pleased to report that it is so robust and safer than ever.

Turning to the area of air cargo, there are two primary operational federal aviation regulations (FAR) overseeing air cargo, FAR part 121 for operators of larger aircraft, and FAR part 135 for non-scheduled operators using smaller aircraft. The part 121 cargo operation per departure hull loss accident rate has consistently improved, and now stands at about one-third of where it was in 1990. Without precise data on the number of departures for the part 135 operators, we track the total number of accidents. A consistent downward trend is also shown for the 135 operators with the number of accidents in 2005 at about half of what they were in 1990.

A review of the accident data indicates that in both types of operations, the accident rates are declining. The trends are coming down. The FAA implemented a number of safety initiatives after the Fine Air accident in 1998, which involved improper loading of cargo. We issued several guidance documents including an Advisory Circular AC 120-85 titled

"Air Cargo Operations." This AC focuses on cargo loading procedures, cargo handling systems, and weight and balance.

Another area of focus for the FAA is in the Helicopter Emergency Medical Service (HEMS) operations, an industry that has grown rapidly in recent years. These operations are unique due to the emergency nature of the mission. The number of accidents nearly doubled between the mid-1990s and 2004. There were 9 accidents in 1998, compared with 15 in 2004, with a total of 83 accidents from 1998 through mid-2004. The main causes were controlled flight into terrain (CFIT), inadvertent operation into instrument meteorological conditions, and pilot spatial disorientation/lack of situational awareness in night operations.

Safety improvements were clearly needed. That is why in August 2004 the FAA initiated a new government and industry partnership to address these concerns and improve the safety culture of HEMS operators. Working with industry, the FAA developed several short and long-term strategies for reducing accidents. An example was the development of Risk Assessment Program guidance for HEMS operations. Another example was the development and implementation of Air Medical Resource Management Training. As a result of the efforts of the FAA and industry, there has been a marked decrease in accidents in this area.

As I stated at the outset, we recognize that we cannot rest on our laurels. We are constantly looking ahead and working with people in both government and industry to

find ways to make this very safe system even safer. It is not acceptable for FAA to react to changes in the system, we must anticipate them.

With that in mind, what are we anticipating in the years ahead? What are the challenges we will face, and how will we face them? The legacy carriers are undergoing fundamental shifts and changes in their business models. There are significant pressures to reduce costs which have resulted in more and more production and maintenance being outsourced, something I know this Committee has long been interested in. At the same time, commercial airline traffic is rebounding. FAA forecasts commercial airline traffic will triple over the next ten years. In addition to the new large commercial aircraft we expect, such as the Boeing 787 and the Airbus 380, there are many more types of aircraft we know will be introduced into the system. We can expect everything from light sport aircraft to commercial space vehicles; from very light jets (VLJs) to unmanned aircraft systems (UAS). In fact, there are some 20 models of VLJs in various stages of design and production. FAA forecasters predict 4,000 VLJs could be in operation in 10 years.

The growing presence of UAS introduces a number of safety concerns about which I know this Committee is aware. We need to know about the mission, characteristics, requirements, and performance of the many, many different models of UAS. For safety's sake, we need UAS operations to be transparent and seamless. But first and foremost, we must ensure that UAS operating in civil airspace will have no adverse impact to the thousands of aircraft already operating in the national airspace system (NAS). As I

testified before you earlier this year, we are currently working with government and industry to establish standards and metrics to enable us to move forward in this area.

In short, from my perspective we are experiencing the greatest change in the history of civil aviation, yet at the same time U.S. travelers are enjoying unprecedented safety. FAA is committed to maintaining and improving upon this record of performance.

In 1998, FAA began overseeing the ten largest part 121 carriers using the Air Transportation Oversight System (ATOS) model, which goes beyond simply ensuring regulatory compliance. The goal of the ATOS model is to foster a higher level of air carrier safety using a systemic, risk-management-based process to identify safety trends and prevent accidents. ATOS has improved safety because it identifies and manages risks before they cause problems with safety, thus ensuring that carriers have safety adequately built into their operating systems.

To continue to improve aviation safety we must use every tool at our disposal. The most effective way to improve safety is through Safety Management Systems (SMS). Safety Management Systems enable organizations to identify and manage risk far better than before. With this formalized approach, we can identify issues, fix them, and ensure they stay fixed.

Operating under a Safety Management System assures a disciplined and standardized approach to managing risk. The best part is we can review past experience and address

known hazards, and at the same time we can look ahead and rigorously apply Safety Risk Management principles to any changes or introduction of new elements.

Furthermore, under an SMS, the whole process — identifying potential problems and putting corrections in place — is ongoing and the procedure is continuously assessed to make sure it is working.

In short, SMS formalizes risk management, which is imperative as we move from a forensic, or after-the-fact accident investigation approach, to a diagnostic and more prognostic, or predictive, approach. With the accident rate as low as it is, we must get in front of information, analyze trends, and anticipate problems if we are to continue to improve on an already remarkable record of achievement. Operating under a Safety Management System will allow airlines, manufacturers, and the FAA to do this better than before. So that we are all operating from the same approach, FAA must apply the same high standards to ourselves that we require of the entities that we regulate.

We are no longer dealing with "common causes" of accidents. To meet tomorrow's challenges, we need more data points and the analytical expertise to discern trends and identify precursors. And we need to share what we learn. We have an effort underway called the Aviation Safety Information Analysis System that begins to address this challenge by integrating multiple data bases for a more comprehensive analysis. To keep the pressure on reducing the accident rate, we will need far more information about

trends, about precursors, and about what is going on every day in the manufacturing and operating and maintenance environments.

Turning to a new and slightly different oversight function in my organization, I would like to discuss the Air Traffic Safety Oversight Service. As you know, the Air Traffic Organization (ATO) is a performance-based organization and has the responsibility for internal safety monitoring and compliance with safety standards. Like an airline or other certificate holder, it is important to have an independent safety oversight function of the ATO to ensure the highest level of compliance with established safety standards. We formally established the safety oversight office in March 2005 with 15 Air Traffic Safety Inspectors; currently there are 37 personnel on board. Oversight of the ATO follows the model of our long history of regulating the airlines and service providers such as manufacturers and repair stations.

We have the responsibility to oversee, audit and apply a risk-management based approach to ensure continued safety of air traffic operations. To this end, we have granted approval of an interim Safety Management System (SMS) which will be implemented throughout the ATO. In addition to the monitoring, audits and surveillance of the NAS, we have recently implemented a program to issue credentials to ATO safety personnel modeled on the successful oversight of the aviation industry and airmen. Credentialing will help assure continuous operational safety by providing standards for training, testing, and competency, as well as compliance with the ATO's policies and directives. Our oversight of the ATO has already yielded important safety benefits such

as changes to taxi into position and hold procedures that were based on safety risk management principles. Essentially, our vision is to regulate the ATO in the same way that we would regulate any other certificate holder.

Finally, although it is not a function under my organization, let me summarize where we stand with our efforts on runway incursions. As you know, the FAA, along with pilot groups and industry, has invested a great deal of time and effort to reduce the number and severity of runway incursions in the past several years. Today, the United States National Airspace System (NAS) has nearly 500 FAA and contract tower-staffed airports that handle more than 173,000 aircraft operations — takeoffs and landings — a day, averaging approximately 63 million airport operations per year. Of the approximately 254 million aircraft operations at U.S. towered airports from FY 2002-2005, there were 1,311 reported runway incursions. This translates into approximately 5.1 runway incursions for every one million operations and less than one serious runway incursion for every one million operations. There were six collisions during this period, none of which resulted in a fatality. When viewed in the context of the total number of operations, the number of incursions is low. This tells us that further reducing the rate will be quite a challenge, but a challenge we are embracing.

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 2006, we have had a total of 313 runway incursions. Twenty-seven of those were Category A and B incursions, which is fewer than 10 percent of the total. Pilot deviations

are the most common type of runway incursion, they accounted for 55 percent of serious incursions in the past fiscal year. Operational errors/deviations, on the other hand, accounted for only 28 percent of total incursions, but 33 percent of serious incursions 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 as a result of operational errors. 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.

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 2005 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 re-prioritize their application. We are currently deploying and evaluating new technologies that will improve "error tolerance" in the system – as we understand only too well that human error is inevitable.

Mr. Chairman, I recognize that I have just touched on a few of the very many important safety initiatives ongoing at the FAA. I will be happy to talk to you about these or any other safety programs. We are at a critical time in aviation and I want to leave you with a clear understanding of the strength of the commitment that exists within FAA at all levels

of the agency. We are proud of our record, but we recognize that many challenges still await us. I know we have the support of this Committee and that of a dedicated industry as we move forward. This concludes my prepared statement. I'll be happy to answer your questions at this time.

* * *

Questions for the Record from Rep. Mica from the House Aviation Subcommittee Hearing on Safety Oversight

September 20, 2006

Question #1: How would you rate the United States' aviation safety record over the past decade?

Response: Aviation safety in the United States has steadily improved in each of the seven decades for which we have safety data. The past decade is no exception, as fatal accident rates once again reached new lows in all categories of civil aviation.

Compared to the preceding 10 years, fatal accident rates over the past decade have decreased by 60 percent among Part 121 air carriers, by half for scheduled and non-scheduled Part 135 air carriers, and by 20 percent in general aviation.

The historical experience in air carrier safety has been characterized by major improvements that drive the accident rate lower, followed by brief periods of relatively stable rates, followed by yet the next major breakthrough. FAA believes that the air carrier industry is in the midst its next breakthrough in the long-term fatal accident rate. General aviation also is poised to achieve significant improvements, as new avionics and "glass cockpits" become ever more common in the fleet.

In sum, the aviation safety record over the past decade has been better than ever before and the FAA expects safety will continue to improve in the coming decade.

Question #2: When can we expect to see a final rule on eliminating the flammable vapors in fuel tanks in place to eliminate this safety threat? Will this rule address the existing airline fleet along with the new production aircraft?

Response: The FAA plans to issue the final rule by the end of September 2007. This is an aggressive schedule for a rule as complex and controversial as the proposed fuel tank flammability reduction rule.

We are in the process of preparing the disposition of the many comments we received. We will develop the final rule with consideration of the comments received, and at this stage in the process we can not say what the final rule will include.

Question #3: With regard to airport runway and taxiway safety improvement, while systems like AMASS and ASDE-X are being deployed to provide better information to the tower controllers, what can be done to provide better information to the pilot?

Response: The Federal Aviation Administration (FAA) is committed to increasing airport runway and taxiway safety. For pilots, the FAA is working on a research and development project called the Runway Status Light System (RWSL). RWSL is an automatic system of airfield lights that convey runway status directly to pilots and vehicle operators. RWSL software detects the presence and motion of aircraft and surface vehicles on or near the runways, assesses any possible conflicts with other surface traffic, illuminates red runway entrance lights if the runway is unsafe for entry or crossing, and illuminates red takeoff hold lights if the runway is unsafe for departure. Operational evaluations of RWSL were recently completed at the Dallas-Ft. Worth International Airport and the San Diego International Airport. The FAA is currently in the process of analyzing the results of the tests and developing a business case for RWSL. The business case will include the program requirements, business case analysis report, and implementation strategy and planning. It will also determine how many sites and to which sites to deploy RWSL.

Question #4: On July 25th of this year, the FAA released the names of the 35 airports to receive the ASDE-X equipment. Please explain what criteria the FAA uses to determine which airports receive this latest runway incursion prevention technology. How soon will this new equipment be fielded and what can be done to expedite the installation?

Response: On September 9, 2005, the Federal Aviation Administration's Joint Resources Council approved a rebaseline of the ASDE-X Program. As part of the business case for the rebaseline, the FAA completed an alternatives analysis which reevaluated the sites scheduled to receive ASDE-X equipment. Safety and efficiency benefits were analyzed for the fifty-nine top tier airports, including the thirty-four Airport Surface Detection Equipment, Model 3/Airport Movement Area Safety System equipped airports and the twenty-five original ASDE-X airports.

The analysis showed that the best business case was to replace the original ASDE-X waterfall with best value ASDE-X sites. Best value was based on site specific safety and efficiency benefits as compared to site specific costs. Selection of the best value sites yields the greatest return on the agency's investment. 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.

Site sunk costs were also considered during the determination of sites to include in the program rebaseline. Sites with significant sunk costs were included in the rebaseline even though other sites had higher safety and efficiency benefits versus costs.

It takes approximately three years for an ASDE-X system to become operational at an airport. This process includes site survey, site design, lease approval, completion of environmental requirements, site preparation and construction, installation, optimization, and acceptance and commissioning activities. Although the last ASDE-X airport is

currently planned to become operational prior to the end of fiscal year 2011, the FAA is looking into ways to expedite this schedule.

Question #5: How much would it cost to expand the ASDE-X program so that the top 100 airports have the technology? How long would it take?

Response: The average total cost to implement an ASDE-X system is $21.2M ($14.5M Facilities & Equipment (F&E) cost and $6.7M Operations (lifecycle) cost). The FAA would be required to re-bid the contract for any additional sites; therefore, the cost to deploy additional ASDE-X systems may be higher.

At the current rate of deployment, it could take up to an additional 18 years to deploy 65 more ASDE-X systems. This schedule factors in the need to re-bid the ASDE-X contract.

Question #6: The DOT Inspector General reported that non-certificated repair facilities that perform critical and scheduled maintenance work are not covered under FAA's routine oversight program because FAA believes this responsibility rests with air carriers. Can you comment on this question?

Response: The holder of an air carrier operating certificate is responsible for the maintenance work performed on its aircraft. Federal Regulations (Title 14 of the Code of Federal Regulations, part 121) authorize the air carrier to use "other persons" to perform maintenance and does not differentiate between certificated repair facilities and non-certificated repair facilities. "Other persons" whether or not they are certificated by the FAA, become an extension of the air carrier's maintenance organization. In accordance with Federal Aviation Regulations, the air carrier is authorized to use, and responsible for, maintenance that others perform. Specifically, section 121.369(a) requires certificate holders to keep a list of persons with whom they have arranged for the performance of any required inspections, maintenance, preventive maintenance, or alterations, including a general description of that work.

In December 2005, the Office of the Inspector General (OIG) released its audit on Air Carrier's Use of Non-certificated Repair Facilities and recommended the FAA inventory air carrier vendor lists to include all maintenance providers working on any air carrier's aircraft and identify non-certificated repair facilities performing critical or scheduled maintenance. In response to the recommendation, the FAA has drafted a Flight Standards Handbook Bulletin for Airworthiness (Bulletin) requiring air carrier principal inspectors (PI) to verify the air carrier's required list, its accuracy, and availability to the FAA for review. PI verification will focus on other persons performing critical or scheduled maintenance. The Bulletin will also require PI verification of adequate procedures in the certificate holder's manual for maintaining the required list. The FAA expects the Bulletin to be published within the first quarter of fiscal year 2007.

Additionally, the Bulletin will provide information and guidance to air carrier PI to verify that there are adequate procedures in the air carrier's manual for qualifying, authorizing, directing, and overseeing the maintenance performed by other persons. A copy of the draft Bulletin was sent to the OIG for their information and review.

Question #7: Can you explain the FAA's position, supported by the GAO, that without designees, the system could not work?

Response: The FAA designates experts and organizations in the fields of medicine, aviation, and aerospace engineering to perform functions critical to the FAA safety mission and the aviation industry. The use of designees allows the FAA to accomplish its safety mission economically on behalf of the American tax payer and with a high level of quality for the flying public and the aviation industry. In addition to the leverage designees bring by not directly costing tax payers any money, designees provide state-of-the-art and cutting edge knowledge and expertise in their respective fields. The FAA and its predecessor organizations have appointed designees since 1927 under authorities granted by Congress in the Air Commerce Act of 1926, the Civil Aeronautics Act of 1938 and the Federal Aviation Act of 1958. The FAA ensures the quality of its designee programs through designation policies and practices, designee training, and quality assurance methods and systems. FAA designees perform hundreds of thousands of examinations and inspections every year. Without FAA designees, Congress would have to fund hundreds of additional FAA employees to do the work currently accomplished by designees.

Question #8: One of the primary benefits of ADS-B and other new ATC technologies is increasing capacity by reducing separation of aircraft. Reducing separation raises the long-standing wake vortex problem. I understand FAA has spent just over $5 million in F&E funds for wake vortex research since FY 2004. What is FAA's plan to improve wake vortex?

Response: FAA has teamed with NASA in the research required to apply technology to mitigate the air traffic impacts of aircraft wake turbulence. FAA's role has been the development of the operational concepts for the application of technology and the role of NASA has been to develop the technology applications to enable these concepts. FAA has invested in the development of pulsed LIDAR based sensors that are able to track the wakes of aircraft arriving and departing airports and has used the collected data to develop proposed changes to air traffic procedures that will better utilize an airport's closely spaced (centerlines of the parallel runways are less than 2500 feet apart) parallel runways during weather conditions requiring instrument landing system operations. Additionally FAA has developed the operational concept of taking advantage of wind direction during departures on closely spaced parallel runways and eliminating the wake mitigation wait time when the wind direction is favorable. NASA has been developing the feasibility prototype of a system that would predict the favorable wind conditions on a highly reliable basis and provide that information to the air traffic controller. The joint

wake turbulence research effort is well positioned to support NGATS and the transition to that system from the current NAS.

Question #9: It is my understanding that FAA should have prepared a formal response to the NTSB report on the crash of Corporate Airlines Flight 5966 (October 19, 2004, Kirksville, Mo.) by the end of May 2006. Has FAA completed a formal response to the NTSB report in regards to Corporate Airlines 5966? If not, please provide an update on the status of your response. If your response has been completed, please send a copy to Mr. Reynolds' office and to the staff of the House Aviation Subcommittee.

Response: A copy of the FAA's initial response to the NTSB recommendations from the Corporate Airlines Flight 5966 crash is attached. In addition, attached is a copy of the Safety Alert for Operations (SAFO) issued in response to one of the recommendations.

Question #10: Why has the FAA not yet updated and revised its pilot flight and duty time regulations which NTSB found was one of the primary factors in the Corporate Airlines crash? What is the FAA's latest timeframe for issuing revised regulations?

Response: In 1995, in response to several NTSB recommendations, the FAA proposed to amend existing regulations to establish new duty period and flight time limitations, and rest requirements for flight crewmembers in Parts 121 and 135. This rulemaking was based on recommendations from an aviation rulemaking advisory committee (ARAC) and reflected the input of both the pilots and operators. It included a 14-hour duty period, 10 hours of rest, increased flight time to 10 hours, and addressed other related issues. More than 2,000 comments were received on the proposal, mostly negative. The pilots felt 10 hours of flight time was too long and the operators felt 14 hours of duty time was too short. ATA estimated the cost of the new rule at $2.13 billion. The NTSB commended the FAA for the proposal.

Following several attempts to adopt portions of this proposal, the FAA decided to start over. The new proposal reflected many of the comments and simplified the requirements. It called for limitations on actual duty hours and actual flight hours. The current rule and all earlier proposals regulated 'scheduled' hours. Using the word 'scheduled' in the rule has caused confusion when FAA has tried to enforce the current requirements. The FAA determined that limiting actual hours would be easier to enforce, but could potentially increase the costs of the rule.

We compared our proposal to the hours of service regulations of other modes. We compared six areas: hours of service (duty time), limits on flight/driving/operating time, minimum rest, circadian rhythm, the pilot's/operator's obligation for rest, and on-board rest facilities. The greatest commonality among the various modes appears to be the rest requirement, with most focused on 10 hours of rest within a 24-hour period. Variations exist, however, in the work hours within the duty period, but such variation seems

operationally essential, and in the end, not critical if the rest requirements are met. The modes are consistent in not specifically addressing the problem of disrupting circadian rhythm. Only the FAA and Federal Motor Carrier Safety Administration have addressed the pilot's/driver's obligation for rest.

We had our risk analysis reviewed by Professor Arnold Barnett of MIT who found that we used the limited, available data to its fullest extent. However, he found the analysis suggestive but inconclusive. In addition, we quantified the benefits to the extent possible, but were not able to demonstrate that the proposal is cost beneficial.

The FAA is currently looking at different options to address flight time limitations and rest requirements in 14 CFR part 121 operations, but we do not yet have a timeframe for issuing a new proposal. However, the FAA established a joint FAA / Industry Aviation Rulemaking Committee (ARC) in 2004 to develop recommendations for revising the commuter and on-demand flight time and rest requirement rules in 14 CFR part 135. The ARC has provided its recommendations to the FAA. The FAA is presently developing a Notice of Proposed Rulemaking (NPRM) that incorporates the ARC's recommendations. The NPRM will include a Fatigue Risk Management System (FRMS) that provides an alternative to the proposed prescriptive limitations.

Hours of service and fatigue are high priority issues in all transportation modes. The FAA has attempted for many years to develop more effective rules for use in aviation. In 14 CFR part 135, some promising work that would simplify hours of service practices has been accomplished by the ARC reviewing the rule. Whether that work will culminate in explicit rule language regarding hours of service will become clearer over the next 2 years as the sweeping rule changes for part 135 are developed.

The FAA is also working with the International Civil Aviation Organization (ICAO) to develop a FRMS to regulate flight and duty time. Rather than the existing prescriptive limitations, the FMRS provides an alternative that is based upon a Safety Management System that looks at risk and applies certain risk mitigations to improve flight crew alertness. The FRMS is a comprehensive collaborative process that requires a company to manage fatigue. All company personnel are responsible for the success of the FRMS including management, flight crewmembers, maintenance personnel, schedulers, and dispatchers.

In addition to pursuing rulemaking, the FAA has taken several actions to enforce the current rest/duty regulations:

- In May 2001, the FAA announced that we would begin enforcing the 16-hour duty day codified in 14 CFR 121.471. Airlines were given until November of that year to achieve compliance. ATA and RAA sued, arguing that this was de facto rulemaking. The FAA prevailed with a 3-0 ruling of the Appeals court.

• We followed up this action with briefings and instruction to FAA Principal Operations Inspectors on the enforcement of the rest and duty rule in July 2002. Also, we began increasing inspections of carrier records.

• In November 2003, we clarified two areas of the rest and duty scenario for the Airline Pilots Association: 1) we reiterated a standing interpretation that carriers may make one phone call to a pilot during a rest period, and 2) we emphasized that transportation that is 'local in nature' means that transportation to the rest facility should not be so time-consuming that a pilot cannot obtain sufficient rest.

• In December 2005, we announced that requests for interpretation would be posted to an electronic docket for public comment before an interpretation is rendered. If a request is covered by a previously issued interpretation, the FAA may issue a decision but still allow comment from the public on that decision. We find that this process may provide valuable information for future rulemaking on rest/duty issues.

Question #11: While systems like AMASS and ASDE-X are being developed to provide better information to the tower controllers, what can be done to provide better information to the pilot? When can we expect to see these improvements, and are they affordable?

Response: See response to Question #3.

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, D.C. 20591

MAY 3 1 2006

The Honorable Mark V. Rosenker
Acting Chairman, National Transportation
Safety Board
490 L'Enfant Plaza East, SW.
Washington, DC 20594

Dear Mr. Rosenker:

This is in response to Safety Recommendations A-06-7 through -11 issued by the Board on February 7, 2006. These recommendations were issued as a result of the Board's investigation of an accident on October 19, 2004, involving a BAE Systems BAE-J3201, N875JX, operated by Corporate Airlines (doing business as American Connection). The airplane struck trees on final approach and crashed short of runway 36 at the Kirksville Regional Airport, Kirksville, Missouri. The flight was operating under the provisions of 14 CFR Part 121 as a scheduled passenger flight from Lambert-St. Louis International Airport, in St. Louis, Missouri, to Kirksville, Missouri. The captain, first officer, and 11 of the 13 passengers were fatally injured, and 2 passengers received serious injuries. The airplane was destroyed. Night instrument meteorological conditions prevailed for the flight, which operated on an instrument flight rules flight plan.

A-06-7. Direct the principal operations inspectors of all 14 Code of Federal Regulations Part 121 and 135 operators to reemphasize the importance of strict compliance with the sterile cockpit rule.

FAA Comment. The Federal Aviation Administration will issue a Safety Alert for Operators (SAFO) calling attention to the so-called "sterile cockpit" rules (14 CFR 121.542 and 135.100) applicable to air carrier operations. The SAFO will remind inspectors and 14 CFR Parts 121 and 135 operators that strict compliance with those rules, respectively, is required, and that breaches of those rules have contributed to at least one recent accident involving a U.S. air carrier. The SAFO will be issued by June 30, 2006.

I will provide the Board with a copy of the SAFO as soon as it is issued.

A-06-8. Require all 14 Code of Federal Regulations Part 121 and 135 operators to incorporate the constant-angle-of-descent technique into their nonprecision approach procedures and to emphasize the preference for that technique where practicable.

FAA Comment. Constant angle-of-descent is the essence of stabilized approach technique. That technique, while flying all instrument approaches including nonprecision approaches, has been explicitly recommended to air carriers operating under 14 CFR Parts 121 and 135

since August 2000, when Advisory Circular (AC) 120-71, "Standard Operating Procedures for Flight Deck Crewmembers," was issued. Appendix 2 of the AC, "Stabilized Approach: Concepts and Terms," is devoted entirely to that recommended technique. Rulemaking is in progress now in 14 CFR Part 121, Subparts N and O, that would require that technique in training and in operations. Rulemaking in 14 CFR Part 135 is not so well developed as that in 14 CFR Part 121, but it is expected to produce a requirement that stabilized approach be required in pilot training and in operations. Additionally, as air carriers increasingly equip their airplanes with flight management systems with vertical navigation capability and other modern avionics, this technique is being adopted voluntarily by air carriers and their pilots, who welcome vertical guidance during nonprecision approaches. That vertical guidance, in turn, causes the pilot to fly a constant angle-of-descent, as the Board and the FAA both recommend.

I will keep the Board informed on the FAA's progress on this safety recommendation.

A-06-9. Revise applicable 14 Code of Federal Regulations Part 121 and 135 regulations to prohibit pilots from descending below the minimum descent altitude during nonprecision instrument approaches unless conditions allow for clear visual identification of all obstacles and terrain along the approach path or vertical guidance to the runway is available and being used.

FAA Comment. The FAA finds that pertinent regulations are appropriate as written, but that clear guidance might be helpful to pilots who do not understand the significance of all of the rule language. Accordingly, the FAA plans to add language to AC 120-71A, "Standard Operating Procedures for Flight Deck Crewmembers," Appendix 2, and to the Aeronautical Information Manual (AIM) that will clearly explain a pilot's responsibilities before electing to descend below the minimum descent altitude. It is anticipated that the AC and AIM will be revised by March 2007.

I will provide the Board with copies of these documents as soon as they are issued.

A-06-10. Modify and simplify the flight crew hours-of-service regulations to take into consideration factors such as length of duty day, starting time, workload, and other factors shown by recent research, scientific evidence, and current industry experience to affect crew alertness.

FAA Comment. Hours-of-service and fatigue are high priority issues in all transportation modes. The FAA has attempted for many years to develop more effective rules for use in aviation. In 14 CFR Part 135, some promising work that would simplify hours-of-service practices has been accomplished by the aviation rulemaking committee reviewing that rule. Whether that work will culminate in explicit rule language regarding hours-of-service will become clearer over the next 2 years as the sweeping rule changes in 14 CFR Part 135 are developed.

A-06-11. Require all 14 Code of Federal Regulations Part 121 and 135 operators to incorporate fatigue-related information similar to that being developed by the Department of Transportation Operator Fatigue Management Program into their initial and recurrent pilot training programs; such training should address the detrimental effects of fatigue and include strategies for avoiding fatigue and countering its effects.

FAA Comment. Since March 19, 1998, 14 CFR Part 121 air carriers have been required to provide crew resource management (CRM) training to their pilots. CRM training is strongly recommended for pilots of air carriers under 14 CFR Part 135 as well, but it is not yet required. It is expected that CRM training will be explicitly required in the revised 14 CFR Part 135 rules now underway. Since 1990, comprehensive guidance for developing CRM training has been included in AC 120-51, "Crew Resource Management Training." The AC is in its sixth revision. Fatigue has always been featured in the AC as one of the most important factors degrading situation awareness and overall crew performance. The FAA plans to call attention to that important element of CRM training by issuing a SAFO and to direct operators to the fatigue-related information being developed by the Department of Transportation's Operator Fatigue Management Program, as well as other competent sources such as the National Aeronautics and Space Administration. It is anticipated that the SAFO will be issued by June 30, 2006.

I will provide the Board with a copy of the SAFO as soon as it is issued.

Sincerely,

Marion

Marion C. Blakey
Administrator

U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

SAFO 06004
DATE 04/28/06

Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest.

Subject: Approach and Landing Accident Reduction: Sterile Cockpit, Fatigue.

Purpose: The Air Transportation Division, AFS-200, issues this SAFO to emphasize the importance of sterile cockpit discipline, especially during approach and landing when adverse factors may compound, such as night instrument meteorological conditions (IMC) and crew fatigue. This SAFO also calls attention to fatigue as one of the most important elements to be addressed in crew resource management (CRM) training and directs operators to the information and countermeasures being developed by the Department of Transportation (DOT) Operator Fatigue Management (OFM) program, as well as other competent sources such as National Aeronautics and Space Administration (NASA).

Background: On October 19, 2004, a BAE-J3201 struck trees on final approach and crashed short of runway 36 at the Kirksville Regional Airport (IRK), Kirksville, Missouri, destroying the airplane and killing all but two of the airplane's occupants. The National Transportation Safety Board (NTSB) found that factors contributing to the accident included: (1) breaches of sterile cockpit discipline, and (2) crew fatigue.

Discussion:

Sterile cockpit discipline.

Compliance with the so-called sterile cockpit rules is required by Title 14 of the Code of Federal Regulations (14 CFR) part 121, section 121.542, and 14 CFR part 135, section 135.100. Furthermore, compliance makes irrefutable good sense since breaches of those rules continue to contribute to fatal accidents in air carrier operations.

Managing fatigue.

Operator fatigue is one of the most persistent hazards in all travel modes, including commercial aviation. For years, the FAA has promoted awareness and countermeasures for fatigue by funding various research organizations, including NASA. Recognizing and managing fatigue is one of the most important elements recommended for inclusion in CRM training. CRM is

required in part 121 crew training, and is highly recommended in part 135 crew training. Rulemaking in part 135 now in progress would make CRM training mandatory for crews under that regulation, as well.

Recognizing the importance of managing operator fatigue, DOT modal administrations joined together in 2000 to start a partnership research initiative, OFM. That partnership has produced three valuable tools for use by air carrier managers, with two more expected some time during 2006, as follows:

(1) Software application to evaluate/design work schedules.
(2) Guidance for validating fatigue models for different uses.
(3) Handbook of scientifically-based fatigue management practices and countermeasures.

(4) Logic model for prioritizing fatigue research gaps (due 2006).
(5) Blueprint to derive a business case for the implementation of fatigue management activities (due 2006).

Recommended action: The director of safety of each air carrier operating under part 121, and the director of operations of each air carrier under part 135, should accomplish the following:

- Become familiar with the circumstances of the accident at Kirksville, Missouri http://www.ntsb.gov/ntsb/query.asp (enter Kirksville in the City block, click on Submit)
- Become familiar with the contents of this SAFO
- Emphasize the importance of sterile cockpit discipline in flightcrew operating manuals and in their training programs.
- Stay abreast of the latest research and fatigue countermeasures being developed under DOT's collaborative OFM program by regularly visiting the following public Web site: http://scitech.dot.gov/research/human/#programs (click on Operator Fatigue Management Program)
- Emphasize sterile cockpit discipline and incorporate new material regarding operator fatigue management, as it is developed, in the CRM training provided to flightcrews.

Other pertinent reference material on public Web sites:

- NASA's public Web site containing information and recommended practices regarding flightcrew fatigue management: http://search.nasa.gov/nasasearch/search/search.jsp?nasaInclude=rosekind

- FAA Advisory Circular (AC) 120-51, Crew Resource Management Training, current edition: http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/MainFrame?OpenFrameSet (enter AC 120-51E in the Search: box, click on Go)

Questions for the Record from Rep. Chandler
On the House Aviation Subcommittee Hearing on
Safety Oversight

September 20, 2006

Question #1: The FAA issued verbal guidance to have all air traffic control towers staffed with two controllers. However, this guidance was not followed at the Blue Grass tower, and this was not discovered until after the Comair crash. Why are critical safety directives delivered verbally and not in writing? What oversight does the FAA take to ensure its air traffic facilities are meeting safety guidance, such as the verbal guidance at issue?

Response: The verbal guidance that was issued in early September of 2005 was simply a clarification of existing procedures and was not guidance to staff all air traffic control towers with two controllers. The verbal guidance was directed to the specific circumstances of an "up/down" facility, where regular control tower operations and terminal radar operations (TRACON) are provided from the same facility during the midnight shift. Even though many of these type facilities have very little traffic during the midnight shift, like Lexington, the guidance was that when both the radar position (TRACON) and the Airport Surface (Tower) position were open, each function should be staffed separately. However, managers and controllers were given the discretion to combine the radar and tower functions when necessary to accommodate breaks and meals and other circumstances. These breaks are intended to be of a short duration, so that the two functions are combined for only a short duration and normally only during periods of low traffic.

Of the 138 air traffic facilities with combined functions, we found that 3 were not fully in compliance with the guidance following the Comair accident. All 138 facilities are now in compliance with the guidance.

Staffing is and will continue to be monitored at all facilities. In addition, as part of the Air Traffic Organization's safety facility evaluation program, staffing will be part of that review.

Question #2: In the FAA's view, was the decision by the tower manager to staff only one controller at the Blue Grass Airport within his discretion? Please explain when and to what extent verbal guidance is mandatory and not subject to discretion.

Response: Staffing the midnight shift at Lexington with one controller when both the radar and tower positions were open was not consistent with the verbal guidance. The guidance is mandatory, even though the traffic during the midnight shift is very light at Lexington – during the midnight shift before the Comair accident, the controller worked only 12 airplanes over the entire shift. Managers and controllers are given discretion to

combine radar and tower functions when necessary to accommodate breaks and other circumstances. These breaks are intended to be of a short duration.

Question #3: Does the FAA plan to re-visit the implementation of its verbal guidance regarding tower staffing in light of the fact that it was not followed on the morning of the accident? Has anyone been reprimanded over the Blue Grass tower's decision to schedule one controller rather than follow the two-controller verbal guidance?

Response: The FAA has worked closely with all 138 of the air traffic control facilities with combined functions to ensure they are operating in accordance with the guidance. We plan on reinforcing the guidance in writing.

The investigation of the August 27 accident is ongoing. When the investigation is complete, the FAA will determine what action to take, if any, with facility management.

Question #4: In the FAA's view, is the Blue Grass Airport adequately staffed at this time? Please confirm the number of certified air traffic controllers needed to fully staff the Bluegrass Airport, and the number of certified controllers currently working at the tower.

Response: FAA is confident that Lexington is adequately staffed for conducting safe and efficient air traffic services. There are currently 19 controllers – 17 fully certified and 2 developmental controllers. Considering future attrition, we plan to add two additional controllers in FY 2007 to ensure we maintain adequate staffing levels.

Question #5: How can the FAA claim to have a comprehensive staffing plan for the future if it does not yet understand its staffing needs at the individual tower level?

Response: Staffing needs at individual towers, such as Lexington are part of the comprehensive staffing plan for the future. The plan incorporates many individual facility characteristics into its calculations. They include; facility specific traffic volumes based on FAA forecasts, hours of operation, as well as individualized forecasts of retirements and other attrition.

Responses to Questions for the Record from Rep. Allyson Schwartz
From the House Aviation Subcommittee Hearing on
Safety Oversight

September 20, 2006

Question #1: There was only one air traffic controller in the Lexington, Kentucky tower when Comair Flight 5191 crashed on August 27, 2006, despite Federal Aviation Administration rules that at least two controllers be on duty. That controller had worked 15 hours in a 24-hour period and said he only had two hours of sleep between shifts. While we await the full results of the National Transportation Safety Board investigation, we certainly ought to be concerned that one controller with only two hours of sleep was expected to simultaneously direct planes on the ground and monitor air traffic by radar. The FAA has acknowledged short-staffing at Lexington Blue Grass Airport. However, air traffic controller understaffing is an issue at airports throughout the country, including Philadelphia International Airport.

Philadelphia International is authorized to have 107 air traffic controllers, yet today, only 64 fully qualified controllers work there. In addition, 16 of those controllers are set to retire by the end of 2007. My office has spoken to air traffic controllers at Philadelphia International who say they are routinely held past the end of their scheduled shift because there are not enough controllers. This allows them less time to recover between shifts – impairing their ability to function at a high-level. Why is Philadelphia International so understaffed? According to the FAA, what is the optimal staffing level of controllers? If it is less than the authorized level, why? Please provide me with specific hiring objectives and plans. And, what are the safety implications for the millions of individuals who fly into and out of Philadelphia Airport if the control towers are not adequately staffed?

Response: It is important to know that staffing levels in the past were negotiated with labor and had little or nothing to do with traffic. When NATCA refers to authorized levels, they are referring to the old negotiated levels. We are hiring controllers based on workload – that is the number of positions that need to be staffed based on traffic demand on an hourly, daily and seasonal forecast.

Philadelphia Airport Traffic Control Tower (PHL) is adequately staffed for conducting safe and efficient air traffic services. There are currently 84 controllers on board (as of 9/30/2006) compared to the target level of 86.

While there may be a significant number of controllers eligible to retire, we project that 7 will actually retire in FY 07. PHL is scheduled to receive an additional 8 new controllers this fiscal year. PHL also has the option to solicit experienced controllers through our bidding process.

Question #2: On September 3, 2006, the FAA imposed a unilateral contract on the National Air Traffic Controllers Association (NATCA) despite the fact that a majority of members of the House of Representatives voted to prevent this. The contract could lead to reductions in pay by as much as 30% for current and future controllers, as well as reduced pensions. How will this impact the FAA's ability to hire air traffic controllers? How will it impact the number of controllers set to retire in the coming years? What steps has the FAA taken to mitigate morale problems that pay decreases and pension cuts will have on air traffic controllers?

Response: Under the new contract, current controllers' salaries will not be reduced by 30%. In fact, the FAA is holding harmless all existing controllers. No controller would lose any salary at all (base and locality pay). We project that, for the average current controller, the new contract would mean a salary increase over five years.

The new pay scale for future controllers was developed with consideration given to many factors -- the FAA's Core Compensation pay plan, pay bands that were in effect prior to previous NATCA contract and the government-wide increases since that time, and the commitment to maintain the integrity of the existing facility classification index, which pays controllers based on traffic levels and complexity at their respective facilities. We believe the resulting pay scales are still generous, by any standards. By their fifth year on the job, a controller newly hired in 2007 under our new contract could expect to receive an average $ 94,200 in cash compensation (including base pay, premiums and locality pay). This brings projected total compensation, including generous benefits package, at more than $128,000 on average. We believe that these compensation levels for new hires will be more than adequate for recruitment. In fact, in comparing this compensation with pilots at major airlines, our controllers will still earn more on average, after 5 years on the job, than pilots in the airline industry they serve.

The FAA is having no problem recruiting and hiring new air traffic controllers, since it is widely known that air traffic controllers are one of the highest paid professions in government. In fact, the FAA has more than 3000 air traffic controller candidates on a waitlist. Comparing fiscal year 2005 to fiscal year 2006, we see about the same percentage of the workforce as a whole retiring (3-4%). Of those eligible to retire, we've seen about a two percent increase in retirements over last year. In fiscal year 2005, about 21 percent of those eligible to retire, actually retired. In fiscal year 2006, about 23 percent of those eligible to retire actually retired. We have adjusted our hiring plan to accommodate these retirements. With reference to the issue of morale within the workforce, we are working closely with the newly elected leadership of NATCA to mitigate any transition issues with the new contract.

Supplemental Information for Hearing Transcript
From House Aviation Subcommittee Hearing
September 20, 2006 on
Aviation Safety Oversight

Question #1: On p. 78, Nick Sabatini responds to a question from Rep. DeFazio about the ValuJet crash, where Rep. DeFazio says, "Now remind me whether that was non-certificated or certificated the incompetence of mechanics or unlicensed incompetent mechanics who stowed the loaded air, the oxygen containers that caused a lot of people to die . . . Was that non-certificated under the supervision of the airline?" Mr. Sabatini responds, "I don't recall the particulars, but I can certainly provide you with the fix on that."

Answer: In the ValuJet accident, NTSB found that employees at SabreTech, a Part 145 domestic repair station under contract to ValuJet, failed to "properly prepare, package, and identify unexpended chemical oxygen generators before presenting them to ValuJet for carriage." Those employees were not mechanics and were not subject to FAA certification requirements. However, ValuJet remained responsible for ensuring that all requirements under FAR Part 121 were met, while SabreTech remained responsible for meeting all requirements under FAR Part 145. The FAA held both firms accountable. The FAA also made extensive changes to its own practices based on the lessons learned about oversight when an operator expands very rapidly.

Question #2: Representative DeFazio: "And I would go to another, the designee program. I mean, as I recall testimony here for your folks, they say maybe once every 9 or 10 years they can get around to designees, because their scope is you talked about a scope of 1 in 10 and foreign 1 in 4 to 20 national. What is the scope for people who supervise designees? I think it was—I remember it was one to several hundred was what we heard testimony, it was a huge number."

Aviation Safety Response: FAA safety inspectors perform many activities crucial to overseeing safety of air transportation; however, the FAA does depend on congressionally authorized designee programs to help ensure that the aviation industry meets certain aviation standards. The FAA designee programs authorize approximately 13,000 private individuals and 180 organizations nationwide, known as "designees" to act as representatives of the agency to conduct many safety certification activities, such as administering flight tests to pilots, conducting medical examinations of pilots, and approving designs for aircraft parts. Designees enable FAA to accomplish thousands of certification functions each year.

FAA is responsible for the oversight of individual designees and ensuring that aviation industry organizations have systems in place, including staff and procedures, to perform the delegated functions. FAA safety inspectors must assess the designee's performance, technical proficiency, and judgment. Organizational designees are responsible for overseeing their employees who perform the delegated functions. The following charts list the type and number of designees for each of the three FAA offices with designee oversight responsibilities—Flight Standards Service, Aerospace Medicine, and Aircraft Certification Service. It also lists the number of corresponding safety inspectors with designee oversight responsibilities.

Flight Standards Service

Designee oversight is an on-going Flight Standards aviation safety inspector responsibility which is not limited to formal inspections. Each inspector with designee oversight responsibility uses recurring opportunities to evaluate personnel, manuals, procedures, and training programs. However, safety oversight guidance requires a minimum of one annual inspection for each assigned designee.

Flight Standards also has responsibility for approximately 7,500 check airmen which should not be confused with designees. Check airmen are airmen approved by the FAA who have the appropriate training, experience, and demonstrated ability to evaluate and to certify the knowledge and skills of other airmen for an air operator. In addition, they may conduct flight training contained in the operator's approved training program. Check airmen derive their authority from the local air carrier and do not certify airmen to operate aircraft. They are trained within the constraints and procedures outlined by the air carrier's training plan which is approved by Flight Standards. Aviation safety inspectors have ongoing monitoring responsibilities for the training program under the direction of the principle operating inspector.

Type of Designee	Number	FAA Safety Inspectors assigned*	Ratio of Designees to Inspectors
OPERATIONS			
Designated Pilot Examiner (DPE)	1,072	186	5.8:1
AIRWORTHINESS			
Designated Mechanic Examiner (DME)	300	139	2.2:1
Designated Parachute Rigger Examiner (DPRE)	43	38	1.1:1
Designated Airworthiness Representative (DAR-T)	312	203	1.5:1
Organizational Designated Airworthiness Representative (ODAR-T)	53	34	1.6:1

* An aviation safety inspector may have oversight responsibility for more than one type of designee.

Aircraft Certification Service (AIR)

AIR designees are assigned a designee Advisor. The designee Advisor is an Aviation Safety Engineer (ASE), Flight Test Pilot (FTP), or a manufacturing Aviation Safety Inspector (ASI) with a similar discipline as the designee, who has the primary responsibilities of performing continuous oversight after appointment. AIR designee Advisors are required to have at least annual interaction with their assigned designees and are required to conduct a documented performance evaluation each year.

Type of Designee	Number	FAA Inspectors/ Engineers Assigned* (Advisors)	Ratio of Designee to Inspector/Engineer (Advisor)
[illegible]	[illegible]	[illegible]	[illegible]
Designated Airworthiness Representative - Manufacturing (DAR-F)	402	103	3.9:1
Organizational Designated Airworthiness Representative - Manufacturing (ODAR-F)	116	56	2.1:1
Designated Manufacturing Inspection (DMIR)	1155	125	9.2:1
Designated Engineering Representative (DER)	2709	296	9.2:1
Designated Alteration Station (DAS)	37	26	1.4:1
Delegation Option Authorization (DOA)	6	6	1:1
Special Federal Aviation Regulation No. 36 (SFAR 36)	11	6	1.8:1

* An aviation safety inspector may have oversight responsibility for more than one type of designee

Office of Aerospace Medicine

The Office of Aerospace Medicine provides designee oversight and quality management through national and regional programs.

Physicians apply for designation as an Aviation Medical Examiner (AME) to the FAA Regional Flight Surgeon responsible for the geographic area in which they wish to work. The Regional Flight Surgeon reviews the credentials of physician applicants, ensures the applicants have the necessary medical equipment to conduct airmen medical examinations and conducts site visits as necessary to ensure that applicants have appropriate clinical space. Upon selection to be an AME, a designee must complete a one-week basic seminar in Aerospace Medicine at the Civil Aeromedical Institute (CAMI) in Oklahoma City, OK and pass an examination. Each AME must complete recurrent training every 3 years.

The quality of AME pilot medical examinations are monitored through computer systems and also by FAA employees who review examinations both at CAMI and in our regional medical divisions. Regional Flight Surgeons are provided error reports as they occur and detailed quarterly performance reports for each designee. Regional medical personnel make site visits to AME clinics as necessary and on those occasions when we receive complaints. Remedial actions are taken to improve designee performance and corrective actions are taken to address errors.

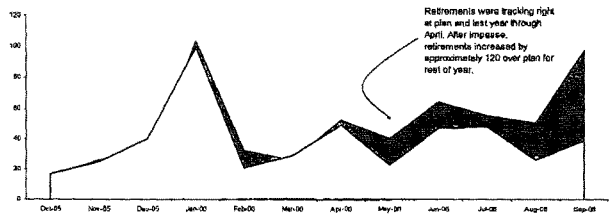
Type of Designee	Number	FAA Physicians and Analysts performing AME oversight	Ratio of Designees to FAA AME oversight personnel
AEROSPACE MEDICINE			
Aviation Medical Examiner (AME)	4,700	17	276.5:1

Question #3: On p. 82-83, Rep. DeFazio asks about the number of retirements since the imposition of the contract on air traffic controllers. He says, "I know, but they are not since the imposition of the unilateral agreement. So I guess I would like to see numbers since that date, if you could, and how they compared to other months."

Answer:

The following chart shows controller retirements by month, throughout the fiscal year. The bottom line is: Retirements were tracking right at plan and last year through April. After Impasse, retirements increased by approximately 120 over plan for the rest of the year. The FAA accelerated the hiring of new controllers to respond to the increase in actual versus planned retirements.

Controller Retirements



	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06
Actual 2006	15	28	23	100	32	26	52	43	64	53	50	97
Prior Year 2005	17	26	40	99	21	29	49	23	47	49	38	56

Question #4: On p. 94-97, Rep. Chandler asks a number of questions about staffing at Lexington Blue Grass Airport. I shall list the questions where Nick promised to get back with additional information separately. On p. 94, Rep. Chandler asks, "I mean, if you have a written directive and then you find out that that wasn't being followed, you know, that the Raleigh-Durham matter took place. And then you followed that up by saying that you need to follow this directive and they still don't follow it, at what point do you need to interpret that? I mean, that seems pretty clear to me. Were they directed to do it or not?" Nick replies, "Well, I can get back to you with more specifics."

Answer: The verbal guidance that was issued in early September of 2005 was simply a clarification of existing procedures and was not guidance to staff all air traffic control towers with two controllers. The verbal guidance was directed to the specific circumstances of an "up/down" facility, where regular control tower operations and terminal radar operations (TRACON) are provided from the same facility during the midnight shift. Even though many of these type facilities have very little traffic during the midnight shift, like Lexington, the guidance was that when both the radar position (TRACON) and the Airport Surface (Tower) position were open, each function should be staffed separately. However, managers and controllers were given the discretion to combine the radar and tower functions when necessary to accommodate breaks and meals and other circumstances. These breaks are intended to be of a short duration, so that the two functions are combined for only a short duration and normally only during periods of low traffic.

Of the 138 air traffic facilities with combined functions, we found that 3 were not fully in compliance with the guidance following the Comair accident. All 138 facilities are now in compliance with the guidance.

Question #5: On p. 95, Rep. Chandler continues, "Has there been any discussion with who was responsible that may they should have made a different decision and followed the directive? Has anybody been reprimanded for it?" Nick replies, "I don't have that information, sir." Rep. Chandler, "Well, could you get back to me with that information, please?" Nick, "I certainly will do that."

Answer: The investigation of the August 27 accident is ongoing. When the investigation is complete, the FAA will determine what action to take, if any, with facility management.

Question #6: On p. 96, Rep. Chandler asks whether we consider the Lexington tower adequately staffed. "Well, I understand that we are short three air traffic controllers in Lexington; is that not correct?" Nick, "As I said, I can get you the specifics for that tower, sir."

Answer: The FAA is confident that Lexington is adequately staffed for conducting safe and efficient air traffic services. There are currently 19 controllers – 17 fully certified and 2 developmental controllers. Considering future attrition, we plan to add two additional controllers in FY 2007 to ensure we maintain adequate staffing levels.

Question #7: Continuing on p. 96, Rep. Chandler asks about the total number of air traffic controllers. "How many of those (14,500) are fully trained and serviceable? All of them?"

Answer:

Of the 14,618 controllers on-board as of September 30, 2006, 271 were in training at the Academy, and not yet providing air traffic control services. The remaining 14,347 are distributed as follows: 12,172 were fully certified at their current facility as Certified Professional Controllers (CPCs), 740 were CPCs in Training (CPCITs) which are controllers that have achieved certification at other facilities, and are in training at their new facility, and the remaining 1,435 were at some stage of the developmental process. It is important to understand that during their training process, CPCITs and developmentals become certified to work some positions independently. Their designation as CPCIT or developmental does not mean that they cannot independently provide service and manage traffic before becoming a CPC.

Question #8: On p. 97, Rep. Chandler continues, "I understand that is a moving target, but in general, what percentage are new hires and what percentage of full performance."

Answer:

There were 1,116 new hires in FY 2006, which was 7.6 percent of the total controller population of 14,618 at the end of September. Of the 1,116 hired during FY 2006, 271 were still at the Academy as of September 30.

Full-performance-level (FPL) controllers, per the Memorandum of Understanding, dated July 9, 1998, were classified as any controller that has ever attained Certified Professional Controller (CPC) status. As of September 30, there were 12,912 FPL's consisting of 12,172 CPCs and 740 CPCs in Training. The 12,912 FPL controllers were 88.3 percent of the controller population. It is important to note that this does not include any of the 1,435 developmentals, some of whom are partially qualified and can also control traffic at certain positions independently.

Question #9: On p. 119, Chairman Mica asks Nick about staffing in Lexington. He said, "I was told at one point that a trainee had appeared on the scene because—and that was sometime in April or May…I am wondering, is it an inordinate amount of time…you did not have that position filled or you gave the discretion to a manager and it wasn't filled or was somebody coming or on their way there to fill the position?" Nick replied, "I need to preface that by saying I need to be accurate in what I say, and I will follow up to you with precision with that information, but I believe a new person was…" Rep. Mica continues, "Obviously, it had been approved, the position, earlier. It wasn't totally filled at the time of this incident, or was it?

Answer: The FAA pursued several alternatives during the year to increase the staffing at Lexington. An additional controller came on board in August, and two additional controllers will be on board by the end of November. That will bring the on board staffing level up to 21.

Question #10: On p. 129, Chairman Mica asks a question about staffing levels. He says, "I should know the answer to this as Chairman, but, actually, we don't do the—the FTEs, are there FTEs for air traffic controllers set by Congress, by the appropriators? Does anybody know?" Nick, "I will ask. We don't believe so sir. I will get you that information."

Answer:

The FAA's Controller Workforce Plan establishes the total number of controllers projected to be on-board by the end of each fiscal year, for the next 10 years. These numbers are used to support annual budget requests. The FY 2006 number was 14,670. FAA tracks agency staffing by on-board employment rather than FTE.

Corrected copy

Before the Committee on Transportation and Infrastructure
Subcommittee on Aviation
United States House of Representatives

For Release on Delivery
Expected at
2:00 p.m. EDT
Wednesday
September 20, 2006
CC-2006-074

Observations on FAA's Oversight of Aviation Safety

Statement of
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Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to testify today on the Federal Aviation Administration's (FAA) oversight of the U.S. aviation system. Safety is FAA's highest priority and for more than 4 years, FAA and the U.S. aviation industry have experienced one of the safest periods in aviation history. However, the August 27, 2006, crash of Comair Flight 5191 serves as a stark reminder to all stakeholders that we must continue to do more to make a safe system even safer. This hearing is particularly timely in light of that accident.

While the Comair accident is at the forefront of everyone's attention, we need to remember that other fatal accidents occurred in the past year as well. In December 2005, a 58-year old Chalks Ocean Airways seaplane crashed off the coast of Florida when the right wing separated from the aircraft during flight. During the same month, a Southwest Airlines aircraft skidded off the runway at Chicago Midway and collided with an automobile off the airport grounds. Each of these accidents is the subject of an ongoing National Transportation Safety Board (NTSB) investigation.

Notwithstanding these tragic accidents, the United States has maintained one of the safest aviation systems in the world. This is a remarkable accomplishment given the many changes occurring within the industry. For example, network air carriers continue to work aggressively to move away from high-cost structures by reducing in-house staff, renegotiating labor agreements, and increasing the use of external repair facilities. To address these changes, FAA is working to implement and refine risk-based safety oversight systems.

At the same time, FAA must also remain attentive to other issues that could affect the safety of the aviation system; that is, runway incursions (potential collisions on the ground) and operational errors (potential collisions in the air). In recent years, FAA has made progress in reducing the overall number of runway incursions, but serious incidents (where a collision was barely avoided) continue to occur. For example, on March 21, 2006, at Chicago O'Hare, a controller mistakenly cleared two commercial aircraft (an Airbus 319 and an Embraer E145) for takeoff on intersecting runways. Before stopping, the two aircraft came within 100 feet of one another at the runway intersection.

Mr. Chairman, it is against this backdrop that we would like to address three areas that are important for strengthening FAA's oversight and enhancing aviation safety:

- Shifting FAA's oversight to risk-based systems,
- Addressing key safety issues for an industry and an Agency in transition, and
- Reducing the risk of accidents on the ground and in the air.

Shifting FAA's Oversight to Risk-Based Systems

During the past 8 years, FAA has taken steps to move its safety oversight for air carriers, aircraft repair stations, and aircraft parts manufacturers to risk-based systems. These systems are based on analysis of data, such as air carrier operations and maintenance data, to focus the oversight on areas posing the greatest safety risks and make more effective use of limited inspection resources. FAA's old inspection programs focused more on compliance with regulations and inspections in designated areas, regardless of the level of risk. For example, in FAA's old oversight process, inspectors could conduct hundreds of inspections of one air carrier, even if no significant problems were found.

Clearly, FAA is on the right path in developing risk-based oversight programs; however, FAA continues to face challenges in advancing these programs. Today, we will be providing perspectives on FAA's progress and the challenges FAA faces with respect to implementing risk-based systems.

FAA's risk-based oversight approach for air carriers needs to be more flexible and comprehensive. In 1998, FAA introduced the Air Transportation Oversight System (ATOS) for oversight of air carriers. We have always supported ATOS—the essential design of the system is sound. ATOS is intended to permit inspectors to proactively use data (e.g., air carrier maintenance problems and past FAA inspections) to assess air carrier systems, determine where inspections should be focused, and shift resources in response to changing conditions, such as financial distress.

FAA initially implemented this system at the 10 largest air carriers and did not expand the program beyond this group of carriers until 2003. Today, FAA uses ATOS for oversight of 37 air carriers. The remaining 85 air carriers are under a system that is designed to be a bridge between the old and new oversight systems until FAA can transition all air carriers to ATOS. This interim system combines FAA's old compliance-based system with some of the data and risk analysis

elements of ATOS. However, for the interim system, FAA does not have personnel to assist inspectors in analyzing safety data and identifying systemic weaknesses in air carrier programs. The safety inspectors are relied upon to analyze this data and identify risks.

While FAA has come a long way in implementing its risk-based oversight approach for air carriers, the systems need to be more comprehensive and flexible. In June 2005, we reported[1] that FAA inspectors had difficulties using the risk-based systems to respond to rapid changes air carriers were making to reduce costs, such as decreasing in-house staff and increasing the use of outside repair facilities. 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. More importantly, over half of the inspections that were not completed were in areas where inspectors had identified risks.

This occurred because FAA did not have a system to prioritize the planned inspections, so some of the areas that posed a safety risk were not inspected. For example, FAA inspectors for an air carrier that had filed for bankruptcy protection and laid off a number of its mechanics correctly identified a potential risk in the qualifications of remaining maintenance personnel. Despite this determination, inspectors did not finish the inspections that had been planned to assess these risks. 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.

Events during the 2005 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 a more simplified checklist, which they believed could be used to quickly gather the information needed to identify risks associated with the strike. The FAA office manager told us that the ATOS data collection tools (checklists) were not specific enough to capture the data the inspectors needed. In addition, he stated that parts of the ATOS process, such as evaluating data quality, would be too time consuming. This demonstrates that FAA inspectors do not see ATOS as flexible and comprehensive enough to adjust to air carrier changes.

In response to the recommendations in our June 2005 report, FAA has:

- revised its guidance to help inspectors more thoroughly address industry changes when assessing safety risks and continually monitor the effects of

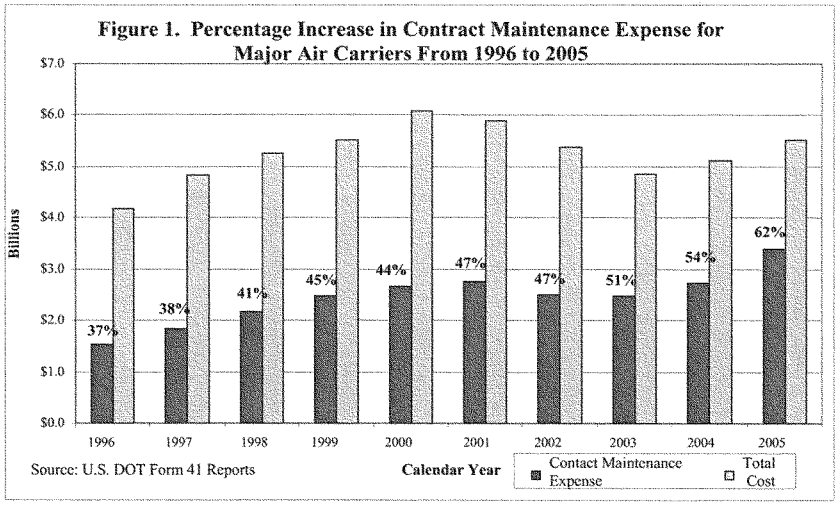
[1] OIG Report Number AV-2005-062, "FAA Safety Oversight of an Air Carrier Industry in Transition," June 3, 2005. OIG reports can be found on our website: www.oig.dot.gov.

those changes rather than reacting to a major event, such as an air carrier declaring bankruptcy; and

- completed a review of risk assessments and inspection plans prepared by field offices to ensure that inspectors are following ATOS procedures and prioritizing their inspections by risk level.

Also, FAA established a definitive schedule for transitioning the remaining air carriers to ATOS and now plans to complete the transition by the end of calendar year 2007. This is an important watch area for this Subcommittee because ATOS is a major cultural change for inspectors, who are not accustomed to relying on data analysis to find potential safety problems. We will continue to monitor FAA's progress in transitioning all air carriers to ATOS.

FAA needs to fully implement its risk-based oversight system for repair stations. Air carriers have historically performed most of their maintenance at their own in-house facilities, but are now contracting out a large percentage of this work to domestic and foreign repair stations. As shown in Figure 1, from 1996 to 2005, air carriers' use of external repair facilities grew from 37 percent of the carriers' maintenance costs to 62 percent.



It is important to note that this issue is not a matter of repair station maintenance versus air carrier in-house maintenance; it is that maintenance, regardless of where it is performed, requires effective oversight.

In July 2003, we reported[2] that FAA oversight had not shifted to where the maintenance was actually being performed. Instead, inspectors continued to focus inspections on in-house maintenance. For example, inspectors completed 400 inspections of in-house maintenance at one air carrier but only 7 inspections of repair stations. This occurred even though this carrier contracted out nearly half of its maintenance that year.

We also reported that 138 repair stations in Germany, France, and Ireland were not inspected by FAA at all. This was because the aviation authorities in these countries reviewed these facilities on FAA's behalf. But FAA did not have an adequate method to monitor the surveillance performed by other authorities. For example, most of the inspection files we reviewed that FAA received from the foreign authorities were either incomplete, written in a foreign language, or otherwise difficult to comprehend.

In response to the recommendations in our July 2003 report, FAA has developed a risk-based oversight approach for FAA-certificated repair stations. This system was developed to assist inspectors in targeting resources for both repair station oversight and oversight of air carriers' maintenance outsourcing programs. However, the new risk-based oversight system is not yet fully operational. Inspectors can use a manual version of the new system to assess potential safety risks at repair stations, but this system does not permit inspectors to share information across offices. This capability is important because multiple air carriers may use an individual repair station that would be inspected by different inspectors assigned to those carriers. According to FAA's current timetable, FAA inspectors will begin using the more effective automated system on October 1, 2006.

FAA is making progress in improving its oversight of domestic and foreign repair stations. FAA has recognized the need to shift its resources to those areas where the actual maintenance is performed (i.e., from primarily focusing on air carriers to placing more emphasis on repair stations). Additionally, FAA officials have worked closely with the aviation authorities of other countries to improve the surveillance they perform on FAA's behalf.

Once the automated feature of FAA's new risk-based oversight system is fully operational, we believe FAA will have a comprehensive, standardized approach to repair station oversight. Further, the information generated from this oversight will be available for review by all FAA inspectors to assist them in targeting their inspections more effectively.

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

FAA's risk-based approach to oversight of aircraft manufacturers needs to be more flexible to adjust to the prominent role suppliers now play in aviation manufacturing. Over the past 10 years, the aircraft manufacturing environment has changed dramatically. Traditionally, manufacturers produced most, if not all, of their major products and parts in their U.S. facilities. Now, most major products and parts are produced for the manufacturer by other suppliers, many of which are located in foreign countries. One major U.S. manufacturer uses major parts and components from close to 1,200 domestic and foreign suppliers to manufacture its aircraft. Some of these suppliers are located in Israel, Turkey, and Russia. This represents a challenge to FAA's ability to effectively perform oversight, particularly in foreign countries.

FAA's risk-based approach to oversight of manufacturers is intended to assist inspectors in determining where to focus their inspection efforts. However, this system was not designed to address the increasingly prominent role that aircraft parts and components suppliers now play in aviation manufacturing. For example, in determining how to target inspector resources, FAA's oversight system does not consider the number of suppliers that manufacturers use or the fact that suppliers have now taken on more responsibility in the design and production of aircraft parts. FAA recognizes that more work will have to be done to make this system more effective at keeping pace with the changing environment. We will be issuing a report on FAA's risk-based oversight system for suppliers later this year.

Addressing Key Safety Issues for an Industry and Agency in Transition

As FAA continues efforts to implement risk-based oversight systems, it must ensure it is prepared to respond to the challenges of an evolving aviation environment—with both its oversight systems and its inspection resources.

FAA needs to improve its oversight of air carriers' use of non-certificated repair facilities that perform critical and scheduled maintenance work. In December 2005, we identified[3] a trend in air carriers' use of external maintenance facilities that FAA was unaware of—the use of repair facilities that have not been certificated by FAA to perform critical and scheduled aircraft maintenance. We reported that these facilities are not covered under FAA's routine oversight program because FAA believes this responsibility rests with the air carriers. We also reported that non-certificated facilities do not have the same regulatory requirements as repair stations that obtained certification from FAA, but performed the same type of work as certificated repair stations.

[3] OIG Report Number AV-2006-031, "Review of Air Carriers' Use of Non-Certificated Repair Facilities," December 15, 2005.

FAA does not know how many non-certificated maintenance facilities air carriers currently use because it does not maintain a list of the facilities. However, during our audit, we identified over 1,400 non-certificated repair facilities performing maintenance for 19 air carriers we sampled. More than 100 of these facilities were located in foreign countries.

Air carriers have used non-certificated facilities for years, but it was widely believed that these facilities principally performed minor aircraft work, such as checking engine oil levels or changing tires. However, we identified non-certificated facilities that performed the same type of work as certificated repair stations, including scheduled and critical aircraft maintenance. For example, we found some non-certificated facilities that performed critical repairs, such as engine replacements and adjustments to flight control systems. FAA permits air carriers to use these facilities as long as the work is approved by an FAA-certificated mechanic.

While a certificated mechanic may approve repair work at non-certificated repair facilities, many other safeguards and quality controls that are in place at certificated repair stations are not required at non-certificated facilities. For example, non-certificated repair facilities are not required to employ designated supervisors and inspectors to monitor maintenance work as it is being performed. Other differences in FAA requirements between these two types of maintenance operations are illustrated in Table 1.

Table 1. Differences in Requirements for FAA-Certificated Repair Stations and Non-Certificated Facilities

FAA Requirement	Certificated Repair Station	Non-Certificated Repair Facility
Annual FAA Inspections	Required	Not Required
Quality Control System	Required	Not Required
Reporting Failures, Malfunctions, and Defects	Required	Not Required
Designated Supervisors and Inspectors	Required	Not Required
Training Program	Required	Not required

We also reported that neither FAA nor the six air carriers we visited provided adequate oversight of the work performed at non-certificated repair facilities. The air carriers we reviewed relied primarily on telephone contact to monitor maintenance performed at these facilities rather than conducting on-site reviews of the actual maintenance work. In contrast, as an added level of quality control, air carriers often assign on-site representatives to monitor the work performed at certificated repair stations; this is not the case at non-certificated facilities.

FAA regulations require air carriers to have mechanic training programs and oversight programs for work performed by external maintenance facilities. However, we found significant shortcomings in air carrier training and oversight programs we reviewed. As shown in Table 2, at these air carriers, mechanic training ranged from a 1-hour video to 11 hours of combined video and classroom training; one carrier only required mechanics to review a workbook.

Table 2. Air Carrier Training Provided for Mechanics*

Carrier	Training Provided
A	Less than an *1 hour* of video training
B	*1.5 hours* of classroom training
C	*11 hours* of combined classroom and video training
D	*3.5 hours* of combined classroom and video training
E	Maintenance procedures provided in a *workbook* that had to be signed and faxed back to the air carrier
F	*3 to 4 hours* of combined classroom and video training
G	*4 hours* of classroom training
H	*3.5 hours* of classroom training

* Training information obtained either from air carriers' or non-certificated facilities' records.

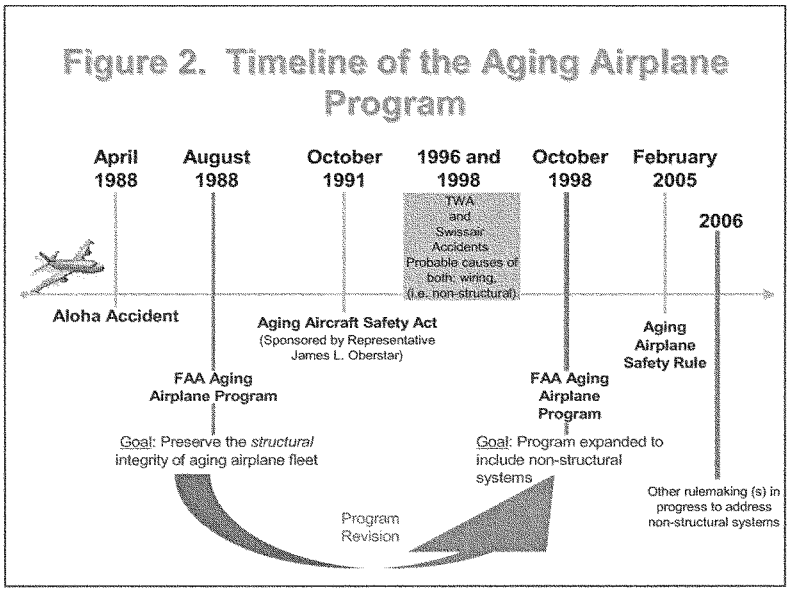
Despite the differences in quality controls and oversight that exists between certificated and non-certificated maintenance entities, there are no limitations on the scope of work that non-certificated repair facilities can perform. For example, we looked at critical repairs performed under special authorizations at one air carrier and found that, over a 3-year period, 14 of the 19 (74 percent) repairs were performed at non-certificated repair facilities. Examples of the work performed include landing gear checks, lightning strike inspections, and door slide replacements. In contrast, repair stations that are certificated by FAA are limited

to completing only the specific maintenance tasks that FAA has determined the facility is capable of performing.

FAA agreed that it needs to gather more information on the type of work non-certificated facilities perform and place more emphasis on the training and oversight air carriers provide. However, even though our report was issued in December 2005, FAA has not yet provided an action plan to address these issues. Mr. Chairman, this is another area that bears watching and one that requires prompt action by FAA.

FAA and the industry must remain vigilant in their efforts to address aging aircraft issues. After the 1988 Aloha Airlines accident, FAA and the aviation industry developed the Aging Airplane Program. This program was intended to ensure that older aircraft remained structurally sound. The Aloha accident also prompted the Aging Aircraft Safety Act of 1991.[4] The Act required FAA to perform aircraft inspections and records reviews of each aircraft used in air transportation. To implement this Act, FAA issued the 2005 Aging Airplane Safety Rule.[5] This rule formalized requirements for FAA to perform records reviews and aircraft inspections. It also required certain operators to perform supplemental inspections of their aircraft to identify potential cracks and corrosion. Figure 2 provides additional details on the progression of the Aging Airplane Program.

[4] Aging Aircraft Safety Act of 1991, Pub. L. No. 102-143 (1991).
[5] Aging Airplane Safety Rule, 70 F.R. 5518 (February 2, 2005).



FAA and the aviation industry have made significant advances in addressing problems with aging aircraft. FAA has initiatives underway that will foster even more improvements in aging aircraft requirements for large transport and cargo operators. For example, FAA recently issued a rulemaking[6] for public comment on Widespread Fatigue Damage, which will address potential damage that occurs on aircraft structures over periods of time. FAA has also initiated a task force to address general aviation aging aircraft issues. However, vulnerabilities remain in aging aircraft inspections for certain passenger air carrier and cargo aircraft fleets.

Specifically, FAA's records review and visual inspections of aircraft will not identify hidden cracks or corrosion. These types of problems will only be identified through more detailed supplemental inspections, which are not required for all aircraft under the current rules. For example, 2 months before the December 2005 Chalks Ocean Airways accident, FAA completed an aging aircraft records review and visual aircraft inspection at Chalks, but no structural issues were identified. However, the NTSB preliminary report[7] on this accident indicates that fatigue cracking was evident in both wings. This incident shows that the structural integrity of aircraft cannot be assured if they are only covered under

[6] Aging Aircraft Program: Widespread Fatigue Damage, 71 Fed. Reg. 19928 (proposed April 18, 2006) (to be codified at 14 C.F.R. pts. 25, 121, and 129).
[7] NTSB Preliminary Report Number DCA06MA010.

FAA's Aircraft Inspection and Records Review process and not subject to supplemental inspections.

Additionally, there are some categories of aircraft that are not covered by any aging aircraft program, as shown in Table 3. According to FAA and industry, this is due to the cost associated with developing programs for these operators.

Table 3. Aging Aircraft Requirements by Type of Operation

Type of Operation	**Operator Inspections** (Supplemental Inspections)	**FAA Inspectors** (Inspection & Records Review)
Multi-Engine/Scheduled Operators With 30+ seats (including Part 121 cargo)	Required	Required
Multi-Engine/Scheduled Operators Below 30 seats	Not Required	Required
Multi-Engine/On-Demand Operators (including Part 135 cargo)	Not Required	Not Required
Single-Engine Operators	Not Required	Not Required
Alaska Operators (flights within the State)	Not Required	Not Required

As part of its investigation of the Chalks accident, NTSB identified similar vulnerabilities. In July 2006, NTSB recommended that FAA require records review, aging airplane inspections, and supplemental inspections for all scheduled operations and cargo operations under Parts 121 and 135.

The Aloha Airlines and Chalks Ocean Airways accidents highlighted the importance of ensuring the structural integrity of older aircraft. FAA, Congress, and the aviation industry have made significant strides in this area, but as aircraft continue to be operated beyond their original design goals, this will be an area that bears watching.

Very light jets will present challenges to FAA's inspector and air traffic controller workforce. One of the new challenges FAA is likely to encounter within the next year is operations of a new class of aircraft called very light jets or VLJs. These small, "affordable" aircraft can operate on runways that are less than 3,000 feet long and can carry up to eight passengers.

As shown in Table 4, one VLJ has already received FAA certification and at least eight others should receive FAA certification within the next 2 years. These jets range in price from less than $1 million to $3.7 million and can fly at the same altitudes as large commercial aircraft.

Table 4. Operational Characteristics of Very Light Jets

VLJ	Full Certification	*Range (Nautical Miles)	**Ceiling	Seats (including pilots)	Price (in millions)
#1	2006	1,100	41,000 feet	6 - 8	$2.3
#2	September 8, 2006	1,250	45,000 feet	6	2.3
#3	2008	1,350	25,000 feet	5	< 1
#4	2006	1,280	41,000 feet	6	1.5
#5	2007	1,600	41,000 feet	5, 6, or 7	< $1
#6	2007	1,300	41,000 feet	8 - 10	3.0
#7	TBD	1,500	41,000 feet	4	TBD
#8	TBD	1,100	41,000 feet	6 - 8	TBD
#9	2007	1,250	45,000 feet	2	2.3
#10	2008	1,160	41,000 feet	6 - 8	2.8
#11	2007-08	1,750	45,000 feet	8 - 10	3.7
#12	TBD	1,300	41,000 feet	4 - 6	1.2

*The distance an aircraft can fly without re-fueling. VLJ operations will generally be on shorter routes of under 600 miles and mainly at altitudes below those of longer-range commercial operations.

**The highest altitude an aircraft can operate. According to FAA, typical operations for VLJs will be between 15,000 and 28,000 feet; they are capable of flying between 38,000 and 45,000 feet. Jetliners typically fly between 30,000 and 40,000 feet.

VLJ manufacturers expect these aircraft to find a niche among a variety of corporate and private owners and on-demand air taxi operators. FAA predicts that approximately 5,000 VLJs will be vying for airspace by 2017—these aircraft will fly in the same airspace as passenger aircraft operated by commercial airlines.

VLJs could also lead to an influx of a new class of pilots, possibly resulting in human factors issues. The pilots of these aircraft are expected to come from general aviation, corporate aviation, air taxi operations, and private ownership. The potential mix of pilot experience levels will demand a new standard in flight training. In addition, VLJs could have an impact on the workload of FAA inspectors and air traffic controllers—a challenge FAA must prepare to address.

FAA has to ensure its readiness for Unmanned Aerial Vehicles. Another emerging challenge facing FAA is the increasing use of unmanned aerial vehicles

(UAV). UAVs are pilotless aircraft operated by remote control. They can have wingspans greater than a 737 aircraft. The number of UAVs has risen dramatically in the last several years. For example, as of June 2006, FAA had issued 55 certificates to operate UAVs this year alone; last year the Agency issued 50 certificates.

In addition, the Department of Homeland Security is using this technology to protect the Nation's borders. Any aircraft operated by Government agencies in the National Airspace System (NAS), including a UAV, is considered a public aircraft operation, and the certification and oversight of that aircraft is the responsibility of the applicable Federal agency. These public operations are, however, required to be in compliance with certain FAA regulations, especially those that ensure that the operation of these aircraft does not compromise the safety of the NAS.

In April of this year, a U.S. Customs and Border Protection Predator B drone, which is as large as some commuter aircraft, crashed in Arizona, reportedly within several hundred feet of homes. According to preliminary incident reports, because the ground operator used the wrong procedures, he accidentally shut off the drone's engine. This accident raises questions about the safety of other unmanned aircraft in the NAS and people on the ground.

In January 2006, FAA stepped up its efforts to address safety issues associated with UAVs by creating a new organization within FAA's Aircraft Certification Service. This office has been tasked with developing policy and rulemakings to ensure that operation of UAVs does not compromise the safety of the NAS. However, as the use of these vehicles continues to grow, FAA will face challenges in developing and implementing rules to govern the safe operation of UAVs.

An evolving aviation system requires that FAA maintain a sufficient number of safety inspectors and ensure inspectors are positioned in the right locations. Much attention has been paid to controller staffing—FAA plans to hire over 11,000 controllers in the next 10 years. While replacing retiring controllers is a critical issue for FAA, it is also important to maintain a safety inspector workforce sufficient to achieve the Agency's mission of safety oversight.

FAA's FY 2007 budget request calls for an increase of 116 safety inspectors. However, it is unlikely that staffing gains over the next few years will be enough to offset the number of safety inspectors eligible to retire during the same time period. For example, this year, 28 percent of the current inspector workforce (1,008 of 3,628) will be eligible to retire. By 2010, however, half of the safety inspector workforce (1,820 of 3,628) will be eligible to retire. Just as FAA has recognized the need to address an expected surge in controller attrition, it must also ensure it closely monitors retirements and takes steps to hire and train the next

generation of safety inspectors. In our opinion, FAA needs to carefully evaluate its inspector staffing levels to ensure it can sustain sufficient oversight in light of the potential attrition within that workforce.

However, FAA does not currently have a staffing model that would provide an effective means of determining inspector staffing needs. In 1996, FAA recognized the need to have a model to more effectively respond to workload changes, such as air carrier growth and cutbacks. FAA developed a model in 2000 at a cost of $1.5 million. However, it was never implemented because by the time the model was completed, FAA had transitioned to ATOS—a change in its oversight process—which made the model obsolete. Without a staffing model, FAA cannot be assured that it has the right number of inspectors, assigned to the right locations, to effectively respond to changes in the air carrier industry.

During our review of FAA oversight of financially distressed and low-cost air carriers, we found inconsistencies in the way inspectors were allocated among field offices. For example, two FAA offices had the same number of inspectors assigned to oversee each of their assigned air carriers, but one air carrier had twice as many aircraft and 127 percent more flights than the other.

We also found that inspectors were not assigned to the locations where they were needed most. For example, FAA currently has one operations inspector assigned to Des Moines, Iowa, where his assigned air carrier averages only 6 flights per day, but does not have an operations inspector assigned to Chicago, Illinois, where the same air carrier averages 298 flights each day. The fact that inspectors are often not assigned to locations where they are needed most is largely the result of an April 2003 memorandum of understanding (MOU) between FAA and the union representing its inspectors. The MOU allows inspectors for ATOS air carriers to remain in their assigned locations if they choose to do so, even when air carriers substantially reduce operations or close maintenance facilities at those sites.

In 2003, Congress directed FAA to contract with the National Academy of Sciences to conduct a study of the assumptions and methods the Agency uses to estimate staffing standards for its inspectors. The purpose of the study was to ensure that FAA has adequate resources to conduct proper oversight of the aviation industry. The National Academy of Sciences has completed their work, and FAA plans to publish the results of their study today. We have not had an opportunity to review this study. However, Mr. Chairman, in our opinion, it is important for the Subcommittee to follow up with FAA to ensure that a model is implemented to effectively allocate inspector resources in response to changes in the industry.

Reducing the Risk of Accidents on the Ground and in the Air

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.

Progress has been made in reducing runway incursions but serious incidents continue to occur at major airports. From 1998 to 2001, 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 figures below, the total number of runway incursions decreased from a high of 407 in FY 2001 to 327 in FY 2005, and the most serious incidents have decreased from a high of 69 in FY 1999 to 29 in FY 2005.

Figure 3. Runway Incursions FY 1999 to FY 2005

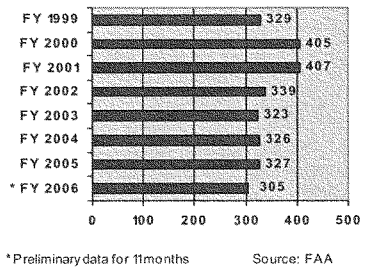
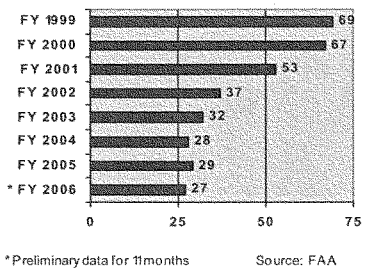


Figure 4. Serious Runway Incursions FY 1999 to FY 2005



However, the number of runway incursions since 2003 has reached a plateau and very serious runway incursions (those in which a collision was barely avoided) continue to occur. Recent incidents at several large airports highlight the potential safety risks associated with runway incursions.

- On July 17, 2006, at Chicago O'Hare, a pilot of a commercial regional jet made a wrong turn and mistakenly entered a runway as a Boeing 737 was landing. The Boeing 737 flew directly over the top of the regional jet, narrowly missing it by less than 100 feet.

- On March 21, 2006, at Chicago O'Hare, a controller mistakenly cleared two commercial aircraft (an Airbus 319 and an Embraer E145) for takeoff on intersecting runways. Another controller spotted the error and ordered both aircraft to abort their takeoff rolls. Before stopping, however, the two aircraft came within 100 feet of one another at the runway intersection.

- On June 9, 2005, at Boston Logan, a controller mistakenly cleared two commercial aircraft (an Airbus 330 and a Boeing 737) to depart on intersecting runways. As the Airbus lifted off the ground, the Boeing 737 pilot saw the potential hazard and kept the aircraft on the ground to avoid a collision. The two aircraft came within 171 feet of one another.

Three airports in particular—Chicago O'Hare, Boston Logan, and Philadelphia—have experienced a recent increase in runway incursions. During the period FY 2005 through August 2006, Boston Logan had 22 incidents (1 severe), Chicago O'Hare had 15 incidents (5 severe), and Philadelphia had 15 incidents (1 severe involving a collision). Those were the highest number of runway incursions among the Nation's large commercial airports. We are currently conducting a review of FAA's actions to address the increase in incidents at those three locations.

Over the past several years, FAA has invested in multiple technologies to reduce runway incursions. FAA initially deployed a system known as the Airport Movement Area Safety System (AMASS) at 34 large airports to alert controllers of potential runway collisions. However, AMASS produced false alerts during heavy rain storms, which rendered the system inoperable at times when it was most needed.

Because of the problems with AMASS, FAA is installing a new system called the Airport Surface Detection Equipment—Model X (ASDE-X). ASDE-X is already operational at 8 airports, and FAA plans to deploy this system to a total of 35 airports (including 25 airports that are currently using AMASS).

Although ASDE-X performs better in adverse weather conditions, it also has problems with false alerts similar to AMASS. In addition, ASDE-X has experienced significant schedule slippages, and the final deployment date has been pushed from 2007 to 2011.

More importantly, while AMASS and ASDE-X provide alerts of potential runway incursions to air traffic controllers, neither system provides alerts to pilots, which has been a longstanding NTSB recommendation. Providing warnings directly to flight crews is a potentially significant tool to prevent runway incursions since over 50 percent of runway incursions are caused by pilot error. We are

completing a review of FAA's ASDE-X program and intend to issue a report early next year.

To address the collision risk of operational errors, FAA needs an accurate baseline of the number of errors actually occurring. While FAA has had success in reducing the total number of runway incursions Agency-wide, it has not had the same success with operational errors—where aircraft come too close together in the air. In addition, shortcomings in FAA's reporting system for operational errors have indicated that the true number of these incidents is not yet known.

In FY 2005, there were 1,489 operational errors (up from 1,149 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—those where a mid-air collision is barely avoided), compared to 40 serious incidents reported in FY 2004.

During the first 11 months of FY 2006, the number of operational errors has decreased—there were 1,242 operational errors compared to 1,358 during the same period in FY 2005. However, the number of operational errors during the 11-month period still exceeds the *total* number of errors experienced during all of FY 2004.

The increase in operational errors is significant, but it is important to recognize that the number of errors reported in prior years may not be an accurate benchmark. This is because, at the majority of FAA facilities, FAA relies on an inaccurate system of self-reporting operational errors.

In September 2004, we reported[8] that only 20 of FAA's 524 air traffic control facilities had 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 investigated claims by a whistleblower that operational errors were being intentionally underreported. We substantiated that operational errors were systematically ignored and traced the cause to local management policy that did not comply with national guidelines. Prior to our investigation, the facility reported just two operational errors during the 6-month period from January 1 to

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

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[9] 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 was most likely understated. Managers at the facility responded by re-training all personnel and redesigning certain facility-specific air traffic procedures.

This past year, FAA has taken steps to improve operational error reporting. For example, FAA implemented procedures that require towers and TRACONs to conduct random audits of radar data to identify potential unreported operational errors. FAA Headquarters is also conducting random audits at selected facilities and is evaluating its severity rating system in an effort to capture more accurately the collision risk that operational errors pose. More importantly, FAA is developing an automated system to identify when operational errors occur at TRACON facilities. FAA plans to start fielding this system in FY 2008 with an estimated completion date in FY 2009.

Clearly, those actions are steps in the right direction, but FAA needs to follow through on those efforts—the number of unreported errors identified just at the New York TRACON underscores the need for top management attention to this issue.

Mr. Chairman, we see two key issues that FAA needs to address 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 causes of these incidents, especially the

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

most serious ones. FAA's action to implement an automatic reporting tool at TRACONs should go a long way in establishing that baseline.

Second, FAA must address the issue of controller attrition and staffing at each facility. The controllers have repeatedly stated that staffing is a primary cause of operational errors. While FAA can disagree, the issue will remain unresolved until FAA has reliable and accurate staffing standards for each of its air traffic facilities (over 300 FAA-operated nationwide). This is particularly important in light of the fact that FAA estimates over 70 percent of its controllers hired after the 1981 strike will be eligible to retire in the next 10 years.

To address the surge in retirements, FAA plans to hire and train over 11,000 new controllers through FY 2015. In December 2004, FAA developed a comprehensive workforce plan that lays out the magnitude of the issue and establishes broad measures for meeting the challenge. However, as we reported in May 2005,[10] the plan lacks essential details concerning two key areas.

- FAA's plan does not identify how much it will cost. The cost of hiring and training 11,000 new controllers will be substantial, particularly since it currently takes new controllers 2 to 5 years to become fully certified. During that time, FAA incurs the cost of the trainees' salary and benefits, as well as the cost of the salary and benefits of the certified controllers who instruct them one-on-one.

- In addition, the plan does not address hiring and staffing needs by location. Without this information, FAA cannot have confidence in the projected number of controllers it says it needs to operate the system safely. That level of detail is critical because there are over 300 FAA-operated air traffic control facilities—many with significant differences in the levels of air traffic they manage and the complexity of operations they handle. Without accurate facility-level planning, FAA runs the risk of placing too many or too few controllers at key locations.

It is important to note that FAA's most recent report, dated June 2006, did not address these two key areas. We are currently reviewing FAA's progress in implementing key staffing and training elements of the plan and will be issuing a report later this year. In addition, at the request of the Ranking Members of the Full Committee and this Subcommittee, we are reviewing FAA's policies regarding the number of controllers required to be on duty during certain shifts at tower and TRACON facilities. Our auditors are visiting the first site this week.

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[10] OIG Report Number AV-2005-060, "Report on Controller Staffing: Observations on FAA's 10-Year Strategy for the Air Traffic Controller Workforce," May 26, 2005.

That concludes my statement,[11] Mr. Chairman. I would be pleased to address any questions you or other Members of the Subcommittee might have.

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

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October 4, 2006

The Honorable John Mica, M.C.
Chairman
House Subcommittee on Aviation
2251 Rayburn House Office Building
Washington, DC 20515

The Honorable Jerry Costello, M.C.
Ranking Democratic Member
House Subcommittee on Aviation
2251 Rayburn House Office Building
Washington, DC 20515

BY HAND

Re: Submission to Record for Sept. 20, 2006 Hearing on Oversight of Aviation Safety

Dear Chairman Mica and Ranking Member Costello:

We are writing to address issues raised by members of your subcommittee about the aviation maintenance industry at the Sept. 20, 2006 hearing on oversight of aviation safety. In particular, it is important that the leadership of the subcommittee understand the following about contract maintenance:

- Contract aviation maintenance providers are a longstanding part of the aviation industry, and a vibrant and growing part of the U.S. economy. With over 202,000 people employed at 4,276 repair stations in all 50 states (see Appendix A), repair stations are an important part of the U.S. economy.

- ARSA shares concerns expressed by subcommittee members about the level of funding provided to the Federal Aviation Administration (FAA) and consequent limitations on the number of aviation safety inspectors. We strongly support efforts to increase the resources available for safety oversight. However, we also recognize that the aviation industry has an obligation to oversee itself and to ensure the safety of the civil aviation system, regardless of the level of FAA oversight. We are very confident that the industry is meeting that obligation.

- Foreign repair stations are critical to the modern civil aviation system. U.S.-registered aircraft must be maintained by FAA-approved facilities. Thus, any limitation on the use of foreign repair stations would inherently limit the ability of U.S. air carriers to fly overseas. Restrictions on foreign repair stations would undermine the competitiveness of the U.S. aviation industry and its workers, both by hurting air carriers and by likely precipitating reciprocal restrictions on the use of U.S. repair stations by foreign countries.

- ARSA is the trade association that represents the aviation maintenance industry. As your subcommittee begins the process of reauthorizing FAA-programs, ARSA strands ready to assist you in understanding the impact of proposed policy changes on our members and their employees throughout the U.S. and around the world.

ARSA is the leading advocate for the repair station industry
ARSA is a 700-member strong international trade association with a distinguished 22-year record of educating and representing certificated aviation maintenance facilities before Congress, the Federal Aviation Administration (FAA), the European Aviation Safety Agency (EASA), and other civil aviation authorities (CAA). Through ARSA, the aviation maintenance industry speaks with a single voice in the regulatory and legislative process.

ARSA's primary members are companies holding repair station certificates issued by the FAA under Part 145 of the Federal Aviation Regulations (FARs). These certificates authorize repair stations to perform maintenance on civil aviation articles, including aircraft, engines, and propellers, and on the component parts installed on these articles. These repair stations perform maintenance for airlines and general aviation owners and operators.

Contract maintenance is a long-standing part of the civil aviation system
The contract maintenance work performed by ARSA members is nothing new. Since the early twentieth century, our industry has consistently provided dependable, expert maintenance to the commercial and general aviation sectors.

Standards for operation of repair stations have been set since enactment of the Civil Aeronautics Act of 1938. The current Part 145 of the FARs continues to set stringent standards, ensuring that certificated repair stations meet the same safety standards as airlines' in-house maintenance organizations. Indeed, maintenance is not the only service that is routinely contracted in the aerospace industry. Flight training, fueling services, and supplying parts to aircraft manufacturers are all services that the industry routinely contracts. 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 work they perform.

Although contract maintenance is nothing new, in recent years more airlines have realized that they can use outside maintenance contractors to reduce costs while maintaining the highest safety standards. 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. For decades repair stations have served as the primary source of maintenance for the general aviation sector.

The repair station industry is a vibrant sector the U.S. economy
The growing contract maintenance industry is a source of stable, good paying jobs for skilled American workers. Repair stations employee more than 200,000 people at 4,276 facilities in all 50 states.

In recent years, our industry 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 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.

Despite insufficient FAA oversight resources, the aviation industry fills the gap
Aviation safety does not begin and end with the FAA. The industry has the ultimate obligation to ensure that the civil aviation system is safe. All evidence suggests that the industry is fulfilling that responsibility despite inadequate FAA oversight resources.

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.[2] 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. As noted by DOT Acting IG Todd Zinser during the Sept. 20 hearing, this system is expected to be fully operational by Oct, 1, 2006. 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. ARSA has also repeatedly called on Congress and the administration to increase funding for the FAA to ensure that the agency has adequate oversight resources.

We note that despite the IG's critique about FAA oversight, repair stations are subject to a significant amount of oversight by airline customers, foreign regulators and others.

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[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] *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).

Between Nov. 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 B). Among the survey's findings:

- The FAA inspects domestic repair station facilities an average of three times a year.
- The average repair station receives eight audits a year by customers. These include the continuous analysis and surveillance programs air carriers are required to undertake by regulation, as well as audits through the Coordinating Agency for Supplier Evaluation (CASE) and other customer programs.
- Repair stations themselves perform an average of 17 internal audits annually.
- Domestic repair stations undergo a total average of 29 audits each year, while foreign repair stations with FAA certificates undergo an average of 79 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, airlines customers, and other regulators collectively provide a high-level of oversight of contract maintenance to ensure continued quality and safety.

Foreign repair stations are critical to the modern civil aviation system
Critics discussing contract maintenance 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 foreign repair stations is a necessary component of the international aviation system; that FAA-certificated foreign repair stations must meet high quality standards; that the U.S. is a world leader when it comes to providing maintenance services to airlines; and that any effort to restrict the use of foreign repair stations would harm both air carriers and maintenance companies within the United States.

The Chicago Convention 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 or related components, regardless of whether the maintenance is performed in that country.[3] 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 approximately 689 FAA-certificated repair stations outside the U.S. At the same time, there are 1,000 EASA-certificated repair stations, and numerous others with approval from other civil aviation authorities (CAAs) inside our borders. As these numbers suggest, the U.S. is a world leader in the market for aviation maintenance services and our industry is highly-regarded around the globe. As a result, the U.S. enjoys a

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

favorable balance of trade in this area, a fact that has benefited repair station employees, and the towns and states in which the maintenance facilities are located.

Any effort to restrict the use of foreign repair stations would undermine the ability of U.S. carriers to operate overseas because certain, necessary maintenance services would be unavailable. Additionally, restrictions on the use of foreign repair stations by U.S. carriers would likely result in reciprocal restrictions on the use of domestic repair stations by foreign carriers. Such action would impede the growth of a vibrant and growing part of the U.S. economy.

Conclusion
Contract maintenance has long been, and continues to be, a vital part of the aviation industry and is a growing part of the U.S. economy. As the "gold standard" in aviation, the U.S. enjoy a favorable trade balance, with domestic workers providing safe and cost effective services to domestic and international carriers.

Although the aviation industry has filled the gap when it comes to oversight, Congress must maintain the positive trends in contract maintenance by providing the FAA with additional resources.

We appreciate and share your commitment to aviation safety. ARSA stands ready to provide any additional information you may require about our industry to help you make the best possible policy decisions in the months and years ahead.

Respectfully submitted,

Christian A. Klein
Legislative Counsel
Aeronautical Repair Station Association

Virginia K. Scattergood
Associate Counsel
Aeronautical Repair Station Association

cc: All House Aviation Subcommittee Members

Appendix A

FAA Repair Stations by State (Including Territories)

State	Count	Employees
AK	57	471
AL	58	6,137
AR	43	3,258
AZ	163	6,628
CA	699	33,434
CO	74	1,226
CT	105	7,604
DC	1	7
DE	6	948
FL	515	16,742
GA	111	14,969
GU	1	6
HI	13	218
IA	39	2,957
ID	30	376
IL	92	3,089
IN	74	3,253
KS	105	7,024
KY	37	521
LA	43	2,080
MA	57	2,051
MD	29	812
ME	12	831
MI	119	4,320
MN	60	1,923
MO	54	3,300
MS	22	1,036
MT	25	292
NC	66	3,689
ND	11	96
NE	13	1,213
NH	23	566
NJ	69	2,396
NM	22	622
NV	28	714
NY	129	4,636
OH	144	4,545
OK	145	11,400
OR	46	1,330
PA	103	2,358
PR	17	145
RI	9	384
SC	30	2,538
SD	15	70
TN	54	1,815
TX	436	25,103
UT	29	423
VA	44	1,461
VI	1	1
VT	12	164
WA	120	7,810
WI	44	1,518
WV	13	1,441
WY	9	90
Total	4,276	202,041

Based on FAA Air Agency Data Dated: August 27, 2006

FAA Repair Stations on Foriegn Soil by Country

Country	Count	Employees
AE	4	3,524
AR	7	1,709
AS	15	6,667
AU	1	1,150
BA	1	5
BE	11	4,520
BL	1	207
BR	16	5,803
CH	25	12,968
CI	4	526
CO	4	1,318
CS	3	480
DA	2	857
DR	1	8
EG	1	3,500
EI	12	3,615
ES	1	1,050
ET	1	2,230
EZ	2	1,295
FI	1	1,800
FJ	1	26
FR	107	32,421
GM	50	30,235
GR	2	914
GT	2	55
HK	8	5,014
HU	2	408
ID	2	2,813
IN	2	779
IS	13	5,536
IT	17	6,703
JA	22	19,871
JO	2	740
KE	1	5
KS	7	5,628
LU	1	383
MO	2	1,231
MT	1	42
MX	21	4,979
MY	8	4,188
NL	20	7,037
NO	6	1,436
NZ	4	3,377
PE	3	516
PM	1	192
PO	2	2,186
QA	1	30
RO	2	938
RP	7	3,249
RS	1	2,350
SA	5	6,423
SF	4	3,790
SN	48	15,047
SP	5	4,314
SW	8	2,496
SZ	8	4,332
TD	1	30
TH	6	5,660
TU	2	3,056
TW	6	4,744
UK	160	22,229
UP	1	91
VE	3	247
WI	1	100
Total	689	269,073

Based on FAA Air Agency Data Dated August 27, 2006

Appendix B
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	Authority	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

MITSUBISHI HEAVY INDUSTRIES AMERICA, INC.
AIRCRAFT PRODUCT SUPPORT DIVISION

Attn: Chris Brown
Majority Counsel
House Committee on Transportation and Infrastructure
Aviation Subcommittee

RE: Mitsubishi Statement in Preparation for the September 20, 2006 Subcommittee Hearing, "Oversight of Federal Aviation Administration Safety Programs"

Statement from Ralph Sorrells, Deputy General Manager, Mitsubishi Heavy Industries America, Inc. Product Support Division-

"Mitsubishi Heavy Industries America has been fully cooperating for the last year with the FAA's MU-2 Evaluation Program to create FAA mandated training for the aircraft and an FAA accepted checklist. The new training program began this month and we are confident that this will result in increased safety benefits.

MHIA has been informing interested parties including the FAA, NTSB and Congress about the training program and the MU-2's history and would welcome the opportunity to answer questions or meet with congressional representatives now or in the future to discuss the latest information about the aircraft."

Sincerely,
Ralph Sorrells
Deputy General Manager, Product Support Division
Mitsubishi Heavy Industries America, Inc.

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