REMARKS BY JOSEPH M. DEL BALZO
INTERNATIONAL AVIATION ROUNDTABLE
MAY 3, 1993

Welcome to the second Aviation International Roundtable session. I would like to thank Ambassador Lilley and Dr. Halaby for agreeing to share their thoughts on trends and strategic issues in East Asia with us.

Your response to the first Roundtable in March was very positive, and Joan Bauerlein and the Transportation Research Board are working on additional sessions.

As you know, the Roundtable series was created to help everyone in this room prepare for the increasing globalization of aviation activities and decisions. We're talking about Asia

today because this region is becoming more and more important in civil aviation. ICAO projects that the international passenger growth rate in the Asia-Pacific region will average 11% through 1994. That's more than twice the growth rate anywhere else. Based upon our own studies at the FAA, we foresee transPacific air traffic overtaking the volume of Atlantic traffic this year. By the year 2000, we anticipate that this regional market will account for nearly half (49%) of total international air traffic.

We've already provided a great deal of training in Asia, and we have many technical agreements with countries in the region. But the high growth rate means that our activities in Asia are only going to increase. For example, we're moving ahead on cooperation with countries in the region for future technologies, such as the Satellite Based Communication,

Navigation and Surveillance/Air Traffic Management (CNS/ATM) Systems. Stan Rivers has just returned from leading a U.S. Delegation to the Third Asia/Pacific Regional Air Navigation Meeting in Bangkok. And we're increasing the U.S. presence in Asia by opening an International Area Office in Singapore this year. Craig Beard will head that office.

Each of us in this room will have more and more contact with our counterparts in other nations on technical issues and planning. So, we have to understand -- and actively interpret -- what's going on inside their countries and what they are doing internationally.

Almost 25% of U.S. passengers and 50% of our cargo traffic are now international. Aviation is the preferred

method of transportation in the U.S. and abroad because of its safety and efficiency levels. But the future of civil aviation rests on our ability to work with our international counterparts not only to ensure safety but also to develop a regulatory environment that doesn't place needless obstacles in the way of aerospace commerce.

If you read the article on China in the Washington Post on April 25, you saw that China's economy is likely to expand by a rate of 13% in 1993 for the second straight year. This is the fastest growing economy in the world. I believe we are all generally aware of the economic success U.S. firms like McDonnell Douglas and Boeing have had in China in the past. But do we understand what the future holds for American firms competing for market share in China and other Asian nations? Will the Clinton Administration assume

an active role in supporting U.S. manufacturers in international competition and R&D projects, as other governments do?

As I look around this room, I think of the domestic challenges we've weathered in the past. Air traffic congestion and deregulation come to mind. While ensuring safety, the FAA has promoted cooperation among aviation systems as dissimilar as New York's and Montana's. We face much greater diversity -- not to mention political complications -- in the international aviation sector.

It's the purpose of this Roundtable series:

* to help us meet these demanding challenges,
* to give us the "big picture" perspective so that we can anticipate future global and technological trends, and

more importantly,

* to help us identify the most effective strategies for safety and improvement.

REMARKS BY JOSEPH M. DEL BALZO
ACTING ADMINISTRATOR
FEDERAL AVIATION ADMINISTRATION
AAAE ANNUAL MEETING
DALLAS, TEXAS
MAY 11, 1993

Good morning. I'd like to thank Chip Barclay and Spencer Dickerson for inviting me here today. I know that's what people expect to hear, but this time it's said with real sincerity. Conferences such as this are important to me. Because when you work in Washington long enough, you begin to think that nothing really important can happen unless it starts in our nation's capital...or at least receives an official Washington endorsement. Those of us who labor inside the Beltway need to be reminded, from time to time, that Washington is not Rome...that not all roads lead to 800 Independence Avenue...and that much of the creative thinking about the problems which confront us takes place far from the center of official policy making.

Probably the number one concern on everyone's mind is the economic state of the aviation industry. Right now, virtually every air carrier in the world is going through a period of financial stress. Many are looking beyond their borders for mergers and for more profitable routes. Hard hit carriers here at home have laid off thousands of workers, canceled new orders for planes, and curtailed service. Everyone...air carriers... airport operators...avionics and airframe manufacturers ...those of us who manage the airspace...everyone is looking for ways to restore the financial stability of our troubled industry and strengthen our competitive position abroad.

The President's new National Commission for a Competitive Airline Industry is expected to hold its first meeting in about two weeks. Those of us at the FAA are ready to provide our full assistance as its members delve into these issues of such vital concern to our entire economy. This Association is fortunate to have Chip Barclay as a member of the panel, and I congratulate him on his appointment. I know that Chip will represent not only what's best for this organization, but what's best for aviation.

By the time the commission completes its report, which I understand should take about 90 days...by that time, or much sooner, I hope, the FAA will be headed by its thirteenth Administrator. I don't want to anticipate what the findings of the commission will be, or to try to second-guess the new administrator's agenda. So this morning I'll spend most of my time on your priorities. I'll talk briefly about our Fiscal Year 1994 budget request, the reauthorization bill, passenger facility charges, and about what we're doing to make the regulatory process less onerous. Then, as time allows, I'll discuss where we stand on a few key air traffic modernization programs.

President Clinton and Secretary Pena have made it clear that they are ready to work in partnership with you to see that airports get the resources they need to keep pace with the demands of a growing economy and the advances in aviation technology. The President's budget for the coming fiscal year seeks funding for a strong grants program. We've requested a total of 1 billion 8 hundred 79 million dollars. That's 79 million higher than last year's program level. Of the total amount, 8 hundred 11 million is allocated for formula grants and 1 billion 67 million is designated for discretionary grants.

I spent most of last month either preparing for hearings or defending the FAA's funding programs before various Congressional subcommittees. It's a little like being on Jeopardy, with John McLaughlin as the host. Immediately following the hearings, the House Appropriations transportation subcommittee, led by Chairman Bob Carr of Michigan, outlined new, more rigorous criteria the panel proposes to use in evaluating requests for new transportation projects...including airports and air traffic control. The criteria and just how they will be applied in specific cases...these are details which the subcommittee still must work out. But I agree with Chairman Carr that all of us will benefit from a process that is less driven by politics and more directed by sound economic factors.

Airports have always been magnets for economic growth and jobs. But in order to keep up with the changing demands of a dynamic air traffic environment, airports need sustained, consistent funding. In a period of competing requirements and diminishing resources, there are not many revenue sources as reliable as the passenger facility charge. In the past two years, we've approved 88 applications with a collection value approaching six billion dollars. These funds have enabled airports to add scores of new aprons, taxiways and runways...to improve security systems...and to install people movers and build access roads. And these funds have been used, as they were in Denver, to pay both the principal and interest on airport development bonds.

No one that I've talked with, not even the harshest critic, advocates the repeal of the passenger facility charge. But I believe it's virtually certain that we will see some form of needs assessment applied to PFC funded projects in the future. While there is little disagreement about the value of the vast majority of the projects, there is uneasiness about a few spending plans which appear to be extravagant, inappropriate or poorly conceived.

It's important to keep in mind that the original PFC rule was issued to improve capacity, security and safety ...to reduce noise...and to promote competitiveness among airlines. Any other use of these funds. or attempts to divert aviation generated revenues for nonaviation purposes, undermines the concept. To protect the integrity of the PFC, we're considering the addition of two new criteria for PFC funded projects. One would require that public agencies certify in their applications that critical needs in capacity, security and safety are all adequately funded before any expenditures are made for lower priority projects.

The second criteria would limit the use of PFC funds for airport ground transportation projects. Money would be available only to complete the last link connecting the airport to a larger transportation system. The money must be proportional to the number of airport-destined riders. And the airport link must be part of the area's Transportation Improvement Program, as required under ISTEA. I'd like to make it clear that these are only considerations at this time. Both criteria would require statutory and regulatory changes before they could be adopted.

The third funding issue that I would like to mention is the Airports Reauthorization Bill. At the moment, there are few details to provide. The Secretary has to decide whether to go ahead with a long-term bill...without the recommendations from the Presidential Airline Commission...or to send up a single-year bill which would give everyone more time to formulate a coherent and comprehensive national policy. No final decision has been made. But submitting a one-year extension to Congress this spring will in no way preclude us from introducing a proposal of broader scope later this year, after the Commission has made its report. You can be sure that we will work in tandem with you as we put together the reauthorization legislation.

I believe that, on the whole, the FAA has been mindful of the legitimate interests of the industry and has tried to work cooperatively as a partner. But, at times, our role as a regulator can make this partnership an uneasy one. One current example is the security access rule. I've not talked to any one who's happy with it. Air crews are frustrated at having to carry multiple access cards or be escorted through the ramp doors. And the costs have greatly exceeded our original estimate. We've issued guidelines which offer less costly alternatives, yet still meet the basic security requirements. We're also determined to do a better job if estimating the cost of our regulatory decisions. But some members of Congress believe that a reassessment of the policy, particularly at smaller airports, may be in order. No doubt this rule will be addressed by the Airline Commission.

We all realize that a modern society cannot function without rules and regulations. But the process of their formulation and enforcement need not be cumbersome and arbitrary. I'd like to think that we can work together on rulemaking just as successfully as we have on other airport issues.

There is one other source of concern which demands everybody's almost constant attention. That's the issue of environmental safeguards. The FAA supports the present statutory requirement that Stage 2 aircraft be phased out by the year 2000. But in the meantime, all of us...the FAA and local airport authorities...we must continue to oppose efforts to ban the older, noisier airplanes in advance of our national phase-out schedule. And we must continue to oppose local restrictions that would disrupt or further diminish the capacity of the NAS.

Your under considerable pressure from your communities, I know. We want to work with you to find ways to best accommodate these conflicting demands. We'll continue to help fund noise abatement projects whenever we can, certainly. But we have other resources as well...resources such as new simulation and analytical models that can help pin-point where the worst problems are and offer solutions you may have overlooked. I hope you'll take advantage of this new technology.

I'd like to use the next few minutes to tell you a little about how the FAA's plans to modernize our air traffic control system are progressing, and the important features which will distinguish the next generation of technology from what we have today.

Let me say, straight off, that progress on some key programs has been painfully slow. Delays in the Advanced Automation System have been especially frustrating, because it provides the foundation for so many new capacity enhancements and work-saving capabilities. The good news is that these problems have now been ironed out.

Three weeks ago, I presented a plan to the Congress to restructure the AAS program to keep it on schedule and on budget. The plan calls for freezing the requirements, placing a dedicated team on site at the prime contractor's plant, and providing greater oversight at the top. We've also changed the implementation strategy for some key elements, so that we can begin to receive the benefits much more quickly.

One phase of the AAS replaces the old computer workstations in the en route centers with new Sector Suites. The new workstations will have enhanced displays that offer higher resolution, color, and better depictions of weather conditions. Our revised strategy calls for delivering the first new sector suites to Seattle in 1996.

The same controller workstations that we're installing in the centers will also go into several of our larger Terminal Radar Approach Control facilities. These sector suites provide the computer architecture to support another improvement called Terminal Air Traffic Control Automation...or TATCA. When TATCA is in place, controllers will have top-of-descent, approach spacing, and sequencing aids to handle higher levels of traffic in the terminal area with greater efficiency and safety. The payoff from TATCA will be additional capacity at those airports which today are choked with congestion.

The Advanced Automation System is a "must have" program if we are to cope effectively with the future demands for air traffic control services.

Another program that we must have, for both safety and economic reasons is digital communications. For the past ten years, the FAA has pursued an aggressive

research program to make digital communications possible in a dynamic air traffic control environment.

Now that research has paid off. At 31 airports in the United States, pilots can receive predeparture briefings over a digital datalink instead of the old radio-based system. By the end of 1995, we plan to extend this service to 60 airports. And by the end of the decade, if not sooner, data link will be available for every facet of flight, and for all users of the airspace.

On a typical three-hour flight, a pilot communicates with multiple air traffic controllers and changes radio frequencies about two dozen times. During peak periods, it's not unusual for a controller to talk on a single radio channel with 25 or more aircraft. It's hardly surprising, then, that nearly one-fourth of all domestic operational errors are caused, either directly or indirectly, by mis-communications. The potential to improve safety by reducing, even eliminating, these errors is one of the most compelling reasons to implement digital communications.

Another reason is cost. One of our air carriers told us that communications-related delays cost it more than $300 million dollars each year. In a single 12-month period, the company experienced more than 8.5 million minutes of delay while either in-flight or taxiing...delays which added $173 million dollars to its direct operating costs.
Air traffic imposed an additional 14,000 hours of delay at the departure gate. Once airborne, altitude and speed restrictions, together with inefficient routings, cost them another 108 million dollars in wasted time and increased fuel consumption.
In today's environment, the introduction of new technologies to reduce operating costs, increase capacity, and eliminate delays heads our list of priorities.

One such technology, with revolutionary implications for air traffic control is the Global Positioning System, or GPS. Two years ago, the use of satellites was little more than a theoretical concept. Today, the transition to that system has begun. This past December, the FAA issued certification criteria for GPS receivers. By next fall, we hope to complete instrument approach overlay procedures that will allow aircraft with approved GPS receivers to use them at over 5,000 published non-precision approaches in the United States.

This September, we plan to request proposals for flight demonstrations to evaluate the ability of GPS to perform a Category-3 autoland capability using Differential GPS. We looking at flight tests to begin late next year. The significance of these tests can't be overstated, for they will, most certainly, have a bearing on the decision to proceed with the deployment of the Microwave Landing System.

But landing capability is only one part of the GPS potential. Two years ago, the International Civil Aviation Organization endorsed the concept of a worldwide air traffic management system based on the use of satellites. We call it the Global

Navigation Satellite System. Not unexpectedly, there are many technical and institutional questions to be addressed. What are the most promising early applications? How do we integrate this technology with the system we have today?

What new procedures and international agreements will be required? And then there are the reservations which have been voiced in international aviation circles about the risks of dependence on a military-controlled satellite system. Reservations which I might add have been expressed just as forthrightly within DOT and the FAA. Yet despite these questions, GNSS is a concept which has very quickly gained momentum. If implemented properly, it can, quite literally, eliminate the disparities among the levels of air traffic services around the globe. You don't have to be a visionary to see ahead to the very substantial savings once it's proven and in place. The impact of GNSS, when combined with other technologies like datalink, could amount to enormous savings--some estimate as much as $5 billion a year.

On a less grand scale, but important nonetheless, parallel runway operations is another program that has enormous potential to increase airport capacity. Using Raleigh-Durham Airport as the test facility, we've developed a proto-type system of high-speed radar, approach monitors, and air traffic control procedures. Then we successfully demonstrated that independent, simultaneous parallel approaches were feasible in low visibility conditions (IMC) on runways spaced 3,400 feet or more apart. The demonstration also confirmed that the use of parallel approach procedures can increase an airport's capacity by 40 percent in inclement weather. We plan to deploy the new system at five airports within the next 2 years. Now we're conducting research to see if the technology will support triple and quadruple parallel runways. If it can, our simulation models predict that 14 airports can benefit from it...and that the savings to the airlines that use these airports could be as much as 2 billion dollars a year.

These are only a small fraction of our modernization programs...ones which I believe will help us safely expand the capacity of our existing airspace and airports and reduce the cost of flying for all users.

There are encouraging signs that aviation's worst problems may be behind us. We have a President who's willing to act to revitalize American industry and sharpen its competitive edge. And we have a Secretary of Transportation who appreciates and understands aviation's role in achieving these goals. The economy is slowly recovering and more people are making travel plans. But we can't expect that better economic times will automatically bring solutions to all our problems. Nor can we allow lean times to discourage us from making long-term plans and taking decisive action. For while advances in the aviation sector certainly depend on global and domestic prosperity, it's just as true that aviation progress itself stimulates economic growth.

Whatever we can achieve in making air travel safer, more efficient, more competitive will, I am certain, help move our nation's economy into a new era of technology driven growth.

Thank you.

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TALKING POINTS FOR JOSEPH M. DEL BALZO
ACTING ADMINISTRATOR
FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS STRATEGIC
MANAGEMENT CONFERENCE
MAY 12, 1993

I. INTRODUCTION/ACKNOWLEDGEMENTS

A. Thank Tom Accardi for the opportunity to address this conference.

B. Thank Phil Boyer of AOPA. There is a new spirit of cooperation and partnership; (1) AOPA is helping promote GPS technology--participated in flight-testing approaches using GPS receivers in trials at FAATC; (2) Flight Standards and AOPA are working together to improve general aviation safety through pilot training, education, more rational and flexible policy on compliance and enforcement.

II. LEADERSHIP

A. Don't believe it when you hear that the federal government is "on hold" waiting for the remaining Clinton appointment.

B. The FAA has only a handful of key positions that are political appointees--seven in all. Just two, the Administrator and the Deputy, require confirmation.

C. We expect any day now to hear an announcement of who the next Administrator will be. Much of the delay, we're told, stems from the President's strong commitment to excellence and diversity--goals which the FAA shares.

D. The FAA has a strong aviation advocate in Secretary Pena and both the President and the Vice President have shown an appreciation and understanding of civil aviation. The agency is by no means on autopilot.

III. REINVENTING GOVERNMENT

A. Theme is quality for less. By now most of you know of the commitment that the President has made to streamline the government and reduce Federal spending. For us in the FAA this means we're going to have to cut back on the size of our workforce a little each year...until we reach a 5 percent reduction in 1995. And it means that money is going to be very tight...probably tighter than we've ever experienced before.

B. All of us have been through these budget cutting cycles. This time, I'm convinced, is different. It's different because of our national resolve to finally do something about the deficit and because of our common concern about the state of the national economy. But there is another importance difference. As Vice President Gore has stated, what is also needed is a change in the very culture of the federal government.

C. There is a revolution underway in government as people demand more from public services while being prepared to pay less in taxes.

D. Consumers expect quality, choice, responsiveness, and competitiveness from the private sector. Now they want the same in the public sector.

E. Making this change requires public-sector managers to behave more like entrepreneurs-- through higher productivity and by becoming more mission driven.

F. At the kick-off meeting of the National Performance Review yesterday in DOT, Vice President Gore told employees

that the government must work harder to serve its customers, empower its employees, and find incentives that foster excellence in people and programs.

F. He asks us to consider these fundamental questions:

-- How can agency missions be clarified?

-- Would thinning out bureaucratic layers improve front-line supervisory authority?

-- How can we serve our customers better?

-- Can the number of rules and regulations be reduced? and

-- What things should the government stop doing because they are no longer needed?

G. The timing of this meeting could not be more appropriate. Your agenda, addresses many of the questions the Vice President is asking. Flight Standards is setting the pace...thinking creatively about where we where we can streamline, consolidate, and simplify, without undermining the performance of our essential mission.

IV. IN CONCLUSION--

A. I would like to congratulate all the award recipients who will be honored at tonight's banquet. I would also like to say to everyone here how honored I am to have had the opportunity...if only for a few months...to lead the world's finest aviation organization. Being the Acting Administrator has deepened my perspective that are few organizations in government who carry such a heavy responsibility as our employees. When I go back to my regular job as Executive Director, I hope that the experience will help me serve you better.

B. I wish you a successful and productive conference.

Thank you.

REMARKS BY JOSEPH M. DEL BALZO
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BOARD ON MATHEMATICAL SCIENCES
SCIENCE AND TECHNOLOGY SYMPOSIUM
WASHINGTON, DC
MAY 13, 1993

Good Afternoon.

This symposium couldn't have been better timed. For it's now very clear that we're on the cusp of a new intellectual era, when powerful mathematics will play a greatly expanded role in the design and management of modern transportation systems.

It's still a little premature to announce the full-fledged appearance of that new discipline known as "mathematical engineering" which some have been advocating in recent years. It's premature because even in technology-driven organizations such as the FAA, many of us still can't quite figure out what to do with mathematics, other than to use some of the familiar applications of statistics.

I'm reminded of an incident which Ian Stewart relates in one of his popular books on mathematical symmetry. He tells about some calculations made by Robert Jones, an aeronautical engineer at NASA's Ames Research Center. The calculations demonstrated than an aircraft with one wing swept back and another swept forward actually has advantages over the conventional bilaterally symmetric design. Although such an aircraft was built and flown successfully, Stewart speculated that no aircraft manufacturer would dare to make a jumbo-jet with a skewed wing. People would refuse to fly in a plane which defied common-sense expectations of airworthiness.

In a similar fashion, I believe, many government officials and corporate executives are reluctant to base important management decisions on mathematical analyses which they do not comprehend. So the potential of mathematics has never been fully exploited. Until now.

What has changed is the advent of a new stage of technological evolution...one defined by the emergence of gigantic systems of unparalleled...almost unimaginable...scope and complexity. It's been some 40 years since the term "system engineering" was coined to recognize that the design and operation of such complex systems differ qualitatively--as well as quantitatively--from our dealings with simpler and more familiar systems.

Some of you, I'm sure, know that the FAA is in the eleventh year of a multi-billion dollar modernization program which is based on just such an immense system configuration. We're in the process of replacing radar and other electronic gear which

date from the 1960s and 70s. And we're installing the most advanced real-time computer system ever developed. It's called the Advanced Automation System and it uses one and a half million lines of code.

This new system, combined with advanced telecommunications and satellite technology, offers us virtually unlimited opportunities for improvements in safety, capacity, and operating efficiency. Once in place, computers will perform many of the routine functions now performed by air traffic controllers, leaving them free to concentrate on matters which call for human judgment and decision-making. But with the creation of this vast inter-connected system of air traffic control technologies, we are faced with the urgent need to create new management tools of analysis and optimization with which to master the complexities of the system. There is no alternative but to rely on mathematics to invent those tools. Modern management has no choice but to accept the inevitable dominance of mathematical thinking.

If we look today for examples of sophisticated mathematical work inside the FAA, most of it takes place...not surprisingly...in operations research. This afternoon I'd like to briefly describe a few of these projects. Some have been around for a while and have a history. In fact, one has already produced a product available for sale. You can actually buy it in a box. Others are just on the verge of being implemented. Some are in test trials. And some of the projects I'll discuss are still largely in the conceptualization and design phase. It will be a while before they find routine use within the Agency.

But regardless of their stage of development, all our projects come tagged with identifying acronyms. Like most government agencies, the FAA is infected with an advanced case of acronym-phoma. It's virtually impossible to talk about air traffic control technology without using them. A recent document of ours lists more than 150 different ones. I read the other day that the Secretary of Energy, Hazel O'Leary, requires anyone using an acronym in her presence to drop 25 cents in a jar for the Department's child-care center. If we had that rule at the FAA, our child-care center would be more richly endowed than Harvard. So I'll have to ask you to bear with me. I'll use them as sparingly as I can.

SIMMOD--our acronym for simulation model--is a software package which the FAA developed to assist in the design of airports and the airspace surrounding airports. It enables planners to play "what if" kinds of games, systematically tracing through all the possible ramifications of a proposed change. What would happen if we closed down a taxiway? What would happen if we lengthened a runway? What would happen if we changed approach procedures?

SIMMOD has become a very popular planning tool. It's available through a licensed vendor, and it's being used by local airport authorities around the country and

by at least two of our major airlines. There's even a SIMMOD users' group in Europe. But the potential value of SIMMOD extends beyond the applications for which it was originally intended. This was dramatically demonstrated by the events following the USAir crash at LaGuardia in March of 1992. The primary cause of the accident, you recall, was ice on the wings.

In the aftermath of this crash, the FAA moved quickly to issue regulations requiring new de-icing procedures before the next winter season. One critical factor in the rule involved the length of time a plane can wait between de-icing and take-off. Many commercial carriers found that they needed to install additional de-icing stations for the servicing of planes operating in hazardous weather conditions. In choosing locations for these stations, airline personnel, working with the airport managers, had to pick spots which allowed planes to take off soon after the de-icing procedures, before ice could again form on the wings. At the same time, they wanted the stations placed where they would not unduly interfere with other airport operations.

Many of our airports are already congested, especially during peak travel times. And the new de-icing rules threatened to be an additional cause for delays. A lot of mental jockeying had to be done to find the best location. And the problem was different at each airport. These were complicated decisions and they had to be made under the pressure of a rapidly approaching winter deadline. To help airlines with the task of site selection, we quickly prepared a special version of SIMMOD. It was distributed without charge and was put to immediate and widespread use.
The swift and decisive response of the FAA to the danger of aircraft icing is one of the proudest moments in the history of our Agency. And SIMMOD was a very significant factor in this success.

Unfortunately, much of the work of our agency takes longer to accomplish. Not because of bureaucratic lethargy...but because almost any large scale undertaking involves the interests of many parties...and requires extensive coordination with other government bodies. Airport planning is a is a prime example.

As everyone who lives near one knows, airports are noisy places, and expansion or modification can make them even noisier. So any proposal for new construction requires an environmental impact study which determines, among other outcomes, the anticipated changes in noise levels. The FAA, through its Office of Environment and Energy, took the lead in developing a standardized method for assessing the impact of noise on the area immediately surrounding an airport. It's a modeling technique which creates a contour map showing gradations of noise intensity within the locality. It then estimates how many people live within each of the zones marked off by the contours.

We're currently developing an advanced version which can model the effects of varying terrain and vegetation. If a house is behind a hill, for example, the model will allow us to calculate the extent to which its residents are sheltered from the sound of roaring jets. The Noise Integration Model is widely used in preparing Environmental

Impact Statements and other documentation which are part of the formal process of airport planning. Like SIMMOD, the Noise Integration Model is available to the public.

Noise isn't the only environmental concern which our agency is addressing. Working closely with the Air Force, we've constructed a model to assess air quality at airports and to map the concentrations of emissions as these vary from one location to another in and around the airport complex--runways, gates, parking lots, and fuel storage areas. The model has been used extensively at airports throughout the United States and in 15 other countries.

What I have been describing so far are some analytical approaches to help managers solve problems within a fairly long fuse...where there is sufficient time to tinker with alternatives. These are essentially tools for long-range planning. But we are also making exciting progress in the development of optimization models which will assume increasing importance in our actual moment-to-moment management of traffic in the airspace.

This summer we will be using, for the first time, an innovation we're calling HARS...for High Altitude Route System. It's an adaptation of a tracking system now employed for trans-oceanic flights, but modified for the continental U.S. airspace. HARS uses dynamic programming to select the most fuel-efficient high-altitude route between pairs of cities, taking into account winds and temperatures at various altitudes. Its initial tryout will occur during this summer's thunderstorm season, when HARS will help in the rerouting of traffic around severe weather disturbances. A pre-prototype version has already been turned over to our flow control staff so that they can practice with it before summer storms begin to become disruptive to domestic air travel. Depending on our experience during the next few months, HARS will undergo further refinement and modification. Eventually, we expect that it will prove to be extremely valuable in optimizing routes all over the country.

Already, HARS has demonstrated its versatility. Many communities which are adjacent to our nation's airports have organized to protest the noise of jet take-offs and landings. If you've ever lived under a flight path...or even spent an afternoon at the U.S. Open Tennis tournament at Flushing Meadow...you know how uncomfortable the noise of jet engines can be. We estimate that aircraft noise affects close to 3 million people throughout the United States. That's half as many as it was a short time ago, but it's still a matter of grave concern to us.

One ingenious attempt at a solution involves HARS. We've modified the model, stripping off the fuel optimization component and replacing it with a module called autorouting which was developed by the Defense Department for strictly combat purposes. Autorouting was originally designed for submarine and strike warfare. It looks for the best way to sneak a submarine past a fleet of hostile destroyers or to get a

jet fighter to a target through anti-aircraft fire. In our appropriation of the technique, we simply substituted people for flak. This version of HARS maps out the route over populated areas which enables a plane to dodge the largest concentrations of inhabitants.

Air traffic control has always had to solve optimization problems ...even before the term existed... long before the advent of the computer and operations research. Lacking sophisticated tools, we relied largely on intuition bred of rigorous training and long experience. Our controllers developed an instinct, a sixth sense, about what to do in a given situation. Nowhere is this more evident than in flow-control-- the real-time management of the entire continental airspace.

Flow-control is responsible for the hour-by-hour coordination of air traffic everywhere in the country. If an instrument landing system isn't working at Newark, if tornados and thunderstorms sweep through the South, or if San Francisco is shrouded in fog, delays can back up through the entire system and flow control must immediately respond. Our people must know the best way to move airplanes through or around these conditions. Knowing what to do to avoid dangerous tie-ups and costly delay is largely "seat of the pants" knowledge. There is no highly systematized manual which lays out all the correct procedures to be followed in every situation. And there would be no time to consult it if one existed. We depend on the judgment...training...and experience of seasoned professionals to keep the system working safely and smoothly.

These are circumstances where we might reasonably expect the field of artificial intelligence to have some relevance for us. And we are, in fact, actively exploring the feasibility of introducing expert-system technology into flow-control. We've made significant progress in developing a prototype of a decision support tool we're calling SMARTFLO. We're attempting to codify, as a set of explicit rules, all the informal procedural know-how which our flow-control specialists bring to their job. We're trying to design a computer-based system which essentially mimics the decision-making processes of these experienced professionals. If, for example, a flow-control specialist decides to hold a plane at the gate because of bad weather at the destination or because of some difficulty along the route, the expert system should also issue a ground-hold advisory.

Initially, SMARTFLO will only be an ancillary tool. Our design approach is to "build a little, test a little" -- gradually improving and refining the system until the humans who have the responsibility begin to feel that they can trust SMARTFLO to make the right decisions. Right now, air traffic controllers are apt to be as skeptical of expert systems as air travelers would be about skewed wing aircraft.

Later, SMARTFLO will be integrated as part of a coordinated system of interactive computer models and decision-support tools which will totally transform the way the FAA performs its air traffic control function. Equipped with this new decision-support technology, our managers will be able to reconfigure the airspace

dynamically--simply and quickly--to adjust to workload, to reroute aircraft around bad weather, and to provide pilots with more flexibility. Aircraft will move through the airspace with a greater margin of safety, fewer delays, and with a wider choice of fuel-efficient routes.

I have had time today to describe only some of the projects which are underway. There are actually eight different computer models and decision-support tools now being developed for just one operational application -- the planning and management of traffic flow. So this is a very fast moving field for us. Many of our projects are paced to produce a payoff in a year or less. We need quick results because the growing complexity of modern air traffic control technology threatens to overwhelm our capacity to make full and effective use of it.

If you'd like to know more about the FAA's aviation modeling programs, we're conducting a seminar that begins June 13th at the Sheraton Washington.

The system we are now building at the FAA may well be one of the most complex ever devised in human history, and we recognize the limitations of our existing intellectual tools to control our own creation. We look to mathematics and to mathematicians to give us a new language with the power to capture the truly awesome complexity of our system.

I'm aware that mathematicians sometimes criticize their own field for its aloofness...for its almost monastic isolation from real world problems. Your presence here today is evidence of your own professional commitment to applied, interdisciplinary effort. We invite your collaboration.

The FAA's Operations Research Service has established a program for visiting researchers which provides opportunities to work side by side with its own staff here in Washington. Our ongoing projects cover a very wide range of aviation-related topics and call for expertise in many quantitative disciplines.

If you are interested in spending a few months or a year with us, and are presently a government employee or hold a salaried position at a university or non-profit organization -- we invite you to contact us. I believe that the FAA can offer you an exciting and demanding real-world proving ground for vital new ideas.

Thank you very much.

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Joseph Del Balzo
Acting Administrator
Federal Aviation Administration
TRACON Groundbreaking
Elgin, IL -
May 14, 1993

Introduction

I want to thank you all for inviting me to participate in this ceremony today.

It's an opportunity to make a bit of Air Traffic Control and Airway Facilities history.

And it wouldn't be happening except for the people in this audience. You've done an outstanding job of getting us to this point.

I know some people might look at this empty landscape and say, "At last, they're getting started."

Actually, the planning process leading up to today has been underway for a number of years.

Employee Involvement

According to one progress report I saw, 12 to 18 ad hoc committees have been involved in this effort. They have been looking at such things as the design of the building, the layout of the operational areas, the equipment requirements and the human resources management strategies that will tie it all together.

The objective has been to maximize employee participation. But it's not one of those "touchy-feely" exercise designed to make everyone feel like an important cog in the big machine. It's a matter of necessity.

We recognize that the controllers, technicians and other TRACON employees have the knowledge and expertise we need to transform this real estate package into a first class operational facility. Without their help -- that is, without your help -- we would be flying blind, so to speak, without a friendly voice from the TRACON to guide us.

Need for Continued Commitment

So again, thanks for a job well done. But don't relax, not even for a minute.

Guys like me come in, say a few words, shake a few hands, pat a few backs, turn a few spadesfull of dirt and then we're out of here. The real heavy lifting remains.

Bringing a facility of this size and complexity on line will require everyone's continued best efforts. We're looking at three and one half years of hard labor before this facility is ready to go operational in the fall of 1996.

To put that perspective, look at it this way: We still think of President Clinton as our "new" President. But in the fall of 1996, he will be wrapping up his re-election campaign, assuming he decides to run again.

And, when you consider how busy he'll be at that point, I'd say you're chances of getting him for the commissioning ceremony are pretty slim.

Well, that could depend on which way Illinois is leaning in the polls.

Or try this one on for size: In the fall of 1996, the Cubs could be playing in the World Series... maybe against the White Soxs.

But you might want to hold off for a bit on ordering tickets.

Easing the Trauma of Transition

We especially want this transition to go smoothly for the FAA people involved. Moving always involves a certain amount of trauma. And when you're moving a couple of hundred people, I imagine the trauma is multiplied many times.

I remember a few years ago, we wanted to close FAA's New York office and merge it with the one in Boston. You can guess how that went over with the New Yorkers.

One of their major complaints -- and this is the truth -- was that they couldn't even get decent pizza where we were sending them.

Anyway, the pizza lovers of the world united and -- with a little help from friends in high places -- the move never took place.

That shouldn't be a problem with this relocation. I'm assured that you can get good, Chicago-style pizza in Elgin.

Keeping That Chicago Attitude

But I do wonder what happens when you take the TRACON out of Chicago. Do you also take Chicago out of the TRACON?

I rather doubt it. I suspect Chicago isn't just a place; it's an attitude.

For controllers and technicians, Chicago always has meant: "Hey, we're the best... Send us all the traffic you want... We can handle it."

I like that attitude. However, sometimes prudence dictates that we implement flow control procedures.

Chicago's Aviation Heritage

In fact, from an historical standpoint, it's worth noting that the concept of flow control -- that is, matching traffic demand to system capacity -- was developed originally to deal with the system-wide impact of the Chicago area's famous snow storms.

It proved a life saver during the controllers strike and since that time has become an indispensable air traffic management tool.

And Chicago has been a pacesetter for the ATC system in many other areas, as well. It was among the first to get airport surveillance radar and, later, the automated radar terminal system, ARTS III. Also, it virtually wrote the book on parallel runway operations.

And who in this audience is old enough to remember when a Chicago airport -- first Midway and then O'Hare -- wasn't the busiest airport in the world. Just as I thought, nobody wants to admit to being that old.

ATC Modernization

But what about the future? Is the Chicago area going to remain Number One in air transportation with all the economic, political and social benefits that position entails?

I think this ceremony today partly answers that question. The air traffic management system is changing rapidly and the Chicago area facilities must remain in the forefront of technological change.

For the past decade, FAA has been involved in a multi-billion dollar system upgrade and modernization effort. We're replacing virtually the entire physical plant and adding new automated capabilities to expand capacity and enhance safety, reliability and efficiency.

In fact, most of the old tube-type equipments -- radios, radars, navigation aids, landing systems, etc. -- already are history. Look at the National Airspace System Plan and its, successor, the Capital Investment Plan, and you'll find that 96 percent of the projects already are under contract and 43 percent are completed.

Moreover, the contractors are making hundreds of new equipment deliveries to the field every month -- ASR-9 advanced airport surveillance radars, ASDE-3 airport surface control equipment, and terminal Doppler weather radars, to name just a few.

AAS Problems

However, we have taken some hits lately -- and deservedly so -- for delays in the Advanced Automation System program. AAS, for the uninitated, is the largest real time computer system ever developed and will permit the evolution of air traffic control to much higher levels of automation.

The problem primarily is the software for the computerized controller work stations, what we call the Initial Sector Suite System, or ISSS.

No excuses, but anyone who owns a PC can imagine the difficulties inherent in writing more than one and a half million lines of computer code. That's what this project required.

Even so, both we and the prime contractor could have done a better job.

Right now, the important thing is that the program is back on track and we've learned some painful lessons in the process.

The revised scheduled calls for the first operational system at the Seattle en route center in October 1996, about the same you'll be ready to commission this facility.

We've also taken steps to minimize the impact of the ISSS slippage on the other components of the AAS: the Terminal Advanced Automation System, TAAS; the Tower Control Computer Complex, TCCC; the Advanced Computer Complex, ACCC; and Automated En-Route Traffic Control, AERA.

It may be possible to accelerate some portions, such as AERA, which promises to yield the biggest productivity gains.

Conclusion - ATC Future

Don't worry, I'm not doing into details. But I do want to make the point that the AAS is not the end of the line in air traffic management.

More accurately, it's the take off point in the transition from an essentially manual control system to one that is primarily automated.

When I think of the future of air traffic control, I'm reminded of Jimmy Durante's trademark saying:, "You ain't seen nothing yet."

For example, we have barely scratched the surface on satellite use but there is no doubt that it's the wave of the future for aeronautical communications, navigation, and surveillance. It's an exciting time to be involved in this business.

This new TRACON will help to ensure that the Chicago area remains in the forefront of aviation progress. However, the real winners are going to be the traveling public -- the millions of people who fly into and out of the Chicago area every year.

The men and women who staff this facility will keep flying into O'Hare, Midway and the area's two dozen or more satellite airports as safe and efficient as it is humanly possible to make it.

Thank you!

STATEMENT OF JOSEPH M. DEL BALZO, ACTING ADMINISTRATOR OF THE FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION, SUBCOMMITTEE ON AVIATION, CONCERNING THE AIRPORT IMPROVEMENT PROGRAM. MAY 19, 1993.

Mr. Chairman and Members of the Subcommittee:

I welcome the opportunity to appear before the Subcommittee today to discuss the FAA's administration of the Airport Improvement Program (AIP) and Passenger Facility Charges (PFCs), as the Subcommittee begins its efforts on an FAA reauthorization bill.

As the Members of the Subcommittee know well, one of the most pressing needs in our air transportation system is the need for additional capacity to handle projected air traffic. Put simply, the airport capacity of today will not meet the air transportation demands of tomorrow. We project, for example, that airline passenger enplanements will grow by about 60% by the year 2004. In that same time, total aircraft operations at airports with FAA air traffic control service will experience an increase of 25%.

We are already at a point today where 23 of our busiest 100 airports experience more than 20,000 hours of airline flight delay each year; 40 airports may fall into that category by the year 2000. It is readily apparent that, without substantial improvements in system capacity, passengers and air carriers will face added costs and increased delays.

The AIP program has been the traditional means of Federal assistance to airports to provide additional capacity, along with preserving the integrity of the existing airport system and addressing key airport safety and security needs. It is a major component of the financing necessary for airport planning and development, and it has provided the financial stability necessary for airports to obtain additional financing in the bond market for airport development. Historically, AIP assistance has provided about one-third of the funding for the capital investment in airport infrastructure. This continued Federal presence remains important to support the annual public spending expected in the near-term for airport development.

I would like to take a moment to briefly bring you up-to-date on the status of our AIP efforts this year. During FY 93, FAA will issue approximately 1500 grants. Capacity projects at primary airports continue to receive priority consideration under the discretionary portion of the AIP program, where we can target funding. We have, for example, continued to support the new Denver Airport, which, when complete, will have the capacity to handle over 22 million passenger enplanements annually. We have also funded work to provide additional runways at a number of key airports throughout the country.

In addition to increasing capacity, the highest priority for AIP funding will continue to be major safety and security

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initiatives. This year, approximately $250 million in AIP grants will fund safety and security projects. These grants, for example, will fund the installation of airport signs in furtherance of our efforts to reduce runway incursions. AIP will continue to fund environmental improvements. Over $225 Million in AIP grants will fund noise mitigation projects. This funding assists airports in projects such as land acquisition, reducing the numbers of people exposed to airport noise, as well as in the soundproofing of homes and schools.

Another major element of our capacity expansion plans is the development of reliever airports in metropolitan areas to increase capacity for general aviation and to off-load that demand from the primary commercial airports. This Fiscal Year, $180 million will be granted to these airports. The Military Airport Program (MAP), established as a key component of the AIP program also provides an opportunity to add new capacity. FY 93 will bring an additional 4 military airports into the program, as well as an increase in set-aside funding. There is substantial airport infrastructure available for conversion throughout the country, which can provide valuable added capacity to complement capacity efforts at current civil airports. Two locations that are included in the MAP have also received significant discretionary grants beyond that in the MAP set-aside for redevelopment to convert to civil use. Manchester Airport in New Hampshire is being developed to relieve

congestion at Boston's Logan International, and to provide needed system capacity in the New England area. Also, Scott AFB in Illinois is being developed for civil use to relieve current and future congestion at Lambert/St. Louis International Airport.

We are also continuing work on the 1993 National Plan of Integrated Airport Systems (NPIAS). We agree with the views expressed by the Subcommittee that the NPIAS should be recast to be a more effective tool in the AIP process. This year, I believe our efforts will be closer to the mark. We are currently developing a NPIAS report that we believe will be a more useful policy and planning tool. The report will include key indicators of airport system condition and performance, such as runway pavement condition and the extent of air traffic delays. It will provide a comprehensive overview of airport development requirements by type of airport and purpose of development. In addition, it will set goals for the AIP, such as preventing any increase in delay and maintaining efforts to convert military facilities into viable commercial and joint-use airports.

I believe the AIP program has served our air transportation system well, and that it will do so in the future. To continue this important program for FY 94, the President's budget seeks a funding level of $1.879 Billion. This amount will enable us to continue to meet critical airport development needs.

To supplement the AIP grant assistance we make available, many commercial service airports now have available to them an added

source of funding--PFCs--made possible by the commitment and strong efforts of this Subcommittee and its Chairman. Nationwide, we expect PFC collections could approach $700 - $800 Million in FY 94, based on the number of airports that have indicated an intention to apply for PFC authority.

Together, the AIP and PFC programs provide an investment in the infrastructure so important to the economic well-being and growth of our air transportation industry. In addition, PFCs provide a funding stream that gives airports the added flexibility they need for long-term planning and development projects.

As intended, PFCs are beginning to make an important contribution to our Nation's airports. PFCs have assisted in major safety and capacity enhancing projects around the country. Over the next 34 years, PFC's will provide approximately $2.3 Billion for construction of the new Denver Airport. The Detroit Metropolitan Airport is using PFCs to rehabilitate its existing terminal and to build a new terminal to keep up with domestic demand and increased international traffic. For example, Las Vegas McCarran International Airport is using PFC revenues to fund a runway extension and runway upgrade, safety area improvements, terminal and apron expansion, and land for airport development and noise mitigation. At San Jose International Airport, a runway extension funded with PFCs is underway that will allow air carriers to operate without weight restrictions. The ability of PFCs to support the issuance of bonds increases their effectiveness.

PFCs have also opened up additional development capabilities for smaller airports. The Westchester County Airport in New York and the Worcester Municipal Airport in Massachusetts now have funds to build taxiways, eliminating the need to taxi on runways. PFCs are helping small airports build suitable airport terminals, which serve as "gateways" to these communities. And, at many small airports, PFCs are being used as the local match for AIP grants to finance runway and taxiway reconstructions, aircraft rescue and firefighting vehicles, and taxiway guidance signs.

In the future, numerous safety and capacity enhancing projects will be funded with PFCs. Approximately 100 airports have already received approval for PFC collections. Although a significant number of applications have been approved, many have been revised or withdrawn following FAA review. We are working closely with the airports on this critical program to see that the PFC collection programs that are approved meet the Congressional intent. To date, we have approved applications for the collection of more than $6.4 Billion out of the $14.6 Billion requested. A total of $6.3 Billion in applications has been withdrawn after consultation with the FAA.

We appreciate the support we have received from this Subcommittee as we have administered both the AIP and PFC programs, and we welcome the opportunity to work closely with you on the FAA's reauthorization that you will be shaping shortly. To assist you in these efforts, there are several concepts we hope can be

considered by the Subcommittee as additions to FAA's basic statutory authority. My staff will be pleased to work with your staff to flesh out the details of these concepts that I will briefly outline.

As one key initiative, we would ask the Subcommittee to consider an expansion of the FAA's statutory authority to make clear that the FAA can engage in cooperative agreements with the aviation community to pursue jointly important development and standard-setting initiatives. Through this type of arrangement, we believe there will be cases in which the time it takes to complete the development of projects of critical interest and importance to air transportation can be reduced significantly.

We would also seek additional authority to complement the security training legislation this Subcommittee initiated in our behalf in the last reauthorization act. In 1992, you granted us the authority to provide, at our discretion, civil aviation security training without reimbursement to foreign aviation security officials. We would ask the Subcommittee to consider providing us comparable authority to provide at less than cost or without reimbursement aviation safety training or operational services to foreign aviation officials when it is in our interest to do so. This authority will not only assist in continuing U.S. preeminence in world aviation, but will assist us in working with foreign aviation authorities to upgrade safety standards worldwide.

Although we seek no fundamental change in the AIP structure at this time, we may identify some minor programmatic changes that can make the program more efficient in delivering grants to airports. To the extent that we identify such minor changes, my staff will work closely with the Subcommittee staff. And, as we have indicated to you, Mr. Chairman, if we determine later that major changes in program structure would improve the overall program, we would ask that we be able to revisit the subject of program structure with the Subcommittee.

In closing, Mr. Chairman, we look forward to working closely with you and the Members of the Subcommittee on this important effort, and will be pleased to provide whatever support we can to you.

That completes my prepared statement. I would be pleased to respond to questions you may have at this time.

STATEMENT OF JOSEPH M. DEL BALZO, ACTING ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION, BEFORE THE NATIONAL COMMISSION TO ENSURE A COMPETITIVE AIRLINE INDUSTRY, CONCERNING SYSTEM CAPACITY, WASHINGTON, DC
MAY 27, 1993

Mr. Chairman and Members of the Commission:

The United States air transportation system is the most complex...and the most efficient in the world. It's also the busiest. Today, and on any typical day, the Federal Aviation Administration will handle 170 thousand take-offs and landings, including more than 33 thousand air carrier operations. In one year, FAA specialists perform 10 thousand security inspections, host 5 thousand safety seminars, and conduct 300 thousand safety inspections. We oversee some 17,600 airports, license approximately 700 thousand pilots, more than 500 thousand non-pilot aviators, and over 70 thousand flight instructors. To guarantee the high level of performance and reliability that the public demands of its transportation system, airway systems specialists will maintain and monitor a vast network of some 28 thousand air traffic control, navigation, surveillance, and communication systems.

No workforce anywhere in the federal government carries a greater day-to-day responsibility than do the men and women of the FAA. They have set demanding standards of professionalism which are unsurpassed anywhere in the world of aviation. Of equal quality are the complex electronic systems which are critical to modern air traffic control.

But we cannot be complacent about what we have achieved, nor should we take for granted what the system delivers. The economic crisis which confronts the airlines today has forced all of us to take a hard look at what we can do to restore the health of our industry. For those of us at the FAA, the breadth of our responsibilities for licensing, inspection, certification, and management of the national airspace brings us into daily contact with every sector of the business.

As we have witnessed the cumulative effects of economic distress, we have thoroughly reviewed all the courses of action open to us which would help the industry regain its profitability and competitive vitality. We've examined how we could best reduce regulatory burdens consistent with the overriding concern for safety and security. We have taken the lead in promoting international trade through the harmonization of standards for aircraft certification and operation. And we are seeking ways to reduce costly delays through improved system capacity. It is this area of concern...how we can expand system capacity...that is the focus of our discussion today.

A safe and efficient national airspace system, capable of meeting the demand for air service, is fundamental to the economic stability of the airlines and the aviation industry. Our latest aviation forecasts predict that, over the next decade, the number of passengers using U.S. commercial air services will increase from an average of 1.3 million a day to over 2 million.

If these forecasts are accurate, we can anticipate that a 25 percent increase in air carrier operations will be needed to meet this demand. Today, the top 100 of the nation's busiest airports account for 95 percent of all air carrier passengers and 92 percent of all air carrier operations. Such concentration leads inevitably to delays. Indeed, even with the present economic slowdown, 23 of the country's largest airports experience more than 20 thousand hours of delay each year. Over the next 5 years, we expect such serious delays will affect 13 more of our airports. The Air Transport Association estimates that, nationwide, delays costs the airlines 3 billion dollars in additional operating costs each year. Add in the cost of passenger time, and the bill climbs to 8 billion dollars.

The delays are the result of a variety of factors. Roughly 65 percent of all delays are caused by weather. Congestion accounts for 27 percent. Closed runways and equipment problems generate another 5 percent. We know that we will never be able to totally prevent all delays. But we're going to try.

The FAA is presently engaged in a three-way effort to expand capacity and increase system efficiency. The first of these is through the continued modernization of the national airspace system. The second is by funding airport infrastructure improvements. And the third is by alleviating environmental and economic constraints at the local level.

During the time that I have available, I'd like to provide a brief overview of these three initiatives. Then, the senior managers who've come with me today will offer more detailed descriptions. Let me tell you first about the FAA's plans to modernize our air traffic control system.

We're in the eleventh year of a multi-billion dollar program to improve safety, increase capacity, and ease pilot and controller workloads. The agency is literally reinventing itself with new technology, including an advanced automation system that's one of the most powerful and complex real-time computer systems ever built. Funding for this program is provided through the Facilities and Equipment Appropriation from the Airport and Aviation Trust Fund. Each project is described in The Aviation System Capital Investment Plan (CIP), which is the FAA's planning tool for documenting current and future requirements for modernizing and expanding the ATC infrastructure. We estimate funding requirements for CIP projects to be between $2.5 billion and $3.0 billion annually into the 21st century.

The Capital Investment Plan, along with our research and development program, introduce a wealth of new technologies that are available now or that can be deployed in the near future. Our annual research and development budget is around 250 million dollars, and it, too, draws upon the Trust Fund.

One of the major challenges facing us is to manage the transition of our workforce to the modernized air traffic control system of the future. In the final analysis, one of the principal contributors to system capacity is an adequately staffed, well-trained, highly motivated workforce. We must never become so preoccupied with the engineering aspects of modernization that we overlook the critical role of human resources. Even with the introduction of hardware designed for high reliability and low maintenance...even with our use of automated controller tools...we will continue to depend on air traffic control specialists and maintenance technicians to keep the system up and running.

While the FAA is adequately staffed to meet current operational needs, modernization requires that the FAA simultaneously operate, maintain, and support dual systems and several generations of equipment while new hardware and software is phased in. It also means that we must make a concerted effort to continue to develop our highly skilled work force to use new technologies without confusion or interruption.

Timing is important in this transition. Regardless of what you may have heard or read, our modernization program is not stalled. Many projects have been completed. Others are in various stages of implementation. I believe that, overall, we've made good progress. But I also admit that some programs have taken far longer than we had expected. The most disappointing example is the Advanced Automation System--the AAS.

The first phase of the AAS, the replacement of the computer peripherals system, was actually completed ahead of schedule. The next step is the replacement of the old computer work stations in the en route centers. The new work stations--called Initial Sector Suites--will have enhanced displays that offer higher resolution, color, and better depictions of weather conditions. Delays in this phase of the program have been doubly frustrating because it's blocking the critical path of many other capacity enhancements.

These same workstations will go into several of our larger Terminal Radar Approach Control facilities where they will provide the computer architecture to support a further improvement called Terminal Air Traffic Control Automation...or TATCA. When TATCA is in place, controllers will have top-of-descent, approach spacing, and sequencing aids to handle higher levels of traffic in the terminal area with greater efficiency and safety. The payoff from TATCA will be additional capacity at those airports which today are choked with congestion.

The new workstations are also required before we can implement a program we call AERA--Automated En-Route Air Traffic Control. AERA will enable our managers to dynamically reconfigure airspace...simply and quickly...to adjust to workload, to reroute aircraft around bad weather, and to provide pilots with the route of their choice. Aircraft will be able to move through the airspace with a greater margin of safety, fewer delays, and with a wider choice of fuel efficient routes.

The Advanced Automation System is a "must have" program if we are to cope effectively with the future demands for air traffic control services.
One month ago, I presented a plan to Congress to restructure the AAS program to keep it on schedule and on budget. We've also changed the implementation strategy for some key elements--like AERA, so that we can begin to receive the benefits much more quickly.

There are some who blame our acquisition problems on inconsistent leadership and inefficient organization. They argue in favor of a fixed term for the FAA administrator, for an independent FAA, privatization of many of our functions, and other structural changes. The debate over the merits of these proposals has been going on for some time now. I don't know how these arguments will fare. The outcome may not be known for months, possibly years. At the FAA, we're looking at reforms that can be implemented now, within our present organizational framework.

One calls for the FAA to adopt the concept of open architecture for our systems and accept the idea of buying much of our technology off the shelf. We are also beginning to make greater use of a strategy we call "fast proto-typing". This is a procurement method where cost-plus development contracts are awarded prior to entering into a fixed-price production contract. It is one way to eliminate problems before we go to full-scale production.

One of the lessons we learned from our experience with the AAS is that we've got to change the way we acquire and manage large programs. The way we do business today is depriving us of ready access to leading edge technologies at a time when we need them the most.

One technology, with revolutionary possibilities for air traffic control, is based on the use of satellites. Two years ago, the International Civil Aviation Organization endorsed the concept of a worldwide air traffic management system which relies on satellites. Beginning this year, the United States has offered its NAVSTAR Global Positioning System to civil aviation around the world. Not unexpectedly, there are many technical and institutional questions to be resolved. And there is the especially vexing question of ownership.

Despite these still unresolved issues, the concept of a global navigation satellite system has quickly gained momentum. The combined impact of GNSS, data link, and automatic dependent surveillance could amount to enormous savings--some estimate as much as $5 billion a year. We would no longer need to replace aging primary radar. We would no longer need to buy, install, and maintain VORs and Category I instrument landing systems. It's hard to over-estimate the magnitude of these changes, or to exaggerate the force of the technological and economic imperatives which have powered the rise of GNSS as a concept. The use of this technology gives civil aviation an opportunity to change the way we've done business for the past four decades.

I've mentioned only a few of the modernization programs which are designed to enhance capacity. We simply must find a way to implement these technologies far more quickly than we have in the past. Few of the policy options available to us have more potential for strengthening the competitive position of the aviation industry.

Our second major initiative to enhance capacity centers on the nation's airports. President Clinton and Secretary Pena have made it clear that they are determined to see that airports get the resources they need to keep pace with the demands of a growing economy and the advances in aviation technology. The Administration's budget for the coming fiscal year seeks funding for a strong grants program. The President has requested a total of 1 billion 8 hundred 79 million dollars. That's 79 million higher than this year's program level.

Another exciting possibility for adding airport capacity results from the military downsizing which is now underway. Former military airfields closed under the provisions of the Defense Base Closure Acts feature prominently in our capacity plans and will be a major source of new capacity to the nation's civil aviation sector. Successful conveyances handled by the FAA to date include the Orlando Airport, formerly McCoy Air Force Base, and Stewart Field in New York.

But plans to build and expand airports must always contend with local concerns about the environmental and economic impact of new projects. Dealing fairly and effectively with such concerns define our third broad initiative to create capacity.

The capacity of the nation's airport and air traffic control system is increasingly dictated by the environmental and economic constraints at the local level. The FAA plays an important role in administering two laws passed in 1990 that were designed to reach a compromise on the two most notable constraint problems; aircraft noise and the need for more local funds for airport improvements.

For airports, Congress passed the Aviation Safety and Capacity Expansion Act of 1990 which granted commercial service airports the authority to impose a passenger facility charge of up to 3 dollars per passenger. The airlines agreed to support these charges...or PFC's...in exchange for the Airport Noise and Capacity Act of 1990, which placed certain controls on local noise restrictions. The Act also established an accelerated national schedule for the phaseout of noisier Stage 2 aircraft which addressed local communities demands.

Some airports are dissatisfied with the national phaseout schedule and are considering their own proposals to proceed locally at a faster pace and to impose other stringent noise restrictions. We at the FAA have successfully resisted local regulatory actions which would have the effect of undermining the national phaseout because these actions would impose additional costs on carriers in the forms of equipment costs, scheduling problems, and delays.

We are also acting to relieve potential constraints on capacity imposed by aircraft noise through research and land use planning programs. To date, more than 200 airports have initiated, and more than 100 have completed, reviews of their noise impacted areas and established programs to reduce existing non-compatible land uses. Our expenditures to date total 1.2 billion dollars for landside noise mitigation efforts.

But there are situations which cannot be remedied by any of the measures I've described so far. When existing capacity is unable to handle the volume of traffic without serious delay, other solutions must be found. The primary tool has been the High Density Rule which restricts the number of operations during peak traffic periods at four highly congested airports -- Kennedy International, LaGuardia, O'Hare and Washington National. Slots at these airports are a valuable asset which -- under our rules -- can be purchased, sold, traded or licensed.

To promote greater competition, new regulations have been issued ...or are currently under consideration... which would grant access to air carriers trying to enter a market. But even though our new rules may increase the efficiency of capacity constraint, the fact remains that it is still a constraint.

These three initiatives to enhance capacity -- NAS modernization, airport infrastructure improvements and the alleviation of environmental constraints -- these three, taken together, comprise a massive undertaking which requires sustained, consistent funding to reach completion.

As you listen to our presentations today, I ask you to bear in mind that the source of most our funds is the aviation user tax. I mention this because the Commission will hear requests for tax relief as well as appeals for more system capacity. Rolling back aviation taxes to pre-1991 levels would deplete the Airport and Aviation Trust Fund within 5 years, even under conservative spending assumptions. The Trust Fund is the principal revenue stream that finances the FAA's capital improvement programs. Without adequate user funding, our ability to modernize the nation's airport and airway system would be problematic in this era of budget deficit reduction.

I am pleased at this time to introduce Mr. William Pollard, Associate Administrator for Air Traffic, who will provide a detailed discussion of air traffic control from the standpoint of system capacity. He will be followed by Mr. John Burt, Executive Director for System Development, who will elaborate on the Capital Investment Plan and the Research, Engineering, and Development Plan. Mr. Quentin Taylor, Acting Assistant Administrator for Airports, will then discuss airport infrastructure funding and issues. He will be followed by Mr. Dale McDaniel, Acting Assistant Administrator for Policy, Plans and International Aviation, who will speak about peak period pricing, slot allocation, and alternative ATC delivery methods. Finally, I will provide a wrap-up of the major points discussed here today.

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