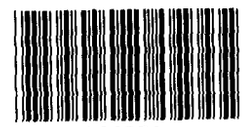
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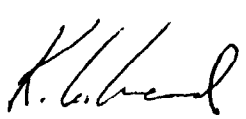
Preface

In the past, we have reported on a wide variety of complex and controversial aviation issues, including the Federal Aviation Administration's (FAA) modernization of the nation's air traffic control system, the training needs of air traffic controllers and the staffing needs of that work force, FAA's oversight of aviation safety, improvements in airport security, aircraft noise, and airline competition. Although the Congress, the Department of Transportation (DOT), and FAA have taken positive actions on these issues, some will remain problematic. At the same time, new problems will develop to challenge the effectiveness of the nation's aviation system.

To better understand and deal with the long-standing aviation issues and to examine emerging issues, we convened a conference on November 29 and 30, 1990. The conference brought together 23 leading aviation experts from the Congress, the administration, the aviation industry, and academia to provide their perspectives on the problems facing the aviation community. To help the speakers frame these issues, in advance of the conference we suggested general topics for them to discuss, including (1) FAA's organization and management, (2) airspace management and air traffic control, (3) aviation safety, (4) airport capacity and security, and (5) airline competition and consumer protection. The conference speakers not only brought new understanding to these subjects, but also raised major points for the Congress, DOT, and FAA to consider when addressing both long-standing and new problems facing the aviation system. Consequently, we are issuing this report to make the results of the conference and the speakers' presentations available to a larger audience.

The "Overview" section of this report summarizes the four themes most often stressed by the participating speakers. This section also provides information on our past and ongoing work in these areas. The "Presentations" section provides a more complete version of the speakers' remarks, though with the speakers' review and concurrence, most have been abridged.



Kenneth M. Mead
Director, Transportation Issues
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Abbreviations

AATF	Airworthiness Assurance Task Force
ALPA	Air Line Pilots Association
ATC	air traffic control
CRS	computerized reservation system
DOD	Department of Defense
DOT	Department of Transportation
EC	European Community
FAA	Federal Aviation Administration
FPL	full performance level controller
GAO	General Accounting Office
GPS	Global Positioning System
MLS	Microwave Landing System
NAS	National Airspace System
NATCA	National Air Traffic Controllers Association
NTSB	National Transportation Safety Board
PFC	passenger facility charge
PPS	precise precisioning service
R&D	research and development
TCAS	Traffic Alert and Collision Avoidance System
TNA	thermal-neutron analysis
TRACON	terminal radar approach control facility

Meeting the Aviation Challenges of the 1990s

Background

Key issues surfaced during the 1980s that continue to trouble the Federal Aviation Administration (FAA) and hamper its ability to solve a number of continuing problems. Among these problems are the persistent shortage of air traffic controllers, delays in modernizing the air traffic control (ATC) system, increasing delays among commercial flights, and the continuing threat of terrorism. More recent concerns involve the aging of the U.S. transport aircraft fleet and economic questions such as the impact of cabotage[1] and foreign ownership of U.S. airlines on the competitiveness of our domestic air travel market. All of these problems and concerns, which regularly will need to be reframed, will play an important role as the Congress sets its legislative agenda for the 1990s.

The speakers at our conference frequently mentioned four key areas that the Congress, the Department of Transportation (DOT), and FAA should focus on now and through the remainder of the decade to meet the challenges facing the aviation industry. Specifically, speakers recommended

- improving FAA's procurement and rulemaking, possibly through organizational changes within FAA, so that the activities are more timely and responsive to users' needs;
- improving ATC by adopting innovative technology and improving the efficiency of the aviation system by increasing airport capacity;
- enhancing aviation safety and security to further reduce the risk of flying; and
- retaining the benefits of deregulation by ensuring competition along routes even though competition in the airline industry, in general, has declined.

Procurement and Rulemaking Cited as Problems That Need to Be Resolved

According to conference speakers, delays in procurement and rulemaking have plagued FAA for years. These delays have caused some major policy changes and some ATC system acquisitions to be less timely than system users would like. For example, some conference speakers asserted that FAA's procurement process is untimely because of the agency's position within the federal bureaucracy. Specifically, one speaker asserted that FAA's organizational placement within DOT results in some redundant responsibilities between the two agencies, and others said that cumbersome procurement guidelines issued by the Office of Management and Budget delayed them in obtaining new technology.

[1] Cabotage is the right of an airline to carry paying traffic from one point in a foreign country to another point in the same country.

According to the speakers, the result is a lengthy gestation period between the conception of a new idea and its delivery to the field, which risks a technology's becoming obsolete. Speakers said FAA's program to modernize the ATC system exemplifies the problem. What was once a $12 billion, 10-year effort has now become a $31 billion program taking twice as long to complete.

Our analysis supports some of these statements and differs with others. We have found that substantial delays in the development of major ATC systems, such as the Mode S communications system, Advanced Automation System, Voice Switching and Control System, and Microwave Landing System (MLS), have kept users from realizing the systems' benefits. On the other hand, we believe that better compliance with the Office of Management and Budget's guidance would actually improve the development process of costly systems.[2] For example, although independent testing and evaluation of a system's performance before committing to large-scale procurement lengthens the development process, it should preclude costly design changes and retrofitting after units have been fielded and enhance a system's long-term effectiveness. Efforts have recently been initiated in FAA to incorporate this concept when acquiring major systems.

According to the conference speakers, rulemaking is another key problem area because it takes too long and is unresponsive to users' needs. A speaker from the Air Line Pilots Association (ALPA) cited a case in which a petition to change a rule has been unresolved since 1984. In this case, ALPA petitioned FAA to remove an exemption allowing airlines that travel only within Hawaii and Alaska to fly without airborne weather radar. At the conference, FAA acknowledged that it has problems keeping rules current, but the agency also noted that it and DOT are trying to improve the rulemaking process. FAA's Office of Rulemaking has chartered an advisory committee to review, discuss, and obtain public consensus on important agency rules before FAA prepares the notice of proposed rulemaking. This preparatory work should make the proposed rules more responsive to the industry's needs and reduce the time needed to act on petitions.

Speakers citing these concerns said that chronic problems, such as those with procurement and rulemaking, have led them to examine FAA's mission to determine whether it needs to be changed. One speaker favored

[2]Air Traffic Control: Continued Improvements Needed in FAA's Management of the NAS Plan (GAO/RCED-89-7, Nov. 10, 1988).

narrowing FAA's regulatory focus to concentrate almost exclusively on aviation safety. If this is done, FAA's current responsibilities in research and development (R&D) and for modernizing the ATC system would be shifted to others better suited to accomplish them. Other speakers said FAA should be independent and funded from a dedicated Aviation Trust Fund. Some speakers also believed that FAA should be headed by a tenured administrator whose term of office is long enough to provide the incentive, opportunity, and stability to tackle the enormous challenges ahead. They stated that an administrator with a fixed term of office could better overcome many of the organizational and institutional obstacles that keep FAA from being responsive to users' needs. We, too, are concerned about the frequent turnover of FAA administrators. Apart from raising questions about the effect this can have on significant initiatives begun by an Administrator, the turnover has occurred at a time when the agency faces perhaps the most difficult challenges in its history, including modernizing the ATC system, reducing shortages in the work forces, and improving aviation security.[3] On the other hand, we have testified that making FAA independent would not alone provide FAA with the wherewithal to modernize the ATC system and rebuild its work forces.[4]

Air Traffic Control Needs Innovation and Airport Capacity Needs Enhancement

During the 10-year period from 1979 to 1988, the volume of air traffic grew by 50 percent. Moreover, according to DOT, the majority of cities having air service in 1978 received more frequent service in 1989, and the number of carriers providing service to these markets also grew between 1978 and 1988. To meet the increase in demand for air travel, while ensuring safety and efficiency, FAA began a massive modernization effort in 1981 that continues today. However, much of the new technology developed in the early 1980s has not been integrated into the ATC system yet. As a result, air traffic controllers are strained by congestion in the airspace and are handling increased traffic loads with aging radars, computers, and communications equipment. With this background, conference speakers advocated applying new technology to relieve the congestion and urged FAA to explore new technological opportunities coming out of the agency's long-term R&D programs.

[3]Issues Related to FAA's Effectiveness (GAO/T-RCED-89-39, May 9, 1989).

[4]Issues Related to an Independent FAA (GAO/T-RCED-88-45, June 2, 1988).

Satellites May Be the Future Direction of the Air Traffic Control System

In predicting what users of the ATC system will need into the 21st century, several speakers concluded that a system using satellite navigation, communication, and surveillance is the most logical alternative to the existing ground-based navigation system. They pointed out that the Department of Defense's (DOD) Global Positioning System (GPS) will be used to serve the military, but within a few years it could also enhance the efficiency of the civilian ATC system.[5]

Currently, the military is deploying GPS worldwide to use as its primary radionavigation system well into the next century. Although some GPS satellites are in place now and available to civilian users, DOD plans for the system to be fully operational by 1993 when 21 satellites plus 3 spares will be in their assigned orbits. At that time, both military and civilian users will have access to the system; however, civilians will use a slightly degraded signal, which will reduce the system's accuracy so that aircraft can be located within approximately 100 meters.[6]

Because of GPS' potential accuracy for use in most phases of flight, the Federal Radionavigation Plan of 1990, jointly issued by DOT and DOD, predicted that civil use of GPS will grow rapidly and eventually exceed military use. For the aviation community, in particular, GPS would enhance navigation during transoceanic flights and flights over locations that now lack ground-based navigation facilities. It also could let more aircraft use the airspace at one time by allowing shorter distances between aircraft, and it could allow aircraft to fly more efficient routes, thus saving fuel, time, and costs. Speakers believed that we cannot move to GPS overnight because it is not fully operational.

In the meantime, however, the National Aeronautics and Space Administration and Honeywell have tested the automatic landing capability of a system called Global Positioning/Inertial Reference, which could eventually replace ground-based navigation systems. A Boeing 737 transport aircraft demonstrated the potential of this system by using it to make 27 automatic landings. Demonstrations such as this probably explain why United Airlines, the National Business Aircraft Association, Inc., and the

[5]Although the speakers discussing satellites largely focused on GPS, other satellite-based systems such as the automatic dependent surveillance system also could augment the use of airspace and the capabilities of the ATC system.

[6]When GPS is fully operational, DOD will intentionally degrade the GPS' timing signals to prevent nonmilitary users from gaining access to the precise precisioning service (PPS-code) signals the military uses for security purposes. The PPS-code will provide the military with highly accurate signals, capable of establishing a location within 16 meters.

Aircraft Owners and Pilots Association suggested that the aviation community needs to move away from ground-based navigation such as MLS and to GPS. The Aircraft Owners and Pilots Association believed that this transition could begin in 1995 with the implementation of a transoceanic GPS and that GPS satellite signals could be used for guidance and surveillance in terminal areas by 2005. We have begun reviewing FAA's efforts to move toward a satellite-based ATC system.

An Increase in Airport Capacity Is Needed

Airport capacity needs to be expanded to keep pace with the growth in air traffic. Capacity is constrained at most hubs because airports are unable to accommodate both local and connecting flights. FAA has identified 21 major airports where delays of 20,000 or more hours occurred in 1988. It predicts another 20 airports will join this list by 1998. To add to the demand on already congested airports, FAA expects the volume of airline traffic to double in the 1990s. Conference speakers affirmed that the system's capacity needs to be expanded to prevent further delays and congestion. To address this problem, they proposed a variety of solutions, including expanding existing capacity through better ATC, increasing capacity at underutilized airports, and building new facilities at congested airports.

Speakers believed that the capacity of many airports could be increased through new or better ATC techniques. These include

- allowing simultaneous operations on intersecting wet runways, operations that have been successfully executed on dry runways;
- enhancing the operational flight procedures used during periods of poor visibility when aircraft must be spaced farther apart, so runways and taxiways can be used more than they currently are; and
- directing aircraft on the ground more effectively by such means as a surface movement guidance control system that uses lights, which is used at London's Heathrow airport.

Clearly, implementing these techniques to increase capacity will take time and, as noted by one speaker, will require FAA to provide significant staffing and funding for R&D.

Speakers asserted that congestion also must be alleviated by adding capacity where possible at the major congested airports or by developing new hubs at underutilized airports. Because FAA cannot order airlines to develop more hubs, one speaker suggested that the federal government could provide incentives as simple as setting priorities in

the use of Airport Improvement Program[7] funds to favor development at an underutilized airport or at a new airport hub. A precedent for this already exists. In 1987, the House Committee on Public Works and Transportation submitted an amendment to the Airport and Airway Improvement Act that sought to help FAA (1) set priorities in its airport capacity enhancement plans and (2) identify future financial requirements. However, because of staffing and funding limitations, FAA has considered these tasks a low priority. In addition to advocating federal incentives, speakers stated that local funds from passenger facility charges (PFC)[8] could provide part of the necessary revenue to improve an airport's capacity.

Aviation System Is Safe, but Both Safety and Security Need Continued Vigilance

Our conference speakers stated that although the U.S. aviation system is extraordinarily safe, continued vigilance is needed to sustain its safety record. As one speaker succinctly pointed out, further vigilance is needed because the volume of passengers could double by the year 2000. He said this means that the number of accidents must decline by one-half if the U.S. is to maintain its current safety level. Speakers' concerns arose from the fact that safety and security are very important to the flying public. People cannot travel in peace and comfort if they believe that the aviation system is unsafe or is vulnerable to criminal or terrorist attacks. Past events—for instance, the cabin of an Aloha Airlines Boeing 737 ripping apart in 1988 and a bomb exploding in Pan Am Flight 103 over Lockerbie, Scotland, in 1988—have heightened the public's concern over the safety and security of the system.

Speakers also agreed that more should be done to enhance the public's perception of the safety and security of the system. A speaker from DOT stated that the agency is working to improve its early warning indicators of safety and security risks. If DOT succeeds in this work and can inform the public that unsafe conditions are being remedied before an accident occurs, the public's confidence in the system could increase.

[7]Financed by the Airport and Airway Trust Fund, the Airport Improvement Program grants aid for airport development.

[8]A PFC is a fee imposed by the airport authority on each paying passenger enplaned at the airport. The moneys collected will be used to finance eligible projects to improve airports.

Aviation Safety Needs to Be Monitored as Airline Travel Increases

Many speakers raised the issue of the safety of the aviation system. Our aviation safety panel believed that the system is safe, but that vigilance is needed as more passengers travel each year. Panelists highlighted some of FAA's efforts to improve safety, including the agency's recent rules for airlines to develop programs to control corrosion, the self-audit program to improve the airline industry's ability to identify and correct its own problems, long-term R&D, and participation in a joint industry-government program to ensure the integrity of aging aircraft. FAA needs to continuously monitor the effectiveness of these programs because the industry, technology, and equipment used to move people from point to point are always at risk. We recently reported on FAA's efforts to finalize its plan to address aging aircraft issues,[9] and we are currently reviewing the results of FAA's self-audit program for the airline industry.

In addition, speakers brought two other issues to our attention. First, they expressed a note of caution about increasing the capacity of the aviation system. They believed that projects and procedures to increase capacity by reducing the distance between aircraft should be considered carefully so that safety will not be compromised. Second, they expressed concern about the limited availability of qualified mechanics and mid-level technical managers needed to maintain the aircraft and ensure safety standards are met. We recently reported that a shortage of skilled mechanics at aircraft repair stations could be hindering some airlines' ability to repair their aging airliners by the 1994 deadline imposed by FAA.[10]

Actions Have Been Taken Against Security Threats

Following the recommendations of the President's Commission on Aviation Security and Terrorism and the requirements of the Aviation Security Improvement Act of 1990,[11] FAA and DOT have increased aviation security measures. For example, speakers pointed out that airports are doing a better job of training baggage screeners, controlling access to ramp and sterile areas,[12] and implementing security systems that require employees to use identification cards. Although our speakers believed that security has improved over the last few years, they also said that

[9]Aviation Safety: Limited Success Rebuilding Staff and Finalizing Aging Aircraft Plan (GAO/RCED-91-119, Apr. 15, 1991).

[10]Aircraft Maintenance: Additional FAA Oversight Needed of Aging Aircraft Repairs (GAO/RCED-91-91A&B, May 24, 1991).

[11]P.L. 101-604.

[12]Sterile areas are those past airport security checkpoints.

more could be done. Two specific needs are (1) better measures to detect plastic explosives and (2) strengthened security over cargo and mail.

DOT and FAA intend to require thermal-neutron analysis (TNA) machines, which are sophisticated devices for detecting plastic explosives, to be used as deterrents at 40 high-risk airports (15 domestic and 25 international). But even these machines cannot always detect the smallest amounts of plastic explosives that could destroy an aircraft. A number of panelists did not believe that these machines are a feasible security solution. Instead, they noted that better training of baggage screeners, who use X-rays to reveal explosives, has increased the detection rate. In particular, ALPA suggested continuing the use of enhanced X-ray equipment, which is available at a fraction of the cost of a TNA machine, while also working to produce and implement better detection measures.[13] In addition, the Aviation Security Improvement Act also requires that before any large-scale installation of equipment occurs, the Congress needs to be sure that the equipment will detect the levels of explosives likely to be used by terrorists.

The security of mail and cargo was another concern because these commodities undergo less scrutiny than passengers' baggage. X-ray machines currently are used to screen some cargo and mail, but security measures need to be enhanced, particularly with foreign freight bound for the United States, because of the large amount of cargo and mail transported into and within the country.

Competition Within the Airline Industry Is Continuously Changing

Following the passage of the Airline Deregulation Act of 1978, more airline passengers received a wider choice of service at a lower cost. Between 1979 and 1984, the number of air carriers expanded and fares declined. Thereafter, numerous mergers and acquisitions occurred. By 1989, eight major carriers provided service to the majority of the passengers; however, conference speakers believed that fares continue to be a good value.

Decreased competition in the airline industry and some carriers' significant financial difficulties have led some to express concern that a form of reregulation could return. Speakers opposed reimposing regulation and believed that increasing international competition could mitigate

[13]TNA devices were originally estimated to cost over $1 million apiece, but they could cost over $2 million each with installation and other costs.

some of the negative effects from mergers and reduced domestic competition. However, in our February 1991 testimony, we concluded that policy initiatives to promote competition also should promote the financial health of the airline industry.[14]

Reregulation of the System Was Questioned

Following in the wake of higher fuel prices, the current recession, airlines' high debt levels, and a perceived threat of terrorism resulting from the Persian Gulf conflict, air carriers are financially strained. Some speakers believed that more consolidation within the industry will occur over the next year.[15] If this is the case, they feared that the Congress will call for some form of reregulation to protect consumers from escalating airfares and to ensure quality service. Some speakers generally did not favor reregulation. They believed that even if fewer carriers provide service to the large and medium-sized cities, travelers will not lose the benefits that competition brings because most passengers still will be able to choose among several airlines. One speaker concluded that reregulation of routes and rates could result in a less competitive, smaller airline industry. We related a similar conclusion when we stated that reregulating fares would reverse the policy established by the Congress in 1978 that encourages competition, would be cumbersome to implement, and might well be ineffective in halting the decline of airlines' profits.[16]

If reregulation is not the answer, what is? Policies that enhance competition should also improve the industry's financial health. In our February 1991 testimony, we suggested revisiting federal policies on takeoff and landing rights (slots) at congested airports and airlines' computerized reservation systems (CRS). PFCs also may help improve air carriers' financial situation by allowing airports to expand their facilities without seeking approval from the dominant airlines. This would increase carriers' access to airports and may encourage the use of preferential-use leases (instead of exclusive-use leases), which would allow carriers other than the primary lessee to use gates and facilities at times when they are not needed by the primary lessee. Further, some of the

[14]U.S. Airlines: Weak Financial Structure Threatens Competition (GAO/T-RCED-91-6, Feb. 6, 1991).

[15]Since the conference, many airlines have experienced financial difficulties. For example, Continental Airlines, Pan American World Airways, and Midway Airlines have all filed for protection from their creditors under chapter 11 of the bankruptcy code; Eastern Airlines has ceased operations; and, recently, Trans World Airlines has defaulted on some of its obligations.

[16]Airline Competition: Weak Financial Structure Threatens Competition (GAO/RCED-91-110, Mar. 15, 1991).

speakers suggested that a competitive international environment, one that provides foreign carriers with more access to the U.S. market, may improve the industry's health. They predicted that competition from both domestic and international airlines would provide U.S. travelers with competitive fares, better service, and a greater choice of routes and carriers.

A New Era of Global Competition Is Emerging

Competition in the airline business is changing rapidly as the industry becomes more global. In this regard, our speakers raised two basic issues. First, they questioned the future competitive environment in Europe after economic integration in 1992. The question was raised as to whether an integrated Europe will try to block current, as well as new, service by U.S. carriers or whether it will become more receptive. In trying to answer that question, a speaker from British Airways said that Europe is already adopting a common policy among the major carriers. How this affects the U.S. airline industry is still unknown, but he did note that Europeans would like the U.S. market fully deregulated for all carriers. Currently, the market has been deregulated only for U.S. carriers, so foreign carriers cannot set up an airline in the U.S. and compete. We plan to review the effect of the European Community's (EC) integration on U.S. airlines.

If foreign carriers are given full access to the U.S. market, this would have important implications, especially concerning the second issue raised by our speakers—cabotage. U.S. policy toward cabotage will be a concern during the next few years as negotiations begin in 1991 between Canada and the United States. The Canadians are asking for cabotage rights. This is the first time that the United States will address the issue, but it will not be the last. One speaker suggested that the Canadian negotiations could allow the United States to begin experimenting with cabotage. In 1992 or thereafter, the EC will raise the issue of cabotage. The representative from British Airways predicted that Europe will demand domestic rights in the United States in exchange for continuing to allow U.S. airlines to provide service within the EC. He suggested that if the United States appears reluctant to give domestic passengers the benefits of international competition, Europe may terminate its current bilateral treaties and begin renegotiating. We recently reported, in the prevously cited February 1991 testimony, that while opening up the U.S. market to foreign competition might offer some long-term hope for improved competition, such a change would be most appropriate as part of a reciprocal agreement for improved access to foreign markets.

Speakers also raised the issue of foreign ownership in U.S. carriers. This issue appeared in the news recently when KLM Royal Dutch Airlines invested in Northwest Airlines, and British Airways sought to invest in United Airlines. Current law does not allow a foreign carrier to own more than 25 percent of a U.S. carrier.[17] Some panelists suggested this should be reconsidered to allow more foreign investment, particularly in some of the financially weakened carriers. Such investment could reduce their cost of capital and enhance their ability to survive. But with increased foreign investment and the potential for foreign ownership of U.S. airlines, foreign carriers could effectively circumvent the bilateral treaties that limit their access to the U.S. market. How this would affect our national defense is a question that might be raised. We are currently reviewing the issue of foreign ownership.

Observations

As the next century approaches, addressing all of the problems facing the aviation community will be difficult. FAA is working hard to modernize the ATC system, oversee and ensure the safety of the aging airline fleet, and facilitate local planning of additional airport capacity. However, FAA also has been challenged with the need to resolve many other problems within the current system and critically evaluate the extent of federal and local involvement in air transportation within the next few years.

If the government is to meet the aviation challenges of the 1990s and those of the next century, the dialogue begun during our conference should be continued, new insights must be shared, and new solutions must be found for emerging problems. The challenges we are currently facing will not resolve themselves. They require action and continuing attention by committed leaders.

[17]The Secretary of Transportation recently relaxed these rules to allow unlimited access to debt capital from foreign sources and access to nonvoting foreign equity capital up to 49 percent of an airline's total equity. But the 25-percent limit on voting foreign equity remains fixed by statute.

Congressional Perspectives

Mr. David Heymsfeld

Counsel, Subcommittee on Aviation, House Committee on Public Works and Transportation

To begin a discussion of the legislative agenda for the next Congress, it is important to recognize that the legislation passed at the end of the last Congress takes a strong stand on some of the important issues that will be coming up over the next few years. Although the legislative decisions of the 101st Congress certainly are not set in concrete, there is a strong presumption that many of the decisions the 101st Congress made will be around for the next few years. Those decisions will be an important part of the framework in considering what else needs to be done. The main aviation legislation passed in the 101st Congress was the aviation title of the Budget Reconciliation Act, which dealt with the Airport and Airway Trust Fund, PFCs, and aviation noise.

The Trust Fund and PFC issues were taken up by the House to deal with the inadequacies of our airport and air navigation systems. These inadequacies in aviation capacity are already leading to substantial delays, at a cost of billions of dollars to the public in lost time and productivity. Studies indicate that unless dramatic action is taken, the problem will get a lot worse over the next 10 years.

The inadequacies at airports are so extensive that there is no realistic possibility the federal government will be able to solve them by itself. Airport development needs over the next decade will be in the range of $10 billion a year. The most funding we can expect from the federal government would be in the range of $2 billion to $3 billion a year. There needs to be a very significant local contribution in addition to the federal contribution. The legislation was developed so that both funding sources would be enhanced.

On the federal level, the trust fund mechanism needed to be reformed. The Trust Fund is supported by fees paid by users for the aviation services they receive. These moneys are used to develop airport and airway capacities. The industry has complained a lot about how the Trust Fund has worked and has ignored the successes of the fund. The success has been the substantial increase in spending on aviation programs during the 1980s compared with the shrinking spending on most domestic programs. At the start of the decade, we were spending less than $500 million a year on airport development programs. By the end of the decade, we were spending over a billion dollars. There have been comparable gains in spending for FAA's facilities and equipment.

But there was a down side that threatened the continuation of the Trust Fund. The problem arose because of disagreements among the congressional committees with jurisdiction over the fund, the Office of Management and Budget, and other executive branch agencies about how the Trust Fund should be used. How much of it should go to capital programs? How much should go to FAA's operations? These disputes led to a situation in which, year after year, the Trust Fund was spending a billion dollars less than it was taking in. The surplus in the Trust Fund was growing each year and was up to about $7 billion in 1990. The industry and consumers were outraged at this, and the whole system was threatening to break down.

The solution reached in the 1990 legislation was to draw down the Trust Fund by a billion dollars a year over the next 5 years. This would be accomplished, in part, by increasing the spending for capital programs by a significant amount. Funding for the Airport Improvement Program, which had been $1.4 billion, goes up to about $1.8 billion, and funding for the Facilities and Equipment Program, which had been about $1.7 billion, goes up to over $2 billion.

For the operation and maintenance of FAA, spending from the Trust Fund was set at a level that would permit 75 percent of the agency's whole budget to come out of the Trust Fund. This will permit much more to be spent for operations than in the past. Interestingly enough, this was not much more than the Congress would have been willing to spend in the past had the capital programs been fully funded.

Let me now turn to the need for additional local funds. PFCs are an idea whose time has come. They are useful because they can raise money for airport development. Theoretically, the same amount of money could be raised by increasing fees charged to airlines, which would be passed on to the consumer. But one of the benefits of PFCs is that even if the airlines do not want airports developed—because it might help their competitors—the airlines will be unable to block the PFCs. As far as PFCs are concerned, the law provides that the airport itself will decide whether or not to develop the airport.

When the PFC bill was being considered, the concern was expressed in the Congress, and justifiably so, that we were giving the airports the right to take whatever they want from the traveling public and use it for things, such as opulent terminals, that do not really help the public. To prevent this from happening, the legislation required that every PFC be specifically approved by DOT. The types of projects for which PFCs can

be used are those already eligible for federal funding, plus the construction of gates and other facilities and the expansion of terminals to aid competition. There also are restrictions in the law to ensure that the facilities built are freely available to all airlines.

This was the legislative package that the House sent forward. The Senate was concerned that the legislation placed no limits on what local airports might do to restrict operations—which would limit the benefits of airport capacity development. The Senate was concerned that PFCs would fund new runways and terminals only to have the local airport limit their use because there is a need for noise abatement. The Senate believed that limitations on the discretion of airports to impose restrictions were needed. So the Senate, in going forward with PFC and Trust Fund legislation, included a provision that required DOT to approve or disapprove any restrictions on the operations of Stage 3[1] aircraft before a local airport could impose them. This is a major change from current law, under which the Department can stop an airport's restrictions by withholding airport improvement funds if restrictions violate grant assurances. The Department can also keep an airport from imposing restrictions by taking the airport to court. To date, DOT has not been willing to pursue this means to a great extent. As a result, airports have a great deal of freedom to impose restrictions.

In the House there was a lot of concern that the legislation passed by the Senate did not reflect the concerns of citizens affected by noise from airports. In negotiations on the legislation, the House insisted on provisions requiring the airlines to phase out their Stage 2 aircraft by the year 2000, with the possibility that 15 percent of the Stage 2 fleet could be allowed to operate to the year 2003. In addition, the House added a provision that would prevent the importing of any new Stage 2 aircraft, effective immediately.

I also wanted to touch briefly on the major security legislation passed at the end of the 101st Congress. The security bill was based on the recommendations of the President's Commission on Aviation Security and Terrorism, which was formed after the Pan Am 103 accident. Before this legislation was passed, security was handled at a lower level in FAA and DOT than the Commission thought desirable. The legislation directed both agencies to establish security offices at the highest level, reporting directly to the Administrator or the Secretary. The President's Commission also recommended that a federal security manager be appointed to

[1]Stage 3 aircraft are newer aircraft that produce less noise than older Stage 2 aircraft.

high-risk airports. The official would be responsible for (1) the coordination of the efforts of all of the federal agencies that get involved in the security problems at the airport and (2) the security responsibilities of the airlines and the airport.

The legislation also found that there was a need for a greatly expanded program to research and develop equipment to detect explosives. Before any massive program of installing such equipment is carried out, we need to be sure that the equipment will detect the levels of explosives likely to be used by terrorists.

Finally, the legislation also took a strong stand that DOT should be doing a lot more to insist that foreign airlines adopt security measures comparable to those required of U.S. airlines. A passenger flying on a foreign airline to the U.S. should have a level of protection similar to that which he or she would have on a U.S. airline operating under our security regulations. The Aviation Subcommittee will be overseeing implementation of this law, and we will probably have hearings later in the congressional session.

Mr. David Schaffer

Assistant Minority Counsel, Subcommittee on Aviation, House Committee on Public Works and Transportation

Many of the major issues facing the Aviation Subcommittee were addressed in the last session—noise, PFCs, and the Aviation Trust Fund. Because next year no major programs will require reauthorization, our agenda will be a good deal more flexible. I will touch on a few of the issues that are likely to come up next year and perhaps in the years to come.

One issue that I think is likely to be with us for the next few years is aging aircraft. As you know, this issue came to a head a few years ago with the Aloha Airlines accident, in which the top blew off the plane and one flight attendant died. As a result of that accident, the Airworthiness Assurance Task Force (AATF) was created. This task force—a joint effort by government and industry—reviewed manufacturers' service bulletins and recommended that after a certain number of cycles or hours, certain parts of the aircraft be repaired or replaced, even if no cracks were observed. FAA is implementing these recommendations through its airworthiness directives.

Some have said that this is a sufficient response to the problem. However, our Subcommittee felt a need for the Congress to be involved in ensuring airworthiness. As a result, H.R. 3774 was introduced. The Subcommittee saw a need for this legislation for several reasons, most of which remain valid. First, recent events had demonstrated that more than a business-as-usual approach was required and that aviation laws should reflect the need for new procedures to address the issue of aging aircraft. Second, the Subcommittee was concerned about the complex web of ownership and leasing arrangements that results when aircraft change hands frequently. Finally, there was a need for a simple, understandable system to assure the public that they are flying in safe planes. Basically, H.R. 3774 required that FAA inspect each aircraft's records after 15 years to determine whether that aircraft is safe. This legislation was approved by voice vote in the House, but has been ignored by the Senate. This legislation will probably surface again next year because it is very important to Chairman Oberstar. He has called the bill "the most important piece of legislation on aircraft safety and the safety of the aviation industry in probably a decade or more."

Concern about the issue of aging aircraft increased recently when GAO issued a report indicating that the capability to repair aging aircraft might be insufficient. This possibility could result in the need for further oversight of this issue, in addition to the issue of foreign repair stations, which has been very controversial, especially among organized labor.

An issue that will be emerging this decade is international aviation. The importance of this issue is increasing as the world becomes more of a global village and as airlines compete for more international routes. Under this broad topic is the question of how liberal we should be in allowing flights between our country and another country. Should air routes be completely open or limited? I think our policy is to try to get them as open as possible, but that tends to be resisted by a lot of foreign countries. Allowing foreign airlines to provide flights within the domestic U.S. market, or cabotage, is a growing issue. This has come to the forefront recently with the announcement by the Secretary of Transportation that there will be a discussion of cabotage at the upcoming U.S. and Canadian negotiations.

Another international issue is the question of what will happen in Europe in 1992. As you know, there will be the economic integration of Europe, which will have important implications for aviation. Whether the new Europe will try to block new service by U.S. carriers or whether it will be more open is a question that has not yet been answered, but one that will be watched closely.

Foreign ownership is an issue that came to the forefront recently when KLM invested in Northwest Airlines and when British Airways wanted to invest in United. I think this will continue to be an issue because it has important implications for competition. There is some indication that one of the solutions to the problem of financially weakened carriers is to allow more foreign investment. If this is to be done, it will require a legislative change. Right now, there is a requirement that no more than 25 percent of a U.S. carrier be foreign-owned. Allowing foreign ownership will also have implications for our bilateral agreements because it could give foreign carriers a way to circumvent these agreements.

Opening new markets is another issue being advocated by what I would call "nontraditional gateway cities." These locations traditionally have not had a great deal of international air service, but would now like some. These cities are pushing the notion that when we negotiate our bilateral agreements, we should consider not just the impact on our carriers but also the economic benefit to areas if they could be served by foreign air carriers. As a result of this group's efforts, DOT recently announced a new policy to grant foreign carriers the authority to open routes to nontraditional gateways in certain circumstances. Under that policy, Lufthansa has a route to Charlotte, KLM has one to Baltimore, and Swiss Air, to Philadelphia. There will probably be more of these sorts of incursions by foreign carriers in the future.

Airline competition is another very important issue. Our degree of attention to this issue will probably depend on whether the number of airlines is reduced, as many predict will happen. The likely response to problems arising from reduced competition would probably be, at the very least, oversight hearings. There are all sorts of legislative actions the Congress could also take.

Consumer protection legislation can also be classified as a competition issue. With fewer and fewer carriers, there will be more of a need to regulate in this area, since we won't be able to rely on competition to ensure good service. A bill on consumer protection passed the House in the 100th Congress as well as the Senate. But it died in conference. My sense is that there is still a lot of interest among many Congressmen to do something on the issue.

Privatizing airports or the ATC system is an issue that has interested a few Republicans. I think it is still seen as a somewhat radical idea, but it might be a way to expand capacity.

Two perennial issues that we have dealt with but that seem to come back in one form or another about every other year are security and drugs. A security issue that has been a concern to some of the Subcommittee members is TNA machines. Do they really work? Should they be required? Should airlines be forced to buy them if they don't really work? There is some indication that FAA might want to require TNA machines as a deterrent. With the machines installed, the terrorists will not want to chance getting caught. If FAA requires TNA machines without showing that they really work, however, the Congress will be greatly interested.

Drugs is an issue that also seems to come back every other year. The Drug Enforcement Assistance Act, passed in 1988, was designed to assist law enforcement officials in their efforts to catch criminals who smuggle drugs via aviation. The act altered the aircraft registration system, aircraft identification numbers, pilot certificates, and major repair forms, and instituted user fees to fund the new enforcement efforts. Some of FAA's actions to implement this legislation have been controversial, so I think we will see some oversight in this area.

Drug testing and alcohol testing are two other controversial areas. The Congress will continue overseeing DOT's drug testing. Alcohol testing

would appear to be an emerging issue of concern as a result of the notorious Northwest incident, in which three pilots flew their plane while under the influence of alcohol.

And, of course, we always have the issues of capacity, modernization of the ATC system, the National Airspace System (NAS) Plan, and safety—those are all issues that have been here and will probably always be important to our Subcommittee and the Congress. These are the type of issues that will be dealt with in our next reauthorization bill in 1992. How we deal with them will depend on the results of our recently enacted reauthorization bill—how the PFC works and how our new trust fund arrangement works out. What we do about the NAS Plan I think will depend heavily on GAO studies, which have always been very helpful in this area. Safety, of course, is always an issue, and what we do to enhance it will be heavily influenced by future events. If there is an accident that points out the need to do something in a particular area, I think you will see the Congress react to that.

Let me emphasize that the things I have discussed are our best guess of what is likely to come up. We have not sat down with the Members of the Subcommittee to lay out an agenda for the next year. When we do so, new issues could arise or the emphasis on the ones I have mentioned could change.

Organization and Management Panel

Mr. Joseph Del Balzo

Executive Director for System Development, Federal Aviation Administration

This morning, in addressing some of the questions contained in the advance information provided to me, I will raise a few questions of my own and express some concerns. The advance information I received asked me to address several areas of concern. I will begin with the retirement of three executive directors in FAA and the notion that system interdependencies would no longer be fully considered. Administrator Busey shares that concern. He shares the concern that all systems under development must be engineered with the big picture in mind. All systems must be designed around human factors, including operating load and work load; the overall impact on capacity; and the overall impact on safety. I think there is one thing that ensures those interdependencies are addressed in a culture like FAA—leadership. Administrator Busey has the leadership to ensure the interdependencies do not go unaddressed.

Issues cutting across organizations within FAA are not only handled at the associate administrator or executive director level, but are also handled at levels below. FAA's program managers have exhaustively built teams with their contractors and our internal customers, such as the air traffic and airway facilities. The team-building sessions that our program managers have held are structured to achieve specific goals—to improve communications, increase team effectiveness, and identify problems early. We have achieved two so far.

Just last week, my senior managers spent 2 days off-site, with no interruptions. They collaborated on how to more effectively manage programs corporately and synergistically using a team approach that captures the talents and expertise of individuals to solve the problems in the organization. Twelve months ago, we would not have been able to do what we did in 2 days last week. The outcome of these sessions will result in a shift in the way we currently do business.

You asked whether our research projects discourage innovation. I do not think so. Again, we have an administrator who has ensured that the system development organization and its programs are propelled by a vision. The vision says that creativity, innovation, and slashing red tape are the values that will be rewarded. I do not think those values are new. They certainly are not new to companies like Levi Strauss, Nabisco, and Bell Atlantic. These are the companies that not only talk about values but bring them to the center of how the business is run. I think we, in FAA, have begun to do the same thing.

I know you are aware of the legislation just passed by the Congress. It includes authorization, tied to the fiscal year 1991 appropriation, for FAA to implement a university research grant program. We have been waiting a long time for that authority. The program calls for greater participation in research activities by colleges, universities, and nonprofit research organizations. We have testified before the Congress that the present system of contracting with colleges and universities is milestone-oriented, inflexible, and not cost-effective. It is an archaic system that has finally been replaced by one that allows us to access research of interest to FAA as well as encourage research in areas that are not being explored adequately.

Last summer, system development managers met off-site in Annapolis, and we asked ourselves this question among others: "What do we do with good ideas?" I think an initiative was born that day to ensure that good ideas get aired in front of a panel of technical and operational experts. The program, called IDEA, for innovation development and engineering applications, will be managed by our Technical Center's Office of Research and Technology Application. That office will sponsor developmental research and engineering efforts that run the gamut from immediate practical applications to promising R&D.

We are still exploring mechanisms to encourage and air good ideas. We will be using the Broad Agency Announcement Program as another means to do so. You may know that under this program, the technical proposal that a company submits ultimately becomes the statement of work for the contract. The system is flexible in allowing the proposals to be expanded or contracted following a mutual agreement between the outside organization and FAA. The program is now being used successfully by the Security Research and Development Program at the Technical Center.

While all of that is going on, reform of the agency's systems acquisition process has also resulted in a lot of improvements. The independent operational test and evaluation function is now organizationally independent of developers and users. As a result of the agency's realignment, the staff conducting tests and evaluations reports directly to the Executive Director for Acquisition. That office is improving the program in a number of ways, for instance, by adding resources and extending coverage beyond testing major systems considered for acquisition.

Reforming the acquisition process has resulted in many changes internally. Probably the most significant change is that every development

program now starts with a requirement. Nothing gets done without one. Once a program is in place, nothing gets changed. Developmental projects or prototypes are fully tested prior to acceptance. And the truth is, we would rather experience a delay than tolerate a risk to production. Was it always that way? The answer is no. It is that way today.

Another question that was posed was whether or not the Aviation Trust Fund is underspent. Its uncommitted balance is in excess of $7 billion, so I think the answer is self-evident. But, in fact, the self-evident answer may not be the right answer, because I am not sure that the right question has been asked. I think the right question is another one that was posed: "Will we have sufficient funds to meet program priorities?" Until now, I think the answer to that question has been yes. "Would you like more money and people?" The answer is yes. "Would you like more control?" The answer is yes. "Do we have enough?" I think the answer is also yes.

This fiscal year, the House and Senate Conference Committee reduced FAA's budget request by at least the amount that GAO recommended for several programs, including those for the Voice Switching and Control System, Mode S, the Advanced Automation System, and the Los Angeles terminal radar approach control facility (TRACON), just to name a few. The impact of those cuts will slow implementation of some NAS Plan programs.

To compensate for that, we will request that about $118 million be redirected, mostly to the programs that were hit by the reduction this year. In fiscal year 1992, we will be adding $200 million to our budget request and defer the remaining $200 million to the following fiscal year. If we receive the requested funding, including the amount that was cut in the last year, then the answer continues to be, "Yes, we have enough; yes, we will be funded at the right level to meet our priorities."

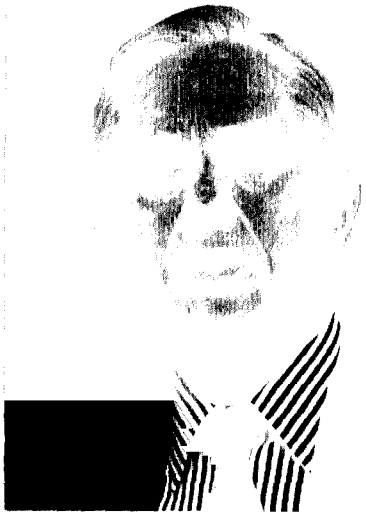
Finally, I was asked, "As an organization, does FAA take the initiative?" I think that answer is yes. In many ways it does, but I also would tell you that I think it has to. Witness, for example, the many hours that were spent by our employees to prepare a response and ultimately create a new organization to address the President's Commission on Aviation Security and Terrorism. Countless hours went into preparing both the agency's and department's responses to that report.

In conclusion, I hope I have been able to provide you with examples that show FAA is working to remedy its problems while improving its service

to the public. While we in FAA may never get all of the best things done as well and as quickly as they can be done or at the lowest cost, I believe that FAA and GAO are working in a complementary fashion and that together today, we can at least make things work better.

Mr. Richard Jones

Attorney, Baker and Hostetler, Attorneys at Law



On the one hand, FAA is asked to increase capacity. On the other hand, FAA is required to ensure safety. The tension between these dual roles assigned to the agency by the Federal Aviation Act of 1958 has caused many of FAA's problems. Take, for example, increasing the capacity at a given runway at an airport. Reducing by half the spacing between landing aircraft will double capacity. But doubling capacity reduces the safety standards by half. That is the balancing act FAA is required to undertake. So without being any kind of an apologist, I suggest we study FAA's mission and consider whether anything about it should change, and if so, what.

In recent years, FAA has been subject to increasing criticism. While the airlines cry out for more capacity and the demand for flights continues to increase, the development and improvement of facilities lag behind. At the same time, airline crashes make safety a looming concern for passengers, the Congress, and the media. Sadly, the media always engage in a feeding frenzy over the flames and the wreckage after crashes, which, fortunately, occur very rarely.

Specifically, FAA is criticized for failing to (1) train adequate numbers of air traffic controllers, (2) provide state-of-the-art ATC equipment, and (3) enlarge the capacity of airports and airways. To add to the dilemma, FAA has had to deal with the throes of deregulation and the completely unforeseen pressures of the intense competition that has resulted from deregulation. The PATCO[1] strike of 1981, which demoralized and devastated the ATC system, further exacerbated the problem. During this period, FAA has been hampered by federal civil service employment rules that aggravate the personnel shortages at locations where the cost of living is high, such as the New York Center and Chicago Center. FAA also has the problem of the labyrinth of procurement rules that must be satisfied before the agency can obtain the desperately needed ATC equipment. While the Congress and the public insist on improved safety regulations, each attempt that FAA makes to push through new safety rules requires it to battle with certain segments of the aviation industry, as well as certain elements in the governmental factions above FAA.

In short, I suggest that FAA does extremely well in performing this sometimes incompatible set of assignments laid on the agency by the Federal Aviation Act of 1958. The cause of FAA's shortcomings, to the extent that they do exist, can be traced back to the dual assignment that is inherent in the 1958 act. I suggest that any cure to the problem will

[1] Professional Air Traffic Controllers Association.

require legislation similar to the recently enacted Aviation Safety and Capacity Act of 1990.

The 1958 act really was the fourth major piece of aviation legislation that we have had in our country. It makes FAA both the referee and the cheerleader. As the referee, FAA has the duty to call the fouls when it sees them, license airmen, certify aircraft, and prevent aircraft accidents. As the cheerleader, FAA must also get the crowd interested in promoting aviation. It is to encourage the R&D of equipment; install, maintain, and operate equipment, such as radars and instrument landing systems, in aviation facilities; and provide all of the services for ATC.

Now, how did we get in that fix in 1958? The earlier laws had been passed in 1926 and in 1938 and then in 1946. Each of those was, for the time and the era in which the legislation was passed, proper and appropriate. The 1926 act created in the Department of Commerce the Civil Aeronautics Administration. There was another organization, the Civil Aeronautics Board, which belonged to the executive branch of the government and reported directly to the President. Those two organizations were overlapping and issued contradictory rules and regulations. Two things happened—the advent of the jet airplane and a midair collision over the Grand Canyon in 1956—which ultimately brought us the Federal Aviation Act of 1958. The 1958 act was a good one, but I think the time may be here to completely revise it, just as prior acts were revised.

One of the problems that come with trying to separate this double assignment is trying to decide what safety is and what promotion is. Assuming, for the purpose of discussion, that safety and promotion of aviation should be separated, how would this be done? As the years have gone by, the promotion of aviation has become so entwined with safety that separating the two is difficult, if not impossible. A clear understanding of the division between the two is difficult to grasp. But separating aviation promotion away from safety would require removing FAA's R&D and ATC functions—which, by most definitions, foster air commerce—out of FAA. How FAA, without the ATC function, could manage safety and regulate aviation I do not understand. So I do not see separating those two functions at this time as a viable solution to the problem.

There is, however, some light at the end of the tunnel with the passage of the Aviation Safety and Capacity Act of 1990. It allows for PFCs, which provide a source of revenue for local airports to do some promotion on their own. Thus, PFCs may lessen the pressures on FAA. The 1990

act may allow airports to use some of that PFC money. We might consider whether or not JFK Airport, if it wants to, could take some of the PFC funds for its own use. For example, the airport could add a premium wage for air traffic controllers to make duty at New York Center more attractive and to reduce some of the effects of the disparity in the cost of living between Gadsden, Alabama, and Jamaica, New York. This is something that civil service rules currently will not allow. Or perhaps, if Boston wants an MLS, Boston could take some PFC funds and install the equipment rather than wait 5 to 10 years for the time when FAA can provide it under an air traffic modernization program.

In conclusion, I suggest that narrowing the focus of FAA's regulatory responsibility, while not resolving all of the regulatory problems, will reduce the pressure of the dual responsibility placed on FAA to be both cheerleader and referee. It will remove some of the conflict that many say causes most of the criticism of FAA. Redirecting the regulatory focus, as the Aviation Safety and Capacity Act of 1990 does, allows FAA to concentrate on what should be its primary responsibility—aviation safety. At the same time, it places the emphasis for R&D on those who may be better suited than FAA. In the absence of these changes, however, FAA probably will continue to struggle under its assigned dual responsibilities and continue to be criticized for the manner in which it performs its often incompatible tasks.

Captain Henry Duffy

President, Air Line Pilots Association

Let me share with you this morning perhaps a little different view, the view from the cockpit of this nation's airliners, on some of the FAA's stewardship of our national airspace system. As you know, our panel was asked to focus on the organization and management of the FAA. I will begin with the first question this panel was asked to address: "Do FAA's decisions about modernizing the system consider the potential impact on capacity and on pilots and controllers?" My answer is that they usually do, but not always correctly. Let me tell you why.

Capacity has become one of this industry's current buzzwords. The consideration of capacity has changed the rules for our national airspace system. In the past, the safety of the traveling public was paramount in FAA's decisions to modify procedures or introduce new equipment. Recently, though, we have been disturbed by the growing tendency for an increase in capacity to reduce the safety margin of a project to an unacceptable level and for the benefits of increased capacity not to match the reduction in the safety margin.

Now, let me hasten to point out that pilots are very sensitive to the desire to increase capacity. More flights translate into more profits, which means that, eventually, pilots are going to get better wages and working conditions. We supported the move to increase capacity, both by acting directly and by participating in the Partnership for Improved Air Travel.[2] But our primary concern must first be safety for the traveling public, because federal law charges the captain with the final responsibility for the safety of each flight.

Let me give you two examples of how the desire to increase capacity has clouded FAA's judgment in proposing new procedures. First, the Air Traffic Service recently circulated a proposal that would allow the use of visual separation between aircraft in the en route phase of flight. Only 2 years ago, the same Air Traffic Service published an article in its periodic bulletin to all controllers saying that this procedure would not be implemented because of serious concerns it would reduce safety. Since then, absolutely nothing has been done to mitigate these concerns, but all of a sudden, the procedure has taken on a new life and has become acceptable simply because it would increase capacity.

The second example involves the use of a procedure called conflict resolution in the terminal control area and the airspace around our busiest

[2]The Partnership for Improved Air Travel, established in 1988, specializes in public education as a means to increase capacity and efficiency in the air travel infrastructure.

airports. FAA has compromised its responsibility to provide the traveling public with the maximum degree of safety by proposing to reduce separation standards[3] at our nation's busiest airports in order to effect what, in our opinion, are minimal gains in capacity.

My bottom line on procedures and projects that would increase capacity is not to reject them, but simply to inject a note of caution. We should challenge proposals that compromise safety in an attempt to improve capacity.

The next issue that we were asked to comment on is the funding process and the continued operation of FAA within the government. Our responses are simple. Yes, the entire Trust Fund should be spent on improving and operating our national airspace system, and that includes the day-to-day operating expenses of FAA. Until recently, it was probably impossible for local communities and states to increase their funding for aviation projects because of revenue shortfalls. But the authorization of PFCs is a catalyst for change. I must be candid and say that ALPA initially opposed PFCs because it felt that the government was not being fair in imposing such a burden on the public while the Aviation Trust Fund was being held hostage in the "great budget deficit shell game." We were concerned that revenues generated by this new tactic might go to municipal uses besides projects to improve aviation or might suffer the same fate as moneys collected from tickets and fuel taxes—disappearing forever into the bottomless pit of the government's general fund. However, it appears that safeguards in the new bill authorizing PFCs do ensure that the newly generated money will be spent for local aviation projects. We wholeheartedly endorse that concept. We are glad that the President relented enough to allow PFCs because there is a dire need for local revenues to improve local airports.

The organizational structure of FAA was thoroughly debated within the aviation community following proposals by the Air Transport Association and the Reason Foundation that the agency either be operated as a type of federal corporation or be completely privatized. Neither proposal found any degree of support. Instead, a coalition of the aviation community, represented by former FAA Administrator Najeeb Halaby, testified before the Congress that three things must be done if FAA is to respond to users' requirements better: (1) FAA must once again become an independent agency; (2) the Aviation Trust Fund must be removed

[3]Separation standards are the longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of ATC procedures.

from the general fund and used in its entirety to improve systems; and (3) we must have a tenured administrator to provide the long-term continuity necessary for effectively rebuilding and modernizing our national airspace system. Mr. Halaby was not the only one with such views. The Aviation Safety Commission appointed by President Reagan recommended in its final report an independent FAA. ALPA still endorses these goals, and I am sure that polling the rest of the aviation community would reveal a broad consensus for such actions.

I was also asked to comment on the implications if FAA's forecasts of future traffic are not on target. If FAA underestimates the growth of the industry, both nationally and internationally, and does not increase its infrastructure accordingly, we are going to see the same operational constraints and safety concerns as—or worse than—those currently being experienced. On the other hand, if an infrastructure is developed to handle growth that does not materialize, then obviously we are guilty of overkill. Of the two choices, however, the latter is far and away the preferable one. It will accommodate actual growth and still leave room for future expansion at a cost that, however expensive it may look now, will undoubtedly be considered a bargain in view of the future cost of construction, relocation, and inflation.

Another subject that I was asked to comment on was the coordination between FAA's various groups, such as those working on flight standards, air traffic, and program management for new systems. If I were a school teacher, I would give FAA somewhere between a C-plus and a B-minus. Given the enormous scope of its operations, FAA often does a credible job on that score, but somehow things do seem to fall in through the cracks. Let me give you two examples. The Air Traffic Service recently proposed new criteria that would supposedly increase system capacity by reducing existing standards governing the simultaneous operation of aircraft on intersecting wet runways. At the same time, the Flight Standard Service had an ongoing dialogue with the airline pilot community on that identical subject, but that dialogue contained significantly different criteria for stopping the aircraft. Needless to say, Flight Standard's proposal more closely met the criteria that pilots preferred, and as we speak, the two groups within FAA are trying to resolve those differences.

Another example of a lack of coordination within FAA concerns the implementation of the Traffic Alert and Collision Avoidance System

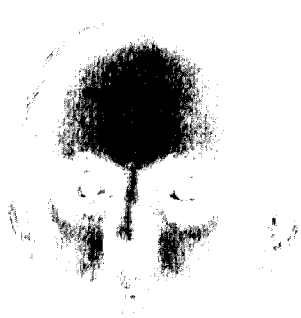
(TCAS). The TCAS program manager, in concert with the industry Separation Assurance Task Force, had developed a detailed plan for the congressionally mandated evaluation of the system. At the last minute, however, the Air Traffic Service, which had been less active in developing and planning TCAS, proposed a change that was unacceptable to industry representatives. Fortunately, after some controversy, this issue was resolved.

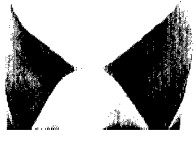
Finally, I want to comment on a question asking if FAA's rulemaking process should be streamlined. The answer is a definite and emphatic yes. Picking which process in FAA's operations is the biggest bureaucratic dinosaur would end up as a toss-up between the current rulemaking process and the procurement process. To get a real handle on the rulemaking snafu, GAO should ask FAA for a printout on how many rulemaking petitions are on file and how long they have been pending. Such a printout would give some idea of FAA's lack of responsiveness to the public in this area. I can assure you that we have not been satisfied with the lack of response to petitions we have submitted. The whole process needs to be reviewed by an outside agency and overhauled from the ground up. In the meantime, FAA should move quickly to implement whatever short-term improvements it can to relieve what is a terrific log jam within the agency.

In summary, I think you will find that on FAA's organization and management, ALPA and others in the aviation community share at least one view. In some areas, we give the agency good marks for doing a good job, or at least the best job that can be done under the circumstances. In other areas, we see the need for swift and substantial changes. In any case, we are not optimistic about the long-term prospects for significant, long-lasting improvements unless and until we have a truly independent FAA funded independently from a dedicated Aviation Trust Fund and headed by a tenured administrator whose term of office is long enough to provide the incentive and the opportunity to tackle the enormous challenges confronting the agency. ALPA continues to support those fundamental reforms of FAA.

Dr. James Greene

Minority Science Consultant, Subcommittee on Transportation, Aviation, and Materials, House Committee on Science, Space, and Technology





My remarks will deal with the organization and management of FAA, specifically the coordination of aviation R&D programs. R&D is not one of the areas that people generally focus on, so I will bring up some of the things that you may not otherwise hear at this conference.

I think people in the aviation community question why the Congress is involved in developing policy for such a complicated area as scientific research. In my opinion, the Congress is involved because it is concerned that the American public does not have an opportunity to provide input into the decision-making processes and the policy that leads to the regulation of FAA and the aviation industry itself. As the Members of Congress look at the various issues that come up, they wonder how the people who come up to them with complaints, are being heard by FAA; how the complaints are taken care of; and how the flying public is included as part of the process. Members of Congress are active in this area because they see a considerable amount of involvement by various groups, but almost none represent the flying public. The words of the flying public are not those loudly heard in the final decision-making process at the agency.

One of the interesting aspects we observed while looking into the Aloha Airlines crash of 1988—which was characterized as a 1-in-10-billion chance—was that Americans were traumatized by the accident. They did not want to be part of a flying experiment, even if the risks were extremely small. When we went down to the National Transportation Safety Board (NTSB) and examined the micrographs of the skin of that aircraft, we saw some very interesting things. NTSB traced the beginning of the cracks, almost 20 years ago, by counting the microcracks. Looking at the cracks even revealed when Aloha Airlines banned smoking on that aircraft because the brown stains suddenly stopped. Why was the plane not grounded before the cracks led to the loss of the top of the aircraft? This is what the Members of Congress were thinking. How could that crash have been prevented?

Congressman Tom Lewis, a former aviator, who also worked in the aviation industry, wanted answers to those questions. He introduced a long-range R&D bill in May 1988. That particular legislation mandates that long-term research be funded by at least 10 percent of FAA's R&D budget. In other words, the legislation requires FAA to look at some innovative programs it had not examined before and to look into some research areas that no one else is looking into. The purpose is not to have another accident like the Aloha Airlines one. Let us assure the flying public that we are going to try to prevent such accidents.

The Subcommittee on Transportation, Aviation, and Materials had hearings and worked hard moving the legislation forward. As part of this process, we asked GAO to examine FAA's R&D program to see how much long-term R&D was underway. GAO reported that of the 90 or so R&D programs that FAA funds and submits to the Congress, 70 had their funds redirected in fiscal year 1988. It is very difficult to have a long-term program if the moneys are being shifted around from program to program. Now, while it is good on one hand for the agency to focus on problems as they arise, it does not signal to the flying public that we are taking the safety problems of tomorrow and solving them today.

The long-term R&D legislation did indeed get enacted as P.L. 100-591. As it passed through both houses of the Congress, there was not a single vote against it. In fact, it had a great deal of support. I would say that even now there is a great deal of support in both houses of the Congress for aviation R&D programs.

This legislation, hopefully, establishes a research program that forestalls problems. Under the legislation, a research advisory committee has been established, to be made up of representatives of the aviation associations, university scientists, and members of the flying public so that the flying population will have an avenue through which its concerns are heard. Since that time, FAA has done an outstanding job in implementing the provisions of the legislation. There is some concern, however, about the representation of the flying public. Does the advisory committee have someone who does not have a tie to industry, who does not have a vested professional interest, but who flies and is concerned about safety? That particular segment is somewhat underrepresented in the advisory committee as it now exists.

A second piece of aviation safety legislation was included in the newly enacted budget, P.L. 101-508. Section 9208(h) deals with the Catastrophic Failure Research Program. This particular piece of legislation was introduced because of safety concerns raised by another crash, the one in Sioux City, Iowa, in July 1989, in which 112 people were killed because the engine's fan disk disintegrated. The fan disk broke apart because of a crack from a metallurgical flaw, which apparently existed when the fan disk originally was installed in 1971 or 1972. People were asking the Members of Congress, "Why was the crash not prevented?" Members of Congress were themselves asking, "How can we stop catastrophic failures like this when we have to look back 20 years? Is no one examining how such risks are assessed? Should we examine the research

priorities to include more studies in prevention?" The Members of Congress believed those questions should be answered. Hearings were held by the Subcommittee. There was a lot of opposition to accident prevention legislation in the beginning, but that was overcome as soon as people saw the wisdom in the legislation and realized that it could serve its intended purpose. Members of Congress were again hopeful of getting the views of the American people represented in the agency's decision-making about policy.

Congressman Lewis called the current research program "tombstone technology" because the aging aircraft program is aggressive in inspecting components—fan disks, among other things—only after a crash. Members of Congress wanted aggressive research before a crash. Thus, the provision establishing the Catastrophic Failure Research Program was included in the FAA legislation attached to the Budget Act.

You may, then, ask the question, after these two pieces of legislation have passed, "What has been accomplished? How have the industry and the flying public benefited?" The answer is that over the long term, the flying public is well served by the programs established in P.L. 101-508. There are more white-knuckled flyers today than ever before, yet almost every available statistic indicates that safety is greater now than ever before. Those statistics do not make any difference to the flying public. They see a catastrophic failure happening and think that they could be on the airplane when it occurs. This legislation addresses that problem. We are often told by those within the industry that every accident cannot be avoided, every accident cannot be prevented. Members of Congress have said, with the passage of this legislation and others, "Well, let us try to prevent all accidents." The goal should be to try to prevent such crashes.

Finally, for other issues I was asked to address, I have the following comments:

- The Congress is concerned about and supportive of innovation in safety research at FAA.
- The Congress is also very concerned about having the flying public's views included in FAA's decision-making process.
- The Congress is concerned about the funding level for R&D programs. It is much lower than it should be, but it is increasing because there is increasing congressional support for R&D.

Airspace Management and Air Traffic Control Panel

Mr. Jonathan Howe
President, National Business Aircraft Association

I will focus on modernizing ATC and pursuing some of the alternative strategies. One issue is what the ATC system of the future will look like. What is the future of satellites as an alternative to both a ground-based navigation system and a ground-based ATC system? Nobody seriously questions that satellite navigation and satellite communication are the technologies of the future. The question is how the future is defined—is it near or far?

One of the most exciting recent events is the Defense Department's decision finally to remove the agency's interfering signal from the Global Positioning System (GPS) satellites. A clear GPS signal, alone, will provide such a tremendous potential for accurate navigation that we should definitely reconsider some of the strategies that have been keeping the ground-based navigation system in place. Clearly, we cannot turn the switch overnight. We must have a transition from using precision approaches[1] and the MLS to using satellites. There still is a place for MLS at certain locations around the world. However, with the accuracies that are now or will be available shortly with GPS, the wholesale implementation of MLS is probably a mistake.

A second issue is FAA's new Capital Investment Plan. What should FAA do to avoid the pervasive delays of the NAS Plan when acquiring new systems? Having been associated with the government for many years and its procurement processes, I do not believe that it is really possible to effectively procure systems of this scale and technology in a timely fashion using the existing government procurement processes. That suggests one of two things. Either the procurement processes must be changed legislatively—which is highly unlikely—or FAA (at least the ATC system) will have to be taken out of the government so that it no longer has to comply with or use the archaic procurement procedures that are currently available. There is nothing more dramatic as you look at the various segments of the NAS Plan than the obsolete technology being delivered because of the procurement processes. MLS is just one chapter in a sorry procurement story.

Let me move on to alternative strategies. Most of FAA's systems under the NAS Plan are scheduled for installation nationwide. Yet most air traffic congestion is around a handful of major airports. Are there systemic solutions available for these locations that FAA has not sufficiently investigated? No, I think FAA probably has investigated most of the

[1]Precision approaches occur when radar is used to guide aircraft into the runway threshold area.

various solutions. The question is whether or not the investigations have had a high enough priority?

Tremendous gains could be made in adopting simultaneous parallel instrument landing system approaches. There has been good work done in developing the so-called E-Scan radar and the back-to-back dual transponder beacon antennae, which will increase the sweep rate and the target acquisition rate. These off-the-shelf technologies provide great promise for simultaneous instrument landing system approaches. Yet we are told that we are not going to have them in the system on a widespread basis possibly until 1997.

One of the biggest constraints on the efficient use of airspace is the arbitrary and fragmented noise restrictions at various airports throughout the country. The Budget Reconciliation Act included the most far-reaching noise control provisions that we have ever seen. It remains to be seen exactly what impact this policy is going to have, but it is clearly an important step in the right direction to remove arbitrary noise restrictions that have significantly reduced capacity in this country.

An area that concerns me a great deal is the present functioning of the central flow control system.[2] The way central flow control currently operates, in fact, constrains capacity. I am not suggesting that central flow control is not an important tool to track aircraft. But there are more efficient ways of allocating capacity. What has happened is that people have lost sight of the distinction between flow management, which is a good thing, and flow control, which is a bad thing. ATC must be left to ATC facilities that are making real-time decisions based on real-time traffic. Flow management is strategic planning for the country or segments of the country on something other than a real-time basis. Unfortunately, the system today has tended to substitute flow control for flow management. As a result, individual controllers and individual facilities have their hands tied.

For advanced automation, the present scenario is that en route automation will be implemented prior to terminal automation.[3] Yet terminals are where capacity truly is constrained today. I recognize that work is

[2]Central flow control manages traffic for the entire national airspace system.

[3]En route automation is the automated computer system that the air traffic controllers use to guide aircraft flying between destinations, and terminal automation is radar used to control aircraft approaching or departing the airport, as well as their movement on the ground.

being done in this area, but a great deal more needs to be done to speed up the implementation of terminal automation.

Many of the current ATC systems are far beyond their useful life. What can FAA do to maintain these systems? The secret to maintaining the old equipment until new equipment is on-line or until a satellite-based system is available is contract maintenance. There is a difference between contracting out maintenance and contracting out quality control. Obviously, FAA cannot contract out the responsibility for overseeing that facilities function according to an acceptable standard. But the actual maintenance work can be contracted out.

Despite FAA's pay demonstration program, the New York area and a lot of other areas are short of controllers. It is not difficult to figure out that for the same level of pay, people will not work in places like New York and Los Angeles when they can work in other places with better living conditions. Clearly, controllers and other personnel will have to be compensated with a wage corresponding to the location where they work, or FAA must consider a strategy that does not provide certain ATC services from within a high-cost area. Area control facilities and various types of remote operations are possibilities. There are significant political constraints to implementing these. But I believe that if we, as a nation, are unwilling to pay for people to live and operate in the high-cost areas, then we must investigate an alternative strategy to locate people in lower-cost, more attractive areas and let the technology substitute for people in the high-cost areas. New avionics will relieve the controllers' work load, particularly for the routine repetitive work, and will provide additional capacity in the system.

In closing, I have a comment on TCAS. It is a beneficial piece of equipment, but I suggest that when the risk of midair collisions is considered alongside the amount of money being spent for TCAS, there are other areas where that money would have a far greater payoff in reducing the number of accidents.

Mr. Stephen R. Bassett

Senior Vice President,
Aircraft Owners and Pilots
Association

My comments will be focused on one specific area, which this time last year we brought to the attention of the Congress and the government—satellites. Last year, we looked at each and every project in the NAS Plan, all 187 of them. We analyzed approximately 155 of the ones that had not yet been completed. We were in favor of approximately 85 percent of the 155. But we were not in favor of approximately 15 percent of the projects, which cost a total of approximately $11 billion. We came away with this firm conclusion 12 months ago: The procurement problems that partially created some of the massive delays and the cost overruns that have occurred with the NAS Plan may well be a blessing in disguise for all of us in the aviation community. Over a 10- or 15-year period, approximately a billion dollars a year in development costs in the current NAS Plan could be saved by aggressively beginning the transition to the new type of system. As the delays and cost overruns were occurring, satellite technology—GPS, specifically—was coming on-line faster and faster. It was being driven by the user community. The only logical conclusion is to patch the system we currently have and begin the process of evolving to this new system. This new system would be a space-earth system that links GPS with a ground-based system capable of random-routing, such as LORAN C, OMEGA, or another form of instrument navigation system. Eventually, the system may be based solely in space.

A study by DOT reached that conclusion, saying GPS was feasible and would provide the integrity, reliability, and accuracy required by the user community and the government. The study also concluded that GPS would be far more useful to the aviation community and, indeed, would be capable of meeting the expanding needs of ATC for communications, navigation, and surveillance in the 21st century. So it only makes sense to evolve to a new satellite system rapidly.

As we testified in front of the House Subcommittee on Aviation last year, we believe that by the year 1995, given what we are seeing technologically, we can implement GPS to provide transoceanic navigation, communications, and surveillance. Indeed, we can almost do this now. By the year 2000, we could have a hybrid space-earth system implemented continentally in the United States. And by 2005, if the technology will permit it, we can begin to move this system into the terminal areas. Our timing was challenged to some extent last year. We expect to begin implementing a transitional system in 1995 that will last approximately 10 years. But by the year 2005, we clearly believe that we can cease using the current system. The new GPS will save the capital and labor required for the costly system that we are faced with today. Prognosticators suggest that the new system will save billions of dollars, not only

in this country, but globally as well. Just in the United States, long-term savings could be about $250 billion. Globally, between $5.2 billion and $6.6 billion could be saved annually by using this kind of a system. When we have just finished going through the budget summit and when all of our user taxes have increased to reduce the deficit, we ought to be looking for places to start saving money quickly.

So the debate, I believe, may well be when we are going to get a new satellite system, not if we are going to get it. If we begin moving toward the system, much equipment—for instance, Mode S, data link equipment, VORs,[4] NDBs,[5] and MLSs—and many activities—upgrading radars and consolidating control facilities, for instance—can go by the wayside. By beginning the transition to the new type of satellite system as quickly as possible, by moving the bureaucracy as fast as we can, everybody will be better off. We are very comfortable that technologically we can meet the time frame we suggest. We are not at all comfortable, however, that bureaucratically we can meet it. The challenge of adopting a satellite system exists for the user community, GAO, and the Congress of the United States, which now, suddenly, after 9 years of history with the NAS Plan, has an alternative to consider. Now, we need to continue to push the bureaucracy in the direction in which we need it to move.

[4]Very high frequency omni range station.

[5]Nondirectional beacon.

Mr. John Thornton

Senior Director, Legislative Affairs, National Air Traffic Controllers Association

I will limit my remarks to staffing and human resources issues. There is a disagreement between FAA and the National Air Traffic Controllers Association (NATCA) on the number of controllers in the ATC system today. FAA will tell you that there are more controllers now than there were in 1981. NATCA, on the other hand, contends that there are 2,000 fewer controllers than there were in 1981. Who is right? Well, it depends on what you think an air traffic controller is. Is it someone who spends part of his or her time separating air traffic while the majority of his or her responsibility and accountability lies elsewhere? Or is it, as we believe, someone whose full responsibility lies in providing for the safe and efficient flow of air traffic?

FAA seems to believe that more can be done with less and that a portion of that "less" can perform on a part-time basis. NATCA completely disagrees with these assumptions. We believe that the system has gotten past the point of being able to survive on best wishes and sacrifices. During the initial rebuilding phase after the disastrous strike of 1981, the use of supervisors and staff specialists as air traffic controllers was necessary. Everyone pitched in to keep the system running while looking forward to the promised rebuilt system. Of course, we all know from experience that the rebuilding phase was never completed. FAA still insists that the new technology will pick up the slack.

What is the answer to this dilemma? We believe that the government must hire and train an additional 2,000 air traffic controllers. There is, however, a demonstrated pool of talent available to FAA—those controllers fired in 1981. I will not try to justify the strike, but it seems that enough is enough. The government invested in the training of these individuals, and their expertise remains available. There are substantial benefits to this remedy. Training time would be greatly shortened, and training would begin with proven employees. At our recent national convention, 75 percent of our membership voted in favor of allowing fired controllers to reapply and compete for air traffic controller positions. Should the thought of rehiring those people be too distasteful, then FAA must hire the additional controllers needed and set aside the necessary funding to operate the FAA Academy around the clock and allow for overtime at the facilities to do the required on-the-job training.

The first issue I was asked to focus on is the shortage of controllers in New York, despite FAA's pay demonstration project, which went into effect June 18, 1989. It covered the following air traffic facilities: New York Center, New York terminal radar approach control facility (TRACON), Chicago Center, O'Hare TRACON, O'Hare Tower, Bay TRACON,

Coast TRACON, Los Angeles International Tower, and Los Angeles TRACON. The stated purpose of this program was to attract and retain qualified controllers at those identified hard-to-staff facilities. From the five quarters of information available, we should be able to identify trends. We all know that traffic in the New York area continues to grow and delays are increasing. The only thing not expanding is the number of controllers and specifically the number of full performance level controllers (FPL).

At first look, we would have to say the project has been successful in helping the New York facilities attract and retain controllers. Since the beginning of the project, New York Center has attracted an additional 67 controllers. However, the purpose of the project was to attract qualified applicants from other facilities. In New York Center's case, 50 controllers came from the initial hiring out of the FAA Academy. Critical staffing levels at all en route centers make it difficult for New York Center to recruit FPLs from other centers. While there may be interested applicants at Indianapolis, Cleveland, or Washington Centers, those employees cannot be released to go to New York Center because their current facility already has a staffing emergency of its own. New York TRACON, on the other hand, has attracted an additional 50 controllers. Of those, 24 were previously qualified at other air traffic facilities. So New York TRACON is doing somewhat better than New York Center. Unfortunately, the majority of those transferred controllers came from the surrounding control towers, which greatly assisted the TRACON but did a disservice to the New York towers at Kennedy, LaGuardia, and Newark. As much as anything else, this reduction in staff at various New York towers may have led to the increase in delays in the New York area.

The raid on experienced controllers led to the following staffing problems in the New York towers. Of the 24 positions for FPLs that LaGuardia is allotted, it has only 9. Six have less than 2 years' experience. At Kennedy, 15 of 26 allotted FPL positions are filled. The average level of experience of the controllers at Kennedy is a year and a half to 2 years. Newark does a little better. Of the 24 allotted FPL positions, 11 are filled. The average level of experience there is 5 years. Forty-one percent of those controllers who left the tower over the last 2 years went to pay demonstration facilities.

The pay demonstration project is an excellent tool if utilized correctly. It has shown that there is interest in moving to the hard-to-staff facilities when the price is right. If we are going to make the investment, we must

ensure that it benefits the system. NATCA recommends the following modifications to the pay demonstration program to assist the New York area. First, FAA should require that a percentage of incoming personnel to New York Center and to New York TRACON be FPLs. For example, FAA should require that 70 percent of those incoming be FPLs and 30 percent be new graduates of the Academy. FAA should set aside the necessary funds to transfer FPLs from other parts of the country to New York or any of the other pay demonstration project facilities. Second, the New York tower's status should be upgraded immediately so that the facility does not continue to lose the vast majority of its experienced controllers to the TRACON. This would do two things. It would make the bidding into the TRACON less desirable from the New York towers, but if people from the New York towers would go to the TRACON, replacing them would be much easier. Third, FAA should also set aside a certain amount of funds to move controllers back to their former facilities should they not qualify at the pay demonstration facilities. Currently, if the controller does not qualify at O'Hare, for instance, FAA will send him or her to one of the surrounding towers. This sort of transfer means the controller lives in that expensive area but does not get the 20-percent pay increase.

The second issue I was asked to address is what FAA should do about its controller trainees. The task of an air traffic controller is a very difficult one. Not everyone is qualified to be a controller. Although a high washout rate in training is not desirable, it is expected to some extent. Many, however, feel that the current failure rate is too high even for this demanding profession. We feel that FAA may be casting its net too wide and is not attracting top-caliber candidates to the field. GAO has found that applicants who score high on the controller aptitude exam have the best chance to succeed. It currently takes 100 applicants to produce 1 FPL. All too often, candidates scoring lower than 90 percent on the initial test are referred to the FAA regions for hiring.

Among the major reasons most often cited as impediments for FAA's recruiting is the reputation FAA and the government in general have as employers. This situation may have been worsened after the experience of the last the budget cycle and its threatened furloughs. There is competition from industry, and FAA does not have an ongoing recruitment program.

We recommend the following initiatives to assist FAA in attracting high-caliber candidates to the field: (1) FAA and NATCA should formulate a long-term recruitment program, in which current controllers and first-line supervisors visit market areas—colleges, trade schools; (2) FAA

should support legislation[6] to compete with private industry; and (3) legislation should be enacted to move the ATC system and its controllers into a quasi-government corporation. This would free FAA from restrictive government recruitment and personnel rules.

The third issue I was asked to focus on is the length of time it takes an air traffic controller or maintenance technician at FAA to reach the full performance level—3 to 5 years. So often, cumbersome civil service rules tend to inhibit the agency's ability to reduce the time for reaching the full performance level. FAA should seek the authority to do away with time-in-grade requirements. Currently, controllers and technicians are kept from more rapid advancement by the restrictive requirements. The agency should also seek the authority to allow the technicians to "test out" at will. Technicians come to the agency with varying degrees of experience. Some may be able to progress much more quickly than others; yet the most capable are held back by artificial rules in FAA's training manuals.

The time has come for FAA to change the way it does business. Too often, we have watched the agency hide behind the banners of air safety and bureaucratic rules, when in fact it should be reaching out to stabilize the present environment and prepare for the 21st century. All other facets of the aviation community are moving forward. FAA at times seems stagnated and lost. Time for change has arrived, and we cannot afford to be left behind.

[6]For example, H.R. 4741 from the 101st Congress.

Mr. Hart Langer

Senior Vice President of Flight Operations, United Airlines

Next to the government's activities to ensure safety, no other aspect of the government's involvement in aviation has as profound an impact on operations or the cost to the traveling public as ATC. GAO's oversight role is crucial to the Congress' understanding of the issues in airspace management and ATC. If the United States is to continue leading in air transportation, the limited moneys available to aviation must be spent wisely, with decisions based on the most informed analyses, in order to be responsive to changing requirements of the airspace users (i.e., the military, general aviation, and the airlines).

For those who have been in aviation a long time, it is apparent that none of the basic issues are new; only the players have changed. ATC, as we know it, developed in a different technological age. The entire ATC infrastructure for communications, airborne navigation, and surveillance of aircraft is mostly 30 to 50 years old. The structuring of airspace control sectors and the human involvement in the separation and ordering of air traffic has remained unchanged for decades. This arrangement is not intrinsically wrong, unless it gets in the way of efficiency. Unfortunately, it does. In fact, the NAS Plan was conceived to increase efficiency in ATC by taking advantage of what was the new technology available 10 years ago. While some elements of the plan have been completed, the bulk of the items originally touted for their gains in productivity and efficiency are behind schedule and over budget.

A fundamental flaw is that planning and design processes do not reflect well the evolving requirements of aviation system users. We were pleased to note some improvements in this area in the attitude and policies expressed by the current people in charge of R&D at FAA. Efficiency is the key to maintaining safe and affordable air transportation. Achieving efficiency is where our focus must be in the coming months. Efficiency, of course, means many things to many people. In airline flying, it relates directly to the cost of producing an available seat-mile or ton-mile of air transportation, determined by how much time it takes and how much fuel is burned in going from point A to point B. Truly optimizing this alone in today's ATC system would lead to flying very few airplanes at a time so that their flight paths could be completely unconstrained in speed, route, and altitude. In order to prevent delays in accessing the airspace, which would result from this process, it is necessary to meet two requirements at once. We must optimize the efficiency of individual flights and remove restrictions of access to the airspace. Although these requirements sound mutually exclusive and impossible, they are not. To achieve both requires managing the airspace more efficiently, in part by adopting new approaches.

Not all improvements require the addition of new technology. Sometimes a "can do" attitude is all that is needed. For example, our dispatch department at United Airlines creates flight plans each day with routes that are optimized for the then-existing wind patterns, referred to as least-time tracks. Let me give you an example. On a typical transcontinental flight, the difference between the least-time track and FAA's preferred route is about 20 minutes of flying time and about 5,000 pounds of fuel. By coordinating the approval of a dozen or so such flights daily through FAA's central flow control facility, we at United have saved 165,000 gallons of jet fuel in October alone, which translates to an annualized savings of about 2 million gallons. All of this occurred shortly after the current Middle East situation evolved, with nothing more than a "can do" attitude on the part of FAA. Now, while this process is very labor-intensive for FAA, new plans are under way to expand this capability through early coordination among FAA facilities of several airlines' daily route analyses. FAA has called this program Wind Routes and will phase it in on a modest basis beginning December 13, 1990.

Another FAA program to increase the efficiency of flights, the Direct Route Program, provides truly random flight optimization for individual flights. Unfortunately, it is currently available only at 39,000 feet and above, well away from the routes between all but a handful of city pairs. It is not very practical at the moment, but FAA has every intention of expanding the parameters, lowering the altitude above which lateral navigation can be optimized.

Now, to go much beyond the means for increasing the efficiency of high-altitude cruise flight, some changes to ATC processes and the airspace structural organization may be required. For flights to be efficient, airplanes need to take the shortest possible common path going to and from terminal areas. Recently, in response to increasing numbers of flights, modifications of ATC procedures have resulted in longer common paths. The airways are becoming one-lane roads on which passing is impossible, often for over 1,000 miles. The inefficiency of this practice is enormous.

New technology in navigation, communications, and surveillance should be applied to change the present labor-intensive approval and control processes. We must not continue to hand carry each individual flight through the airspace with the constant attention of controllers on the ground. It is simply not efficient to do so. Nor can we reserve such large chunks of airspace for single flights. The precision available for both

navigation and surveillance makes this current waste of airspace unnecessary.

Increasing the efficiency of the ATC system, and recognizing the difference between airspace management and traffic management is important. Airspace management means the application of rules and procedures to take maximum advantage of available airspace and accommodate users' desired trajectories. Traffic management, on the other hand, means the control of traffic demand at all points in the system to ensure that the existing or forecast capacity of the ATC system will not be exceeded. Traffic management programs provide an important safety valve to ensure that system failures or adverse weather will not create unmanageable traffic situations. But the programs do not further our joint goals of efficiency and access to the airspace. For this reason, further automation of traffic management programs will only institutionalize restrictions to movement and mask the real problems of insufficient capacity in the ATC system.

The most pressing needs among the programs of the Advanced Automation System are those that will accommodate the new air-ground communications links and the new satellite navigation system—GPS and a system providing automatic dependent surveillance—to supplement and back up radar. There is no question that the airlines are enthusiastically looking to new airborne avionics to ease controllers' work load and to increase controllers' comfort, while handling greater numbers of aircraft per hour.

Given the high percentage of airplanes equipped with on-board flight management systems and the almost universal use of LORAN C in the general aviation fleet, I can see no benefit in investing hundreds of millions of dollars in MLS. MLS can be bypassed by using the existing and planned airborne systems such as GPS or GLONASS[7] coupled with synthetic vision systems. Just at O'Hare, for example, where there are currently eight instrument landing systems installed, it would be necessary, if we were to proceed with MLS, to install eight MLSs. All of this equipment at the airport could be replaced with the installation of one piece of hardware called a pseudolite, or a phony satellite, which would enable airplanes to precisely approach at Category 3 weather minima. The eight pieces of hardware that would be installed for MLS would cost at least 8 times as much as one pseudolite.

[7]GLONASS is a satellite system being used by the Soviet Union.

I want to take some issue with Mr. Howe [a fellow panelist] on the subject of TCAS and what it can do to enhance the efficiency of the airspace system. TCAS, which is just entering regular service, holds great promise for attaining the joint objectives of efficiency and access to the airspace. Using procedures that are analogous to visual separation, controllers could pass the responsibility for separation to pilots under specified controlled circumstances. This technique should allow the same safe increase in traffic as when visual separation is applied today, but with increased reliability due to the electronic determination made in the cockpit of where the other airplanes are. TCAS provides a means for pilots to establish and maintain a specified interval behind a preceding plane arriving or departing. If we can space planes more precisely on final approach, we can increase every runway's capacity by 25 percent.

Under a memorandum of understanding with FAA, United is participating with FAA in preoperational trials of automatic dependent surveillance and direct pilot-to-controller communications via the satellite link. For those of you who are not familiar with this, in performing automatic dependent surveillance, the aircraft's inertial navigation system or satellite navigation system automatically and regularly sends to FAA via satellite a report of what the aircraft's inertial position is. FAA can then take this information from all of the airplanes that are over the Pacific Ocean, for example, and, where radar is not available, establish their positions as radar would.

One of the most important efforts in data communications is known as the Aeronautical Telecommunications Network. This program is defining message protocols and interfaces so that any message between ground and air can pass on any link with transparency to pilots and controllers, efficiently using the radio frequency spectrum. Air traffic controllers can then be relieved of the burden of passing advisory and routine information to pilots over the voice control channels.

These services, coupled with GPS navigation, hold the promise of raising the efficiency of oceanic flight and ATC to domestic standards. Clearly, these new airborne technologies hold great promise for increasing efficiency if they can be rapidly implemented into the ATC system. But these technologies will change many of the rules of managing airspace that have been in force for decades.

Shortly, FAA will publish its newest vision of what the airspace and air traffic will look like with this new technology in place. This is an important first step, but the document has got to be in a loose-leaf binder so

that the vision may be continuously molded to reflect the best estimate of requirements. There will be no grand turnkey system to be switched on at midnight some day in the year 2015. Instead, we have got to implement manageable pieces along the way as automation systems become available. This means processing some data outside the main computer and patching existing software in some instances. Implementing a system piecemeal presents a difficult challenge for certifying and maintaining software, but it is unrealistic to expect that ATC can keep pace with totally centralized automation systems any more than industry can.

To be responsive to the new realities, all NAS Plan programs should be related to the new vision, canceling those that are no longer relevant and redefining others. To prevent the past mistake of spending years refining a system that the user does not want or need, we must increase the use of preoperational field trials, coordination, and demonstration. The FAA Technical Center could manage the technical development of new systems and procedures while working much more effectively with FAA's Flight Standards and the Air Traffic Service to certify and refine procedures. If we can do a better job of this, we certainly can shorten the gestation period between the conception of a new idea and its delivery to the field. Above all, I would ask the government to take maximum advantage of the capabilities of new airborne avionics and work with the users to optimize flight paths and lessen the involvement of the ATC system to lower ATC costs.

Aviation Safety Panel

Mr. Anthony Broderick

Associate Administrator for Regulation and Certification, Federal Aviation Administration

At midyear, I came across an article in the Conde Nast Traveler entitled "The World's Safest Airlines." From studying accident rates over the past 4 years, Gary Stoller found that the four safest airlines in the world were regulated by FAA. In fact, FAA is responsible for overseeing 6 of the top 10 and 10 of the 25 safest airlines in the world, as he ranked them.

Monthly aviation statistics through October of this year reflect a good accident history over the short term. Better than most people, however, we in FAA recognize the folly of resting even for a brief time on these impressive statistics. An excellent study by Boeing's Earl Weener that analyzed accident rates for the entire world's commercial jet fleet pointed out we urgently need to do better. I agree with him. While accident rates are very useful as analytical tools, it is the number of accidents that is important in revealing the real impact of these tragedies and in affecting public perception. If, as we expect, air traffic is to double in the 1990s, we need to reduce by half our accident rate just to hold our own. To achieve the needed improvements, we must, over the next 10 years, make an extraordinarily safe system more than twice as good as it is today.

The result of the tragic Aloha 737 accident was that industry and government experts around the world reacted immediately and forcefully to the safety issues that arose. The elimination of inspection as the primary means to address safety problems that fatigue can cause in aging aircraft is now well-known. With this measure and the newly mandated Corrosion Detection and Control Program for these same aircraft, the substance of the issue of aging aircraft has been appropriately addressed.

Our Aircraft Certification Service, which approves the design and production of new aircraft, will be successful because this oversight will be in partnership with, and not despite, the industry. We learned long ago that inspections cannot implant quality into a product. We must work with manufacturers and designers to ensure that issues are identified early in the process, production systems are properly designed to provide cross-checks, and potential problems in hardware design and in assembly are uncovered before they materialize. Above all, we must ensure that the speed with which we introduce new models or produce approved designs is not driven solely by customer demand, but is modulated greatly by the need to satisfy the demand for safe aircraft.

Along with the increased diversity of models and growth in the manufacturing rate has come a variety of new technologies. Industry's use of

them presents regulators with substantial difficulties in certifying their safety. We must invest heavily in new curricula for our inspectors and provide time for them to attend this training. We will continue to rely heavily on outside sources for training materials. We simply must build a good core training program for our Aircraft Certification and Flight Standards staffs.

New technologies bring more than concerns about the mechanical hardware. Designers cannot forget that people interact with equipment. We have just released for public comment a draft plan that lays out, for the first time, a comprehensive approach to research in this country on the important human factors in civil aviation. An integral part of the human equation is the pilot's experience and training. New training regulations, the Aircrew Qualification Program, have just been issued that, for the first time, require the extensive use of modern educational concepts about hardware. Using training centers, small airlines will be able to share the cost of obtaining the most sophisticated, and, we hope, the most cost-effective training available. All of these initiatives, by the way, were begun in 1987 as a cooperative government-industry effort led by the Air Transport Association. Once again, these efforts show the power of such alliances.

GAO asked that I address six issues in this presentation. So let me very quickly summarize responses to them. First, the concern about diminished safety caused by continuing shortages—GAO's term—of inspectors, maintenance technicians, and FPLs. With regard to staffing, I think we have finally turned the corner on the identification of our staffing needs. But it is not clear that with our nation's current budget difficulties we will be able to achieve the staffing goals we have set in time to ward off criticism. At present, we are not short of air traffic controllers. Our staffing goal for controller work forces in fiscal year 1990 was 17,000. As of September 30, 1990, the end of that period, the total number of controllers was 17,226. Of these, 91 percent, or 15,635, were operational controllers. During fiscal year 1991, we want to increase that total slightly to 17,495.

The second issue is the affect of the planned consolidation of TRACONs on safety. The overall safety of the system will be enhanced with the consolidation. Systemwide, consolidated TRACONs will have all available measures to enhance safety that we can provide. Consequently, all consolidated locations will have the same enhancements as the more established and busier locations, and all locations will receive future improvements at the same time. Further, systemwide standardization

will also be greatly improved, and since consolidated locations do not close at night, all airports will have a full range of air traffic services available at all times.

Initially, the size of the work force at these consolidated facilities will not be affected, except for a slight increase during the transition years. Ultimately, as new software enhancements such as advanced en route automation come on-line, productivity will increase, but not initially. Work force qualifications are not envisioned to change. Tower radar controllers will remain specialized.

Implementing improvements in the system requires training the people who use the equipment. But initially in the consolidated TRACON, no specialized training will be implemented. The use of common equipment and software systemwide should result in significant economies of scale. We do estimate that the number of relocations brought about by consolidation will be substantially over what they are currently. But ultimately, because the possibility for professional growth is greater in a consolidated facility, the number of people permanently changing their stations should actually decrease, and costs should be lower.

The third issue is whether FAA can assure the flying public that implementation of the new self-audit program will provide adequate oversight of airlines' operations. The new internal compliance audits and reporting by the airlines of their own noncompliance result in airlines' producing an in-house data base that did not exist before and that FAA inspectors can now review. This program is a new tool that can strengthen our capability to oversee airlines. Simply stated, for those airlines with internal audit programs, we are obtaining an additional commitment of resources to improve safety at no cost to the taxpayer. Such initiatives can only strengthen our capability to oversee airlines.

The fourth issue is the targeting of FAA's inspections. We have a number of initiatives under way to improve our inspections. Major modifications in our Work Program Management System and computerized data base will be forthcoming. The new system is being introduced as our Burroughs workstations are replaced. There are two other major tools we will use to focus our resources. One is the Air Carrier Analysis System that has been developed jointly with, and largely funded by, the Military Airlift Command as an outgrowth of the extraordinarily close working relationship forged in the last several years. Finally, we have the input from the inspectors themselves to focus inspections. Inspectors provide input for both the work program guidelines directive, which is updated

every year, and a quarterly review of the need for in-depth inspections by national teams.

The fifth issue is the safety of leased aircraft. We believe that increased leasing per se does not present a safety problem, primarily because leasing is a form of financing by the owner. Because safety regulation is based on the operator and the maintenance organization, it is generally blind to the owner himself or herself. Widespread increased leasing does, however, present a number of challenges to the efficiency of our operation, both in government and in industry. This deserves attention in the coming years.

Finally, there is the issue of FAA's increased reliance on contractors for maintaining the ATC system. The safety of the ATC system is not being jeopardized by this practice, nor would we ever allow it to be. FAA's Airway Facilities organization is responsible for maintaining the NAS Plan whether FAA technicians or contractors perform the work. When contractors are used to maintain equipment, all appropriate agency directives and quality control criteria still apply.

Let me mention our rulemaking initiatives. We have had a lot of problems keeping rules current, and we will continue to have problems as long as there are rules. The new administration has brought a fresh breeze of cooperation between the Office of the Secretary and FAA staff. Part of this new cooperation is a series of initiatives to speed up and improve the rulemaking process, which today, I would say, moves with glacial speed. The centralized Office of Rulemaking has done an outstanding job in the last couple of years, and it has increased the number of rule changes probably by about 50 percent or more.

We have a number of strategic issues that we must consider. Building an international consensus on safety standards is one of them. Harmonizing our standards with the Europeans', both in aircraft certification and aircraft operations, is a very important task that is going to take an increasing amount of our time.

In closing, I think it is important for people to recognize that for us to do our job, air travel must not only be safe, but the public must perceive it is safe. According to a recent paper on this subject by Arnie Barnett from the Massachusetts Institute of Technology, in air travel throughout the world, the mortality risk declined from the 1960s to 1986. Because so many people in the mid-1980s saw a potpourri of dangers ahead, Barnett decided to reexamine those statistics to see if these pessimistic

views were true. He concluded that U.S. air travel was far safer throughout the 1980s than in any previous decade. The risk of death per flight was so low that even America's most frequent flyers faced a minimal cumulative risk. He also concluded, however, that American air travelers had become more, rather than less, nervous in recent years. He attributed this feeling to increased media attention.

I strongly believe that we need to make an effort to better inform the public. With limited resources in all of government, we need to make informed judgments when committing tax dollars to eliminate risks. Barnett's analysis is one of a number that appear to indicate we are failing in our efforts to inform the public. We need to cooperate, and we need to educate the public. I hope that this conference will be viewed as the time that we began to do just that in the 1990s.

Mr. Jack Albertine

Chairman, President's Commission on Aviation Safety

I want to pick up on a couple of points Mr. Broderick [a fellow panelist] raised, because they go to the heart of what I think was one of the most important responsibilities of the Aviation Safety Commission, which began in the spring of 1987 and reported in April of 1988. The atmosphere in which the Commission began its work was one of media hysteria. It was the year of "near-miss midair collisions." Aviation journalists in Washington, in New York, and on the West Coast believed that there was somehow a relationship between economic deregulation and a perceived deterioration in the safety of the system. One of the things that the Commission was successful in doing was putting to rest this notion that somehow the system was not safe or that the safety of the system had somehow deteriorated. It is safer to fly, I would hazard to guess, than it is to walk around at night in your own house. In fact, I used to say, after the Commission report was issued, that probably the most hazardous thing a flyer does on a flight is being on a flight where smoking is permitted.

One of the things that struck me when we undertook this task was just what a good government agency FAA is and how dedicated it is to safety. That goes from top to bottom. I was very impressed with the quality of the people in FAA, their dedication to safety, their confidence, and their esprit de corps. I was also very impressed with the dedication throughout the industry—among pilots, flight attendants, and managers—to safety.

In the report, we found that FAA had some significant organizational problems. Largely, my feeling then was, and my feeling today is, that those problems are not so much caused by FAA, but by the fact that FAA unfortunately is within the federal bureaucracy. There is no question that FAA's procurement mechanism is absolutely abysmal. As a result, technologically it is not a state-of-the-art agency. I think that is fundamentally a problem not of FAA but of the federal government's mandated procedures for procurement. There is no question that FAA's personnel management is hamstrung by the regulations of the Office of Personnel Management and that rulemaking is cumbersome partly because of the duplicative responsibility between FAA and the Secretary of Transportation. But even though the relationship today between the FAA Administrator and the Secretary of Transportation has obviously improved, I do not see any reason why FAA is really part of DOT or part of the federal bureaucracy. I still argue that it is a good idea to have an independent FAA, funded by users, operating outside of the constraints imposed upon the bureaucracy by the rules governing procurement and personnel

management. Also, it would be an excellent idea to have an FAA administrator in place for more than a few years.

The reason given by those who do not favor an independent FAA is that aviation safety has an incredibly high profile. As an independent agency, people argue, FAA will have difficulty gaining the attention of the Congress. However, if there are 7,000 stories about aviation safety, people are going to worry about the question. FAA will never have trouble getting people's attention in this town or on Capitol Hill. Therefore, the notion that independence will lead to a reduction of FAA's influence within the executive branch is not a terribly good argument for why the agency should stay within the DOT.

I would come out today just as our report concluded on the fundamental issue of reorganization. From a conceptual point of view, this is an agency that is technical, not political, and that really does deserve to be out on its own. Every once in a while, it is a good idea to shake up an institution. And the way to do it is to change it. Frankly, I think FAA could use a bit of a jolt. Putting it out there on its own and requiring it to run by itself, with all the visibility that entails, would be a good thing for FAA.

Admiral Donald Engen

President, Air Safety Foundation

Achieving aviation safety is nothing more than flying professionally—seeking good operating principles and then flying that airplane to the limits of one's ability. Everything that moves has its element of risk, so good flying safety is really good risk management. Knowledgeable people understand this, and the people who spend their lives in the sky understand this. The point I am trying to make is that safety cannot be legislated. Aviation is highly dependent on people, and people are prone to make mistakes. Therein lies our greatest challenge. In this avocation highly dependent on people, the public expects zero tolerance for defects.

From January 1 through September 30 of this year, 508 people were killed in all 50 states in airplanes that weighed 12,500 pounds or less (not airliners). In that same time period of 9 months, 600 people were killed on the highways in Maryland alone--100 more than were killed in all 50 states in airplanes. Why is it that we accept deaths on the highway and yet we rise up in horror over fewer deaths in aviation?

Efforts to improve safety have been far more effective in aviation than in other forms of transportation because of the professionalism of the people involved. Pilots understand and work to meet the strict standards that have been set. They cannot fly in the aviation system unless they meet the standards for training requirements and certifications, and people are taught to follow the regulations.

The Independent Safety Board Act of 1967 established the National Transportation Safety Board (NTSB) to look at all accidents. Yet today, there are fewer than 340 people in NTSB, and its budget is 0.006 percent of FAA's. We rely on NTSB to blow the whistle on the different modes of transportation in the United States. If we are going to prevent accidents caused by people, we must place much more emphasis upon learning why accidents happen. We need to emphasize NTSB's efforts and look particularly at accident reconstruction. Accident investigation does provide a means of achieving greater safety.

Recently, our aviation accident rates have been running roughly 0.019 accidents per 100,000 flying hours for the airlines, about 1.3 accidents per 100,000 flying hours for the military, and 7.25 accidents per 100,000 flying hours for general aviation. These accident rates reflect the degree of control and standardization that can be placed on people in each of these aviation communities. In general aviation, with 210,000 airplanes and roughly 500,000 pilots, there is not the same standardization that we find in the airlines. The airlines are doing superbly because

pilots relate their efforts to job security. We need to work harder in general aviation to meet standards, but we must remember that the great majority of general aviation flying is not job-related.

Let me mention one area where all of us passengers really need to be concerned. This is an area where I see nothing being done, and yet in every single airline flight I see poor judgment, lack of consideration, and hazard. This area is the regulation of carry-on luggage. Every airplane has a center of gravity limit, which pilots and operators understand. There is a very finite range for the center of gravity that depends on the load of the airplane. The permissible range is inviolate; if the center of gravity moves too far from what is permissible, the airplane will nose up. The pilot will not be able to control it, and he could crash. The converse is true for a center of gravity too far aft.

I think carry-on luggage is a problem in the making, and each one of us has got to deal with that every time he or she gets on an airplane. The normal passenger is said to weigh 170 pounds and carry 10 pounds of luggage. I have seen those numbers doubled quite frequently. Passengers are totally ignorant of the consequences of their overweight bags, and passengers are not being guided properly by the boarding agents. The rules and regulations are not strict enough with respect to carry-on luggage. Though it is possible that an airplane can take off being thousands of pounds overweight, that extra weight provides risk in flight. I've seen some pilots hold up the airplane in order to recompute the center of gravity because of what has come on-board. That is most wise. Worldwide, over the last 5 years, there have been at least five airline accidents where an improper center of gravity was a contributing factor. Fortunately, there was only one such accident in the United States.

Now, why is it that we cannot regulate passengers to one carry-on bag? We ought to think about that. I think airlines would welcome it, provided it was mandatory. I know that pilots would certainly welcome it. We would have improved aviation safety. I am willing to bet that sometime in the not too distant future, we will have an unfortunate accident, in which cabin luggage will play a very important part in the number of people who survive. Not only does carry-on luggage affect a plane's center of gravity, it also presents a risk to passengers in a crash by becoming free-flying objects and by reducing people's ability to exit.

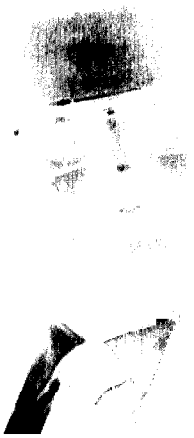
Having said that, let me talk briefly about the Congress' proclivity to direct that FAA certify absolutely every airplane and every airline flight.

This policy is driving up the number of people employed by FAA, and there is a limit to the number of people that the United States can afford to employ. Right now, 60 cents out of every dollar that FAA receives in the budget goes for people, and the Congress is trying to establish more regulations that would require more people to do more things at FAA. This is compounding bureaucracy and the cost to the taxpayer.

There is a need to address the manner in which standards are maintained in complying with the Federal Aviation Regulations. The onus is on the operator to comply with each regulation. It is up to FAA to monitor compliance. Now, it is not in the best interest of aviation or the taxpayers for us to increase FAA's responsibility to monitor the aviation system. Let us not make FAA bigger; let us not require FAA to be behind every mechanic turning a wrench or to sit behind every pilot flying an airplane. We have got to put our trust and confidence in those pilots and airline operators. I do.

Mr. Clyde Kizer

Senior Vice President, Airline Operations, Midway Airlines



The aviation safety issues facing the air transport industry are generally no different today than they have ever been. Our basic concerns of mechanical reliability, structural integrity, and human error remain paramount. There are significant differences, however, in the level of expectation and perception of aviation safety. Our nation, the Congress, FAA, the media, the traveling public, and airline management expect safety to continuously approach perfection. Indeed, there is considerable merit in the Boeing Company's recently publicized suggestion to redirect our efforts regarding safety in light of the significant increase in the volume of air traffic expected within the next decade. We simply cannot tolerate the accident projections from our existing rates, despite the fact that those rates are exceptional.

The combined international efforts of regulatory agencies, manufacturers, and airlines within the framework of the Air Transport Association's Airworthiness Assurance Task Force (AATF) could serve as a means to achieve the required redirection for improved aviation safety. A similar collective effort will be required to improve our existing performance, since we attempt to do as well as humanly possible in our individual efforts. The resources of technically qualified personnel, funding, and time are, and always will be, limited. Therefore, we must share those resources to maximize our ability to improve safety while minimizing the time to do so.

The efforts of the AATF were significant in many regards. The means to ensure the structural integrity of aging aircraft were redefined. Mandatory corrosion control programs were established and standardized. Improved programs for industry communications, human factors, and R&D efforts were explored. These programs—achieved through the considerable efforts of men and women of integrity, representing the world's expertise on the airworthiness of aging aircraft—will have a positive effect on the safety of our industry far into the future.

The recommendations of the AATF have affected the planning and budget of almost every airline in this country. At Midway Airlines, our current planned budget includes about $350,000 for each of 12 DC-9 aircraft; this money will be used to implement 32 service bulletins that are a result of FAA's directives for maintaining the airworthiness of the aircraft. The costs will increase as we implement the Aging Aircraft Program's requirements for controlling corrosion. The programs to control corrosion will have a greater impact on aircraft maintenance programs than perhaps any other program for aging aircraft.

Fault detection remains a major problem in verifying structural integrity. Although the recently established Center for Control of Non-Destructive Testing, Research, and Development holds promise for improvement in this arena, our front line of defense for the foreseeable future will continue to be vigilant, well-trained, and qualified inspectors. The AATF addressed the training and qualification of inspectors to develop permanent industry standards.

Have these efforts improved the safety of the air transport industry? The answer is an unqualified affirmative. The greatest impact was achieved in the establishment of a collective forum for exploring the issues. That forum must be preserved because the logistics and mechanisms for establishing communications, participation, commitment, and mutual trust are too exhaustive to be reestablished rapidly.

Obviously, all of the issues regarding safety in the air transport industry have not been resolved satisfactorily, and they never will be, for safety demands constant vigilance. The result of motion is risk. The result of change is risk. The result of the involvement of human judgment is risk. We are part of an industry that involves changes in technology controlled by human judgment to move people faster and faster from point to point. We can never relax our efforts to minimize and control the resulting risks.

In the short term, the greatest concern that I have is the limited availability of qualified technical personnel to accomplish the difficult and demanding maintenance required by our complex aircraft fleet. Qualified mid-level technical managers are in especially short supply, but so are other members of the work force and mechanics. Well-qualified middle managers are in demand by all components of the industry—the manufacturers, FAA, and the airlines. There are no schools to provide the managerial skills required and the frontline experience essential for effective technical management.

One issue I was asked to address is FAA's self-audit program. Knowledge is the most effective means to minimize risks. The trend in the past toward onerous civil penalties for noncompliance was rapidly driving the air transport industry to communicate less with FAA. For a period of time following deregulation, communications between airlines and FAA suffered. I believe that the present attempt by FAA to encourage self-auditing and self-disclosure will have a dramatic and positive impact on the safety of the air transport industry. Ultimately, aviation is founded upon a basis of trust. The people involved in this unique industry are

well aware of the consequences of their responsibilities. They bear their responsibilities with a passion that does not exist for most endeavors. A unique bond of integrity exists among all who dedicate their lives to aviation; few in this industry would risk discrediting that bond.

Airport Capacity and Security Panel

Mr. Charles Barclay

Executive Vice President, American Association of Airport Executives

Today, I will address airport capacity and security problems we will face in the next 12 to 24 months and GAO's role in addressing these problems. I presume you know about the carnage that is taking place in the airline industry. The hemorrhage of cash is due in small part to the economy and in large part to Saddam Hussein and the fuel crisis. According to projections, in the fourth quarter alone, carriers such as American Airlines will lose up to $300 million. You can imagine what is happening to the weaker airlines.

On the basis of economic forecasts, if these kinds of fuel prices and this economic condition continue through the first 6 months of next year, the issue will be how many airlines are left. We know that we can count that number on one hand. Even if some of the weaker carriers are able to survive in that atmosphere, the big three will still own all of the valuable assets in the business. The weaker ones will have held on by selling key assets to the big three, who are the only ones out there to buy them. There will be a question of whether the big three are willing to part with some cash to acquire those weaker airlines.

No matter how you cut it, with the impact of higher fuel prices and the economy, we face a drastically concentrated airline industry coming at us very quickly. It carries with it the question of what we are going to do when the clamor on Capitol Hill begins to call for reregulation as the answer to that concentration. H. L. Mencken once said that for every complicated question, there is a simple solution and it is wrong. This is good counsel for those who think that a way to answer severe industry concentration is the reregulation of routes and rates by the federal government. I believe that returning to route and rate regulation would create a less competitive, smaller industry.

Clearly, GAO will be invited to help the Congress rationalize what is going to be a required political reaction to a severely concentrated airline industry. It is my hope that GAO will help the Congress in a way that leads it to the right conclusions. Of course, we would rather have many competitors instead of a few competitors. But if a few major competitors come to constitute the airline industry—not unlike some other major industries in our economy—the federal government's role will be that of a police officer to make sure that (a) true national and global competitors give choices to consumers and (b) airlines do not become friendly oligopolists. Creative solutions are needed to make sure that the police officer's role is carried out.

The system has sufficient capacity virtually everywhere to handle the local markets of the communities with airports. The possible exceptions are Los Angeles and New York. Where we have capacity constraints, such as at Dallas, Denver, Chicago, and Atlanta, they occur because the artificially created airline hubs are unable to handle both the local market and the connecting passenger market.

The solutions to those capacity pressures include developing minihubs and increasing airline capacity at underutilized airports, rather than maintaining a few large hubs and continuing to have concentration at a few airports. I am not talking about doing away with the existing hubs. Instead, the growth in the number of connecting passengers could be taken outside of today's major hubs. We can develop more minihubs in communities that are eager to serve in that role. Milwaukee, Indianapolis, and Columbus would willingly become minihubs for the system. The result would be growth of the local market at some of these hubs in comparison to the connecting market, which we have been seeing in Chicago over the last few years. A system with a number of minihubs would cost more for the passengers and is probably less efficient in terms of fares. Conversely, too much concentration in only a few locations has severe ramifications when you run out of room or when a thunderstorm ripples through the system.

Clearly, the number of hubs must be limited. To be viable, even a minihub, for example, must have enough people in one place at one time. We cannot order carriers to develop more hubs, but the federal government could provide incentives as simple as priorities in the Airport Improvement Program for funding development at underutilized or new hub airports. And the federal government, which does not necessarily have to follow the marketing whims of airline executives, can make its own management decisions and logical plans on how to allocate future facilities and equipment to expanding airports.

We also need to better use the capacity currently on the ground. However, this gets into the worst of FAA's record, because the agency is unable to procure equipment and get it into the field quickly enough. But better utilizing existing equipment and space holds possibilities for significantly increasing the capacity of the system.

To the extent that we can add capacity at the major congested airports, we have to do that. The PFC will help us at many of those airports because they are where the passengers are. We will be creating new revenues to finance added capacity.

If I can leave you with one thought on the issue of airport capacity, it is that the only viable solutions call for adding capacity to meet demand. They do so either by adding capacity through building new facilities or by better utilizing existing facilities. Solutions are not slots and buy-sell.

One of the major advantages that we have in global competition is the efficiency of our air transportation system. Protecting that means building a system that meets demand rather than fitting demand into an available capacity via price increases because we have been frustrated in trying to add new capacity.

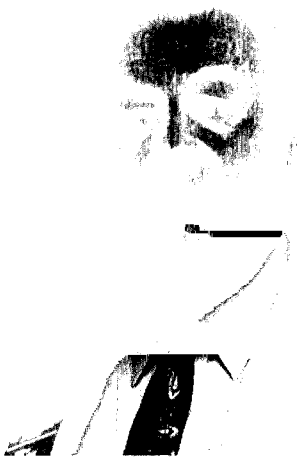
A concern I have is how the industry's increased concentration will affect current and future airport capacity, allow planning for better utilization of capacity at the airports, and allow for the development of more minihubs? Clearly, few airlines have an incentive to increase the number of hubs. Instead, they will maximize the hubs they already have. Carriers will not acquire other companies to use those companies' hubs if the carriers have hubs in the same region that can pick up the capacity.

My recommendation to you is to help the Congress avoid reregulation. Help the Congress find the path to the government's proper role of vigorous antitrust enforcement and other kinds of enforcement for the airline industry. As for airport capacity, keep in mind that the only real solutions are those adding capacity either through better utilization or new construction. Also, use the government's tools that can offer incentives to keep the carriers from making the market too concentrated.

As for security, the key issue is to make sure that we are getting real security for the dollars we spend and not just a false sense of security. Officials with DOT and FAA have done an excellent job of pursuing this goal. Some previous officials with these agencies seem to have had a "doing something, anything" attitude. We must devote a great deal of money in the system to both safety and security. Let us make sure that we spend it on real needs and not on projects that provide an emotional security blanket.

Mr. William Schoenfeld

Deputy Executive Director, Los Angeles Department of Airports



Los Angeles has a unique problem. Not only is it an increasingly busy international facility because of the expansion and economic activities in the Pacific Basin, but it is a facility whose local traffic is also building constantly.

With the advent of deregulation; the resulting emergence of larger airlines; and the creation of connecting air transportation centers, or hubs, markets have changed. Most fares have been lowered, which has resulted in more aircraft in the air, more travelers in the terminals, and more vehicles in the terminal streets and parking lots. For instance, Los Angeles now has 110 aircraft gates. In less than 10 years, with moderate growth there will be a shortage of 20 domestic and 9 international gates. Air transportation now is the most popular form of travel for both business and recreation. In fact, in many instances, it is the only way to reach one's destination.

As you know, the airport capacity problem exists today both domestically and internationally. In less than 10 years, the delays at most major domestic and international hubs will double. The cost of delays to the airlines today is in the billions of dollars and rising. Some of these problems can be alleviated, to a degree, in the short term by enhanced operational procedures, thereby producing maximum utilization of runways and taxiways, especially in periods of poor visibility. Some of these procedures could include the use of short Instrument Flight Rules[1] runways, simultaneous approach to converging runways, reduction of the lateral separation between approaching aircraft required by these rules, reduction of wing turbulence, and better and quicker response time on an airfield's meteorological data. The improvement to capacity thus accomplished would be significant, but would require FAA to provide significant funding for R&D and significant staffing efforts. Without sufficient funding, facilities that increase airport capacity will not materialize in this century. When fully enacted, the recently approved PFC will be a major contributor to the new and reliable funding, together with the remaining resources from the Airport Improvement Program.

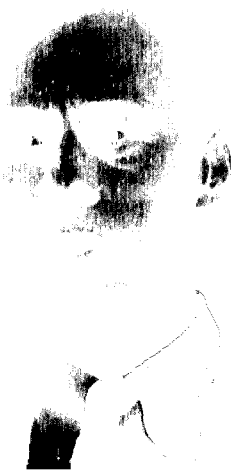
The noise from aircraft today is an unsolved problem. Unhappy communities surrounding airports become obstacles to progress and to gaining the necessary political approval for expanding airport terminals or runways. Los Angeles is a very critical and pointed example of this kind of situation. The key to the aircraft noise problem is a comprehensive national noise program. An important part of this program will require a

[1] Instrument Flight Rules govern the conduct of flight under instrument meteorological conditions.

cutoff date for all operations of Stage 2 aircraft. We are considering a date between 1999 and 2003.

Finally, we need to consider the airport needs beyond this century. We need to give serious thought to new concepts that would improve all facets of air travel, both national and international. We must continue to consider such technical possibilities as the supersonic transport aircraft, the tiltrotor, the vertical takeoff and landing, the vertical/short takeoff and landing, and other technologies we have at hand. We must continue our best efforts in finding new sites for runways and airports. In this regard, we also should not cast aside too hastily the new concept of remote transfer airports as a possibility for accomplishing these systemwide goals.

Captain David Haase
Air Line Pilots Association



Airline pilots face a daily dilemma. On the one hand, they're concerned about looking at safety; on the other, they are saying, "Will safety spending cost me my job?" While the pilots debate in this way, they have always come down in favor of safety. I will speak to you today as an active line pilot and as a representative of ALPA. I will discuss both safety and capacity issues. These issues are related since safety is compromised by overloading the system, which occurs when you put too many airplanes on the airport or too many airplanes on a frequency.

With that, I would like to talk a little bit about some of the particular issues with which our membership is concerned. First, we should not do anything that is going to make our airports less accessible than they already are. We have what we call today a system of airports, a term I use rather loosely because the system that we have was never designed as such. Rather, it evolved over a period of time. Some of our original airports sprang up in farmers' fields. And, of course, in the early days, serving the traveling public as we know it today was only a dream. Growth has taken place from farmers' fields to international airports like the one in Los Angeles. At the same time, the communities around airports have grown, too. This has resulted in a conflicting demand for the areas around the airport and has heightened the environmental concerns brought about by noisier aircraft and more frequent operations. Unfortunately, for a number of reasons, airport operators have been unable to protect their facilities from urban growth. The result has been the inability to provide required additional capacity. These conflicting demands are one of the most significant things affecting our operations. There will probably be limits on capacity, but let me talk about a couple of the things, from a technical standpoint, that we are concerned about. In particular, I would like to talk about obstacles near the airport and noise.

Part 77 is a section of the Federal Aviation Regulations concerned with objects affecting navigable airspace. The industry has been discussing the deficiencies of part 77 since 1978. Just a few months ago, a notice of proposed rulemaking, which affects part 77, was issued. Unfortunately, it would delete some of the most important recommendations made by the industry groups. First, it would delete the requirement for a public hearing to review proposed hazards. Second, it would set aside a recommendation to construct departure surfaces around airports. It assumes we only have approach surfaces that are straight into the airport. But as you well know, aircraft leaving the airport turn off to the left or right to provide traffic flexibility. By not providing departure surfaces and by not limiting obstacles off to the sides of the runways as well as straight

out, we limit the paths that aircraft can fly and, therefore, affect airport capacity. The need for a departure surface is particularly important in the view of the industry.

Another change that is needed, but not included, is protection of the approach surfaces. A technical misunderstanding in the application of this point has allowed obstacles to be built closer to the ends of runways, thereby shortening the length of the runway that pilots can use to avoid those obstacles. That dilemma needs to be resolved. As a result, we strongly recommend that FAA adopt the recommendations of the industry groups as opposed to some of the proposals that it has set forth in the notice of proposed rulemaking.

We should not set unsafe constraints, or marginally safe ones, on the operation of aircraft for purposes of noise mitigation. For example, even though Stage 3 airplanes are as much as 10 times quieter than Stage 2 aircraft, we find that to reduce noise, some airports are setting noise standards that require marginally safe vertical flight profiles. To make matters worse, some airports are allocating slots on the basis of the noise level that the aircraft produce. Such allocation creates competitive flying in that each airline strives to become just a little quieter than the other airlines.

Operating curfews are another noise-related matter that affects us negatively. If we schedule a flight very close to that operating curfew, the pilot is placed under a great deal of pressure to expedite the operation and make up for other deficiencies in the system in order to get the airplane to its destination before the curfew hour.

The Congress recently instructed the Transportation Secretary to develop a new noise policy. We believe that we can support a national policy that mandates the safe and quiet operation of aircraft. But part of that policy must also give FAA the authority to standardize safe departure procedures before we end up with a proliferation of nonstandard and risky procedures. Also, carriers should not be prohibited from making maximum use of Stage 3 airplanes.

We must also examine ways to increase the capacity of existing airports. Specifically, we need to improve the movement of aircraft on the surface, by such means as surface movement guidance control systems using lights. We also need to improve computer systems to reduce the ATC verbal overload. FAA is developing radar and computer systems for which it requires funding to implement. Such systems hold great

promise, not only for additional capacity, but also for major safety benefits. The systems would provide something like the stop and go traffic lights we have on the highway today, if you will, for the aircraft out on the airfield. We do not have that in the United States, as yet, but it has been developed to a very fine degree by the British at Heathrow Airport and elsewhere in the United Kingdom. We think it is an excellent opportunity for a major improvement.

Simultaneous operations on intersecting runways are another technique the industry has used to increase capacity. Today, we use this technique in a safe way on dry runways, but FAA has proposed using it on wet runways as well. We believe that this can be done, if the right criteria are established. What is particularly important is that the aircraft weight is properly limited to ensure that aircraft can in fact stop within the limited distance of available runway.

We should not ignore the design standards of the airports themselves, standards under question because of our dilemma about capacity. We are making much greater use of older airports. For example, Burbank and Midway Airports have no safety areas at the ends of their runways. At the end of Midway's runway, you find yourself against a concrete fence, or on Cicero Avenue. There is no room for error. LaGuardia Airport is another example, as the recent USAir accident shows. Had there been a safety area at the end of its runway, the airplane could have been towed back onto the runway, the passengers taken off the plane and put onto another airplane.

We need to bring these older airports up to today's designs and standards, an expensive proposition. We currently have nothing on the books to encourage movement in that direction. Currently, provisions allow major reconstruction of runways, but at some older airports, such reconstruction will not occur. We must find a means to bring these piston engine airports up to today's jet standards.

Turning to aviation security, we believe security for controls over cargo and mail must be strengthened. Of extreme importance are getting requirements in place for freight forwarders to apply procedures appropriate to their freight, initiating an effort to register and regulate the foreign freight forwarders that offer cargo bound for the United States, and having FAA regulate the U.S. Postal Service as a freight forwarder.

We agree with the President's Commission that the current generation of thermal-neutron analysis (TNA) machines is not yet the answer to the

problem of detecting explosives. Unfortunately, no other technology is currently available that is capable of detecting the smallest amounts of plastic explosive required to destroy a transport aircraft. We need to develop such equipment and the procedures needed for efficiently and effectively using it to detect explosives in carry-on baggage. Until such equipment is produced and implemented, airlines should be encouraged to use currently available enhanced X-ray equipment for that purpose. While the latter equipment still relies on human intervention for detection, it has been proven to be effective and is available for a fraction of the cost of TNA.

We are also concerned with matching passengers and bags. In 1987, the International Civil Aviation Organization adopted a standard requiring that. Unfortunately, only in a piecemeal way have U.S. carriers implemented the international practice of matching passengers and bags. Carriers that have implemented this procedure have found that it significantly reduces their lost-baggage claims.

And, finally, it is no secret that we have been concerned with restrictions on flight crews and their access to air operations areas as a security measure. It seems that some of our measures have not only produced no benefit, but have impeded flight operations and the flight crews' ability to perform their duties as well. We need a comprehensive standard that spells out the criteria for the issuance of, control of, and accountability for identification cards and that allows flight crews to have adequate access to air operations areas.

Admiral Clyde Robbins

Director, Office of Intelligence and Security, Department of Transportation

In anything we do, there has to be balance. That goes for security and safety because, as you know, if we are overly safe, if we are overly secure, we may as well put the airplanes in the hanger and put people in automobiles.

Through the years, I have had an opportunity to read a number of Commission reports. I think that the report by the President's Commission on Aviation Security and Terrorism is probably the best I have ever read. Of the 64 actions recommended in the report, DOT is responsible for about 42, although it shares responsibility for some of these with other organizations. Of those 42, we have completely agreed with 35. We will partially implement six of them, and we will not implement one. The latter requires that we provide additional authority for enforcing civil penalties. Because we think that there is sufficient authority in place and because additional authority has not been required by law, we will not seek it.

The Commission report also recommended that an Assistant Secretary for Security and Intelligence review the organizational structure, which had not received proper attention. As we all know, it is always easy to say in hindsight that security should receive a higher priority within FAA and DOT. But until somebody really cares about it, it is hard to move it up to a level of attention. The Commission recommended an Office of Intelligence and Security be created in Office of the Secretary, and advised DOT to create a closer relationship with the intelligence community, increase its R&D, deploy systems to detect explosives, install federal security managers, and place foreign security liaison officers overseas. The Commission called for strengthening the bilateral treaties with foreign countries. It required security measures for foreign carriers similar to those measures that serve the United States.

The report also required that the President create a method for notifying the public of threats. Although there are appropriate instances in which the public should be told of a threat, often it should not be told. When a threat is credible but too general to allow us to counter it, we must cancel flights. Moreover, there are literally thousands of such threats. If we continually inform the public of them, we would have a problem as time goes on, in convincing the public that a threat is real. A short time ago in South America, a bomb threat was directed at a plane. When personnel searched the airplane, they found the bomb and disarmed it. Such an incident suggests we must examine each threat carefully.

The Congress followed up the Commission report with the Aviation Security Improvement Act of 1990. Over the last couple of years, airports, both here and abroad, have made many improvements in security. The screeners are generally better trained. The sterile areas are better controlled, and access to the ramp areas is closely monitored. Airports are implementing identification card systems. Airports are developing contingency plans. Moreover, airports that handle international flights are implementing additional security procedures. On December 8, 1990, more stringent measures will go in place.

Overseas locations, particularly airports in France, Germany, and the United Kingdom, have already implemented many tough security procedures. Because these airports run a higher level of risk than those in the United States at the moment, they have higher requirements. France, for instance, matches baggage with passengers for domestic flights. Many other foreign countries are striving to improve their security procedures to meet the level that U.S. airlines use to operate overseas.

There were some questions asked that I will discuss only briefly. One question was, "What will be the impact of the Federal Bureau of Investigation's and FAA's assessments at the domestic airports?" We think that the assessments will tell us what actions must be taken by airlines and airports because they are responsible for the security system in the United States.

Another expressed concern was about the apparently weak enforcement of the fines leveled against pre-board screening personnel who fail to detect weapons that are hidden to test security. After discussing the matter with FAA, I do not think that its policy is less stringent in the enforcement of those requirements. It may not be fining the screeners $10,000 every time there is a failure. But I think FAA bases a fine on the overall performance of a particular organization. Moreover, the detection rate has gone from about 78 percent a couple of years ago to about 93 percent. I would like to see it at 100 percent. We all would. But, again, we must weigh this goal against the goal of expediency for passengers.

How will the concept of federal security managers at high-risk airports be implemented? FAA is writing position descriptions, developing operations, and moving toward hiring the personnel. We expect them to meet our training requirements because we are unwilling to use novices. However, within the next year, we expect all of the security managers to be in place.

The security of cargo and mail is also a concern for carriers that do not carry any passengers. Some airports use X-rays for detecting potential problems in cargo. If one properly analyzes an X-ray picture and the cargo is homogeneous, it will be possible to determine if there is something in the cargo that needs closer inspection. But this method is limited, considering the amount of cargo that goes onto one of these airplanes every day. At the moment, luggage is a greater risk. As soon as that risk is reduced, we can put more effort into improving the detection of bombs in cargo or in mail. It is not an easy problem to solve, I can assure you, but there are efforts to do so.

Airline Competition and Consumer Protection Panel

Professor Steven Morrison
Northeastern University

I will begin by discussing the effects of deregulation. Averaged over 11 or 12 years, airline fares have decreased by about 18 percent because of deregulation. This amounts to about $6 billion in 1988 dollars. But this average hides the fact that not everybody pays the same fare. While about 65 percent of travelers pay lower fares than they would have paid under regulation, 35 percent of travelers pay higher fares than they would have paid under regulation.

One issue that Cliff Winston of the Brookings Institution and I are currently studying is the restricted ticket. This product—which allows you to fly to Los Angeles for $500 but requires you spend Saturday night and book 2 weeks in advance—is not the same product as a ticket for $500 10 years ago that allowed you to travel without having to spend a Saturday night at your destination or book your flight 2 weeks in advance. We are trying to estimate the value consumers place on the inconvenience of staying a Saturday night, booking in advance, and making a nonrefundable payment.

I have been asked to address the effect of mergers and bankruptcies on fares. The implication is that mergers and bankruptcies will lead to a more concentrated industry and that more concentration will lead to higher fares. When you look at industry concentration at the national level using the Herfindahl Index,[1] you see a dramatic decline in the number of effective competitors around 1986 and 1987 when many airline mergers took place. However, when you look at industry concentration at the route level, taking into consideration the number of effective competitors on each route, you see a different picture. Yes, there was a decline after 1986 and 1987 owing to the mergers. But now, even after the Eastern bankruptcy, we see an increase. We have a level of route competition today that is just a small fraction of a carrier less than it was at its peak in the second quarter of 1986. Furthermore, although the national industry is bound to get more concentrated if you base the measure on domestic passenger miles, this does not imply that routes are more concentrated. If we end up with five big carriers, each flying on every single route, we would have a lot more competition than we actually need.

[1]By determining the market share concentration, the Herfindahl Index measures the potential for abusing market power. The airline industry falls below the level of concentration deemed detrimental by the index.

Another concern is airport concentration. Because of the hub-and-spoke concept, airlines have come to dominate certain airports. I use two measures to address this concern. One is airport concentration computed by using each airline's share of total enplanements at an airport. The other is based on each airline's share of originating enplanements. These measures differ because a carrier at its hub will have a larger share of total enplanements than it has of originating enplanements. When comparing the measure for total enplanements just before deregulation with the measure now, we see airports' having fewer competitors on average than they used to. But in terms of originating enplanements, airports have a little bit more competition than they used to have. Which measure is right to explain why fares go up or down and why they change is a statistical question. I think that originating enplanements is the relevant variable to use in explaining fares at hub airports.

What impact would increased concentration have on fares at the national level? In my current research, I have found that a 1-percent increase in competitors on a route leads to a 0.12-percent decrease in fares. So if competition goes up by 10 percent, fares would go down by 1.2 percent. My colleague and I also found that the number is bigger than it was just after deregulation. In the same analysis, we tried to explain fares in terms of airport concentration as well as route concentration. Many analysts use a dummy variable that equals 1 if an airport is a hub for a carrier and 0 if it is not a hub. We decided not to do that. We wanted a continuous variable that would explain the degree of concentration of airlines at a particular airport. So we used the number of effective competitors. We found that as airports become more concentrated, everything else being equal, fares go up. Our particular number had an elasticity of minus 0.2. That is, a 10-percent decrease in the number of effective competitors at an airport would lead to a 2-percent increase in fares. Also we found that this effect is increasing over time. When we compared the early years of deregulation with the more recent deregulatory period, the effect of airport concentration on fares is higher than it used to be.

The relationship between hubs and fares is an important concern. Correcting for distance, I compared fares at the 15 airports that GAO used in its study with the average fare. I found that fares at hubs are higher but the average is not nearly as high as GAO finds. But my methodology is different from that of GAO. I control for the distance flown rather than for density because I want to know if people who live near a hub are paying higher fares than they would pay if they were not living near a hub. If their airport were not a hub, the routes would not be as dense as

they are. So correcting for density does not address the question that I want to answer. Those who want to know if airlines are making a lot of money from hubs would want to correct for density. Doing so—and I believe that is what GAO did—they would find fares corrected for density are higher still than the fares I have calculated.

Many people say, "Yes, people at hubs pay higher fares, but they get better service." My own analysis shows that the average hub has direct service to 76 percent more cities than it would if it were not a hub (I've corrected for population effects since hub cities tend to have larger populations), and the average hub has 117 percent more flights per day to those particular cities. So, yes, passengers traveling to or from hubs pay higher fares, and, yes, they receive better service. Moreover, besides being a good marketing tool, the hub-and-spoke system is also an efficient way to process passengers.

Another concern is the effect a dominant airline has at its hub on a competitive airline's entry into or exit from the market. Our initial analysis shows that carriers are more likely to enter routes involving their own hubs and less likely to enter routes involving other carriers' hubs. But that effect has decreased over time. We have also seen that the exit of carriers from routes involving another carrier's hub is less than it used to be.

I was also asked to look at whether current fares are compensatory. My analysis shows how the structure of fares has changed over time. In the fourth quarter of 1978, fares were relatively narrowly distributed around their average. In the fourth quarter of 1983, there was a broader distribution of fares around their average on each route. And in the fourth quarter of 1988, an even larger distribution around each route's average occurred. This is evidence of fare dispersion and its increase over time.

My final remarks are on airport slots and noise restrictions. At LaGuardia airport, for example, between 1978 and mid-1990, concentration decreased and the number of effective competitors increased. Also, when we consider the extent of competition at the route level, we find that the number of effective carriers per route has increased from the time of deregulation to the present. In comparison, at Kennedy, airport concentration, as measured by enplanements, is up, but as measured at the route level, is constant. O'Hare is more concentrated than it was at the time of deregulation. Based on this, my view is to put a price on noise and slots. Even better than having slots, let's just have landing

fees that vary with the time of day and the amount of congestion. If that is not in the cards, let us have slots that can be tradable, maybe leases instead of outright sales. Let the money go to the government or the airports involved rather than to the carriers that were fortunate enough to be incumbents and were given these slots or rights to use noise-sensitive airports in the first place.

Mr. Melvin Brenner

Aviation Consultant, Brenner and Associates

The industry's trend toward concentration has raised understandable concern. Blame for concentration has been placed on the so-called barriers to entry, including the computer reservation systems (CRS), the frequent flyer programs, and the tightness of access to airports. I contend that those factors did not cause the industry's concentration and that their removal would not open the industry to an influx of new competition.

Let us start with CRSs. It has been alleged that CRSs give their owners such a great competitive advantage that they inhibit entry by new firms. But the facts show otherwise. I compared the net profit margin of major and national passenger carriers in 1989 to the status of each carrier's CRS, considering whether they were one of the primary owners who started in this program, secondary owners who bought into somebody's CRS, or nonowners. Five firms had a profit margin of a little over 5 percent—Piedmont, Southwest, Delta, Northwest, and Alaska. Of these carriers, only Delta was a primary CRS owner, and you certainly cannot attribute the profit to a CRS. In fact, Delta's system was so weak that the airline finally had to buy into another carrier's system. At the bottom of this financial spectrum, you find that two of the four carriers performing the worst financially were TWA and Eastern, both initial owners of CRSs. Whatever advantage may be involved with owning a CRS, it is quite clear that in the overall picture, it is pretty small compared with the myriad of other factors that affect performance or survival in this industry.

Another of the so-called barriers is the difficulty of getting access to airports and their gates. Without question, gates are limited at key airports. But it is a gross exaggeration to attribute any significant part of today's concentration to that factor. Interestingly, at considerable pain and cost, proof on that point was provided as recently as 6 weeks ago when Midway Airlines threw in the towel on its Philadelphia expansion program.

Consider the background facts. To guard against having Philadelphia become a one-carrier hub, the government had previously prevented USAir from acquiring gates vacated by Eastern. This made it possible for Midway Airlines to get those gates, thus removing the question of airport access as a possible barrier to entry. Midway Airlines had also arranged to have Sabre, the largest CRS, handle its internal reservation system, effectively removing CRS as a so-called barrier. Compared with other hubs, Philadelphia provided a much more favorable opportunity for a second hubbing carrier because of its large local traffic base. The

local market at Philadelphia is larger than that of the three hubs at Charlotte, Raleigh-Durham, and Memphis combined. Finally, at Philadelphia, Midway was not taking on a carrier that was overwhelmingly dominant. USAir, the hubbing carrier, accounted for less than 45 percent of enplanements at that location in 1988.

As you probably know, Midway Airlines moved into the market just about a year ago. From 1985 to the third quarter of 1989, Midway had a cumulative net income of about $38 million. In the three quarters since it moved into Philadelphia, it had a net loss of $62 million, more than wiping out the net income that had been accumulated in the preceding 5 years. And as you know, in October of 1990, Midway announced its intention to cancel its Philadelphia hub program. It has since sold its gates to USAir. So it appears that Philadelphia will become more concentrated after all, despite the government's efforts to reserve the gates for a carrier other than USAir. The key point is that Midway's failed effort can in no way be blamed on the so-called barriers. The cause must be found in factors more inherent in the nature of the airline marketplace itself.

What are some of those factors in the airline marketplace? I believe that one of the major causes of the industry's increased concentration is a fact scarcely mentioned in many studies of this subject. Far from the behavior of the classic oligopoly, this industry's pricing has provided so thin a margin over costs that it has operated on the razor edge of earnings. That has been the factor limiting the survival not only of most new entrants, but also of many of the original incumbent carriers. When I analyzed the industry's net profit margin since the start of deregulation, I found that in only 1 year, 1988, did that profit margin get above 2 percent. Immediately following that 1 best year, in 1989, it dropped back to close to 0 again. On average, profits for the 11 deregulated years were 0.6 percent. In 1989, the profit margin of the U.S. airlines was 1/16 that of U.S. industries in general. Bear in mind that this was before the recent jump in fuel prices, before the recession, and in a period when concentration was already well under way.

As you all know, this year is turning out to be a disaster for the industry. But the important point is that even before the August jump in fuel prices, 1990 was starting out to be worse than 1989, which was worse than 1988. In comparing the net income of the industry during the months of January to June of 1990 and the same months last year, you can see it dropped from a net profit of $367 million in 1989 to a loss of

$82 million in 1990. The recent jump in fuel prices changed what was already a problem into a disaster.

If we look at the industry's price trends relative to its costs, the explanation for its poor financial record is all too easy to find. In fact, your own GAO report prepared in November 1985 on this industry contained a very revealing chart. As you will recall, you showed the index of costs, consumer prices, and airline fares using 1972 as the base year for your index. By 1984, the trend line for fares was roughly double that of the 1972 base year. But those fares were no match for costs, which by then were roughly triple those of the 1972 base year. This lag between an industry's costs and its prices is something consumers love, but it scarcely provides the basis for corporate longevity. It is no coincidence that the years following the 1984 shakeout period, many carriers simply folded or merged with others.

Many other factors have, of course, contributed to the industry's concentration. They, too, stem from the nature of the airline marketplace itself. An example is hub-and-spoke scheduling. Airlines place a high value on a large network of routes, one that feeds a multitude of spokes into a hub. This has made it attractive to merge separate route systems into more integrated systems. The attractiveness of these systems explains why so many incumbent carriers chose to merge, even when their independent survival was not in jeopardy—partnerships such as Piedmont with USAir, Republic with Northwest, Western with Delta. Whether or not all those mergers made good business sense, they moved us even further down the road toward concentration.

My remarks thus far have dealt with some of the principal causes, as I see them, of the industry's increased concentration. What has been the effect of concentration on the traveling public? Certainly, one cannot possibly conclude that this concentration has yielded excessive profits. You have seen the dismal record of earnings, including in this period of concentration. Nor is there solid evidence to support the allegation that carriers' domination at hubs has led to unreasonable fares at those locations. The fact that average yields at some hubs are higher than at nonhubs does not establish that the differential is due to concentration. One airport can easily have a higher yield simply because it is primarily a destination for business travel and not tourism; the airport has little deeply discounted travel.

Hub communities do tend to be more oriented toward business travel than leisure travel. This would result in fewer deeply discounted passenger fares. The main hubs—places like Charlotte, Nashville, Memphis, Raleigh-Durham—are not the kinds of places you find in travel agents' tour brochures. Appealing little to tourists, these cities would tend to have a lower proportion of leisure travel. According to in-flight surveys by American Airlines, business travelers account for 57 percent of their locally originated passengers at hub stations. That percentage is one-fourth higher than the percentage at the airline's nonhub cities. This means fewer leisure passengers and fewer deeply discounted tickets, and therefore a higher average yield—without any relation to the issue of concentration.

Interestingly, some of the very studies that claim a cause-and-effect relationship between hub concentration and high fares contain the seeds for their own rebuttal. Consider, for example, an analysis of hub fare premiums[2] published this past February by DOT. A key summary table in that report compared what DOT called the fare premium at 16 hubs versus the general national average. Particularly stressed was an 18.7-percent fare premium at the single-carrier hubs and an 8.9-percent fare premium at the multi-carrier hubs. But the table itself contained facts that undercut the significance of this difference. In comparing 1984 and 1988 for both groups of hubs, the table showed that concentration went up. Concentration increased from 62 percent to 83 percent for the single-carrier hubs, and by coincidence, exactly the same numbers for the multi-carrier hubs, from 62 percent to 83 percent. What happened to the fare premium while concentration was going up? Fare premiums on average declined.

The figures get even more intriguing when we look more specifically at individual airports that sustained the greatest increase in concentration during this period. Memphis and Minneapolis were more concentrated because of the Northwest-Republic merger. St. Louis became more concentrated because of the TWA-Ozark merger. Denver became more concentrated because of the demise of Frontier. Nashville and Raleigh-Durham became more concentrated because they became hubs during this period; they had not been hubs in 1984. At 6 out of 16 of these cities, concentration increased because of mergers or the development of hubs.

[2]A hub fare premium is a higher price paid by passengers when traveling to and from connecting hubs where one airline provides most of the service.

What happened to these cities' fare premiums? Two of these cities actually had smaller fare premiums as concentration increased. Two of them had a fare increase of less than 1 percent. One other had an increase of only 1.4 percent.

I would like to make one further point about pricing at hubs: Recent studies imply that any differential between fares at hubs and nonhubs indicates that perhaps the customers at hubs are being overcharged. But even if we accept all of the calculations of these studies, quite a different hypothesis would fit the very same data. Since airlines' overall revenues are inadequate to provide a decent profit, there must be a shortfall somewhere. That raises the possibility that the pricing at nonhubs may be too low to be compensatory and that the pricing at hubs is more nearly what is needed to cover costs. That possibility cannot be ruled out, since none of the recent studies has attempted to determine whether the fares at any individual airport are at, above, or below the level needed for reasonable earnings.

In closing, I submit it is important to recognize that inherent forces in the marketplace have led to this concentration and not a series of artificial entry barriers. Obviously, we cannot rule out the possibility that future industry practices might at some point warrant complaints about market power and abuse of it. But a full, objective analysis of the record to date would not support such complaints. In the meantime, considerable harm can be done if a mere presumption of guilt leads to governmental intervention in ways that would be both futile and disruptive.

Mr. James Craun

Deputy Director, Office of Aviation Analysis, Department of Transportation

I will discuss the Department's views on the outlook for airline competition and the challenges and opportunities that we face today and in the future.

When Secretary Skinner joined the Department early in 1989, the concern was growing that the 10-year experiment with airline deregulation might not be working: Fares had leveled off after a long period of decline, and mergers and consolidations had reduced the number of carriers. Commentators and political leaders were beginning to suggest that some reregulation might be in order. In response to these concerns, a task force within the Department was formed to examine what was happening. We studied the structure and service network of the airline industry, airline passenger fares, regional service, marketing practices such as frequent flyer programs and CRSs, ATC system's impacts on new services, and international service. The final report was released by the Secretary in February 1990. I would like to summarize what we found.

The first and most important conclusion is inescapable: Deregulation has worked. More passengers receive more services with wider choices at lower real cost. That is a pretty strong statement, so let me give you some numbers to back it up. First, there were about 289 million passenger trips on scheduled airline service in the United States in 1988 compared with 172 million in 1978. Second, large and medium-sized cities were served by 60 to 70 percent more flights in 1989 than in 1978. Small cities and rural communities were served by 33 and 44 percent more flights, respectively. Third, in 1988, 55 percent of all passengers traveled in city-pair markets served by three or more airlines, up from only 28 percent in 1979. Only about 10 percent of passengers did not have a choice of carriers, down from 15 percent in 1979. Fourth, following increases from 1978 to 1981—which were caused by an enormous rise in the cost of jet fuel—airline fares, adjusted for inflation, declined by an average of 26 percent. About 90 percent of today's passengers travel on discounted fares.

Deregulation has brought about other benefits, as well. Regional airline service grew stronger, and the number of airports served by regional airlines increased by 25 percent between 1978 and 1988. Regional airlines doubled their aircraft fleets and tripled their passenger traffic during this period. More airline services were offered in response to consumers' needs and competitive pressures. The industry introduced frequent flyer programs, CRSs, and revenue management strategies to increase the public's choice and the industry's efficiency.

Nevertheless, a few pockets of problems exist. About 10 percent of the domestic passenger traffic occurs in the few remaining travel markets dominated by a single carrier. Fares for these passengers average about 14 percent higher than in competitive markets. At the nation's least competitive major airports, according to our study, fares for trips starting or ending at the airport were nearly 19 percent higher than the average for all other airports. Our latest data for 1989, however, indicate that this may be changing and that the premium is now closer to 12 percent.

Two things must be kept in mind when looking at these higher premiums. First, they represent a small portion, about 5 to 10 percent, of passengers. Second, the higher fares may, at least in part, be justified by the frequent service and increased destinations that a hub can offer.

The volume of through traffic using a hub requires service that local traffic alone would not support. Increased travel and a switch to a more efficient hub-and-spoke system have led to increased congestion at some of the nation's large airports. Of course, airport capacity is an essential ingredient to continued competition. Secretary Skinner has made increased airport capacity one of his top priorities. Together, DOT, state and local governments, and the airline industry must search for opportunities to expand existing facilities and build new airports. The recent legislation authorizing the collection of a PFC opens up a new avenue for financing the essential expansion of our ground facilities. I want to mention one more benefit that we see from the PFC mechanism—reducing the dependence that airport operators have on airline lease revenues. Having an independent funding source for development will help operators provide the facilities that will attract other airlines, notwithstanding the operators' lease agreements.

Let me turn now to some of the opportunities and problems that face us in the future. I have already mentioned the opportunity our aviation reauthorization legislation presents with PFCs. Another provision in that legislation that would also make a significant contribution in years to come is the development of a national noise policy, which we view as a opportunity that enhances competition. Replacing an unworkable local and regional patchwork of often inconsistent restrictions will level the playing field and allow airlines and airports to plan rationally for the future.

On the threatening side of the equation is the softening economy and the continuing uncertainty in the Middle East. Market demand is slacking at

the very moment when fuel prices are climbing. The resulting financial squeeze is affecting even the strongest of carriers. It can even be argued that some fares are too low for the long-term health of the industry and the economy. These difficult times have led carriers to propose various remedies to the Department. Some of their ideas are (a) opening up the Strategic Petroleum Reserve in various ways to help the airlines since some have experienced inordinate increases in fuel costs, (b) relaxing the limits on foreign investment, (c) speeding up the government's commercial and charter payments to the airlines, (d) allowing the airlines to defer paying ticket taxes they collect, (e) providing airlines with direct subsidies, (f) softening antitrust reviews, and (g) jawboning oil companies. Some of these ideas could have merit, but others appear unworkable. We are reviewing them all, and the industry is not standing idle. It seems that new sales of assets are proposed every day.

What would happen if some of the carriers fail or merge? While predicting the future is best left to seers and fortune-tellers, the competitive consequences might not be that bad. Some of our carriers have been financially ailing for years, in good times and bad, and their failures seem inevitable. The real miracle is how they have survived this long. The seven largest carriers provide nationwide service to most large and medium-sized hubs, and the majority of city-pair markets have three, four, or more competitors. There is nothing to suggest that the number of nationwide competitors will shrink to the point that travelers will lose the benefits that competition brings.

Let me close by reiterating three things I want to convey. Deregulation works, and competition in the airline industry is strong. The recently enacted Aviation Safety and Capacity Expansion Act provides new opportunities to enhance airlines' service and competition among airlines. And, despite significant short-term difficulties, the long-term outlook for continued competition in the airline industry is excellent.

Mr. John Gillick

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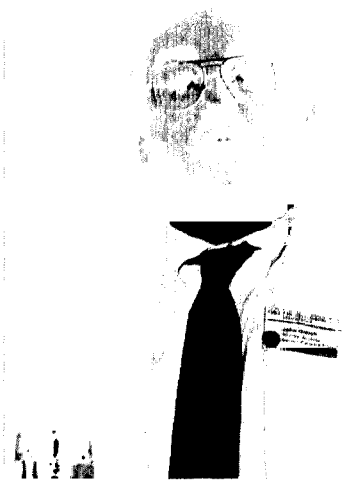

My outlook on airline deregulation is a little less rosy. In general, airline deregulation has been a success story. Fares are lower. There is increased service. There has been opportunity for new entry. However, some potential storm clouds loom on the horizon.

We need to understand the implications of increased concentration on the quality of competition in the national, regional, and city-pair markets. We need to study the consequences of increasingly well-entrenched marketing practices and assess competition issues. We must carefully examine the effects of the changing international environment for U.S. carriers and their lucrative international routes. Everyone is looking towards the economic integration of Europe in 1992 and wondering what kind of position the European Community (EC) will take in negotiating with the United States. We are beginning to see a tightening of policies in the Pacific Rim. Countries, like Thailand, that have permitted virtually open entry historically are now beginning to fight over the fifth freedom operations[3] by U.S. carriers. Difficult times ahead threaten the ultimate health of the U.S. carrier industry and the success of deregulation.

We all know the list of carriers that may fail in the next 6 months. With the failure of one or more of those carriers, there may well be a call for reregulation in some form. In this regard, two principles should guide the policy-making. First, we should neither dismiss nor attempt to ignore the identified problems. Second, and equally important, the remedies that are chosen should be carefully thought out so the solutions are not worse than the problems and are capable of being achieved.

Let me turn first to fares. The fares in the United States are really a function of many factors. First, there are national factors such as systemwide increases or decreases in fares; nationwide promotions by airline carriers; and nationwide structural changes such as the elimination of certain types of fares. Second, regional considerations have an effect on fare levels and fare structures, including, for example, pricing practices in California and east and west of the Mississippi. Finally, there are various factors affecting fares between city pairs, including (1) fares to airports where slots are controlled or access is limited and (2) predatory pricing.

[3]Legally negotiated "fifth freedom" rights permit the airline of one country to carry passengers between two different countries, providing the flight originates in the airline's host nation.

America West has performed some rudimentary analyses of the way in which market power is being exercised today. Rather than focusing exclusively on hubs as the problem, the focus of this study is the individual carrier, the various marketing devices (for example, CRS ownership), and the existence of hubs, for it is not simply the existence of hubs, but a combination of these factors that allows carriers to charge higher fares than other carriers in markets where they compete head to head. We need to begin studying the nature of competition on a carrier-by-carrier basis to understand who has the market power.

Let me address the issue of sufficient compensation. Over the next couple of years, with a weak economy and high fuel costs, carriers are unlikely to achieve a sufficiently compensatory return, particularly with the need to replenish their fleet with more and more expensive aircraft.

A significant factor, though, in terms of evaluating the profitability of the carriers since 1985, with the mergers and acquisitions that were approved by DOT, is that we have really never lost any of the capacity that was in the system. The airplanes get pushed around, but the same number of seats are in the marketplace. This may change if Eastern fails. With the exception of the company's Boeing 757s and a few other airplanes, the rest of the fleet is not particularly desirable. It may well be the first time in the history of this consolidation that we would begin to see a reduction in the capacity of the system. If this occurs, we may also find increased profitability, particularly from the two carriers that would benefit most directly—USAir and Delta.

CRSs, as most in this room are aware, raise several issues—the level of booking fees versus the costs, architectural bias, the halo effect, the vendor-agent issues, the possible role of arbitration in sorting out the CRS issues, and what I call the "technological issues"—the ability to use the Sabre system to reach internal reservation systems of the individual carriers. Can we do that technologically? If so, how much will a travel agent charge to do so?

Of course, CRS issues are compounded by international issues. That Sabre and Apollo are becoming global systems and seem to be well on their way to being the two dominant systems raises the issue of booking fees. Foreign carriers, which have primitive internal reservation systems, are frightened by having Sabre come into their country. They are concerned that over time, because of the increased functionality of Sabre, their internal reservation systems—which are just that, internal

reservation systems—are not going to be competitive. Because the Sabre system will become dominant over time, foreign carriers will eventually pay booking fees for bookings on their airline within their country. Thus, the critical globalization of both Apollo and Sabre needs to be examined.

The federal noise policy is another important issue. In general, the federal noise policy that has emerged in the recent legislation should have a favorable effect on competition. With fewer noise constraints, there will be fewer problems with grandfathering like those we have seen on the West Coast, where airports decide to limit the number of operations and permit the carriers that were there first to provide the service. Such constraints make entering the market difficult. A national noise policy will cut down on the number of local regulations.

Ironically, since new entrants—carriers such as Southwest and American West—will probably have only Stage 3 by the mid-1990s, they will not be affected by such conditions. Phasing out Stage 2 aircraft, however, may adversely affect some of the carriers that have many such planes in their fleet—PanAm, TWA, and USAir. In the short term, the policy will allow carriers to keep those planes in the air, but a phase-out schedule may well affect their ability to remain competitive.

With regard to having access to airports, airports realize that much of the problem is something they have in their own control. Historically, the airports and the airlines have entered into restrictive-use agreements and majority interest clauses to ensure a steady revenue stream supporting the bonds that were issued. Currently in the United States, airports can secure bonds without having those kinds of clauses.

Two final comments on the issue of cabotage and foreign ownership: Clearly, the cabotage issue will confront the United States in two forms, at least. One is in U.S. negotiations with Canada early next year. The Canadians have pursued the right for their carriers to accept passengers in the United States and fly them to another U.S. destination. Rather than seeing this possibility as a cause for concern, I believe it may well be an opportunity to begin to experiment with cabotage. The second area involving cabotage is the dispute over when the EC will try to control the negotiation of rights within Europe.

The United States needs to examine the cabotage issue very carefully and avoid a quick solution to the problem of increasing concentration. It

is not clear that permitting carriers to fly in the United States will measurably increase the competition. Moreover, before we allow foreign carriers to own U.S. carriers above the 25-percent level that is specifically provided in the Federal Aviation Act, we need to evaluate both the benefits and disadvantages of such ownership.

In short, deregulation has been a success, but there are storm clouds on the horizon that need to be addressed.

Mr. Robert Ebdon

Head of Commercial and Government Affairs, British Airways

First, I want to address the issue of deregulation. You have not deregulated your market and this, I suspect, is one of your problems. I cannot set up my company in your country and compete because you have failed to do the job. The United States deregulated its market for American carriers but not for foreign ones. This means the United States does not have as wide a variety of benefits, such as foreign service levels and marketing approaches, as possible.

On the transatlantic route between Europe and the United States, you will find most European airlines saying they are operating at a considerable disadvantage in having access to markets. The problem of competition exists not because European carriers are any less attractive to their customers. Indeed, we would suggest that were it merely a matter of airlines' attractiveness, we would be carrying a larger share of the market than we currently are. The problem is that the U.S. regulatory system denies foreign carriers access to the traffic that feeds into hubs, which is so significant in developing and strengthening U.S. carriers across the Atlantic. Take, for example, the applications put forward for certification by the U.S. administration for the two route options to fly to Manchester or Birmingham. USAir asked for a Pittsburgh-Manchester route. Of the airline's traffic, 83 percent, it says, will come from behind the hub while 17 percent will be point-to-point. Delta asked for an Atlanta-Manchester route, of which 90 percent of the traffic is coming from behind the hub and 10 percent is point-to-point. United's Chicago-Manchester route would have 72 percent coming from behind the hub. Even for TWA flying from Kennedy, hardly a hub operation for anybody, 51 percent of the traffic feeds into the airport. How could a foreign carrier, which cannot reach that traffic behind the hub, be interested in developing additional operations between new gateways in the United States and its home base with such a disadvantage in the marketplace?

Frankly, the major difficulty between us is a different idea of what free competition and deregulation actually mean. The United States tells us that we cannot use this traffic in its backyard that feeds into hubs, but that we have such traffic of our own in Europe. That is a fair point. However, at the moment Europe sits in a regulated market. We cannot do behind our own home base what we would like to do internationally.

In deregulating your national market for American carriers, you have done something quite useful for yourself. All American carriers have been able to organize themselves behind their hubs and strengthen their transatlantic operation. Because there are a large number of American

carriers, each one can have an interest in and develop a certain number of hubs. Were there are only two American carriers, they may not have had the same interest in developing all of those hubs.

We face a competitive disadvantage because we lack access to the traffic that feeds into hubs in the United States. Further, such traffic in Europe, which could exist even in a deregulated market, would be nothing like the 90 percent, 83 percent, or 72 percent we see from American carriers competing for the Manchester route. Indeed, the U.S. administration deliberately selects carriers for international operations that draw much of their traffic from behind their hubs.

A second problem, from a European perspective, is that Europe is offered only small shares of equity in a U.S. airline, no more than 25 percent. This gives us no control and means that we are investing in unprofitable operations. If we could have 51 percent, we might convert the company into an effective and service-oriented airline.

Now let us consider the specific question that I have been asked to discuss. Are the Europeans likely to demand reciprocal cabotage as the price for continued intra-European operations by American carriers? Yes, of course. You would expect it, wouldn't you? However, it is not going to happen overnight. As we say, the EC will take some time to "get its act together." When Europe starts negotiating as a single body, it will demand domestic rights in the United States in exchange for continued European rights. That is not to say it will seek unilaterally to take away the fifth freedom rights that have already been granted. That would be unthinkable. The rights that are already there will remain. However, I suspect that in the next stage—if the Americans appear recalcitrant or reluctant to give their domestic passengers the benefits of international competition and "Singapore-girl type" service—you will find that European countries terminate their treaties and start renegotiating. That is the only way to drive the bargain home.

The second question posed was, "What is the likelihood that the EC members will eventually adopt a common policy with respect to the major European airlines?" It is already happening. There is already an accepted concept for the EC airline within the Community. Indeed, the Treaty of Rome makes it illegal to discriminate on the basis of nationality between different Community nationals. It is, therefore, illegal for the German government to deny British Airways the ability to set up a business in Berlin and fly from Berlin to Frankfurt or Stuttgart or Cologne simply on the grounds that it is British. Unfortunately, the

Treaty of Rome does not handle the idea of a monopoly well. So it is possible at the moment, if it so choses, for the German government to say, "Aviation at the moment is a natural monopoly so—except for special cases—only one carrier on each route. We will select one carrier. Just by accident, it happens to be German. It is just one of those things that happen." So there are, within the mechanisms of Europe, means of enabling nationally motivated (but often vocally pro-European) organizations to frustrate the intentions of the Treaty of Rome. However, it is only a temporary problem because eventually a change will happen, and the idea of a community will become real.

We already have moved towards a Pan-European airline system. There will be mergers, conglomerations, and consolidations—all the good things that happened in America to create a more competitive and natural market environment. It certainly will happen within Europe first, and only then elsewhere.

How long will it take for the system to become as liberalized in Europe as it is in the United States? In many ways, Europe is more liberal now than the United States is. We have a multiplicity of national identities, not only European. There are foreign airlines of all shapes and colors with different service records, different price structures, and different ideas about customer service operating within Europe, and that will no doubt continue and no doubt will be expanded if the elements within Europe in favor of competition have their own way. The worry is that they might not. I think perhaps a message for everyone is, if you believe in competition, then you should forget competition on your own terms—stop simply strengthening your own industry's interests, or perhaps even some of your cities' interests. You should instead look to the interest of the customer in having a more open and free regime.

Therefore, should the United States grant foreign airlines cabotage in order to ensure sufficient competition exists in domestic U.S. markets? Yes, of course. If you genuinely feel that it is the customer that matters, then you should not be interested in reciprocity. On the other hand, if you think that reciprocity is more important or you need to use it at a bargaining counter, then you will reserve it for the day when you feel you are negotiating with a sufficient block to make reciprocity worthwhile. What we must work at is taking away as many of the barriers as we possibly can, whether bilaterally or multilaterally.

If access to markets continues to be negotiated on a basis of reciprocity, that suggests genuine change will not come in bilateral talks (i.e., not in

this series of talks between the United Kingdom and the United States on successors at Heathrow), but will actually take place when the Community and other countries negotiate with a common purpose. At that stage, some of the long-held beliefs of national protectionism, which are strong in the United States and Europe, will have to break down.

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