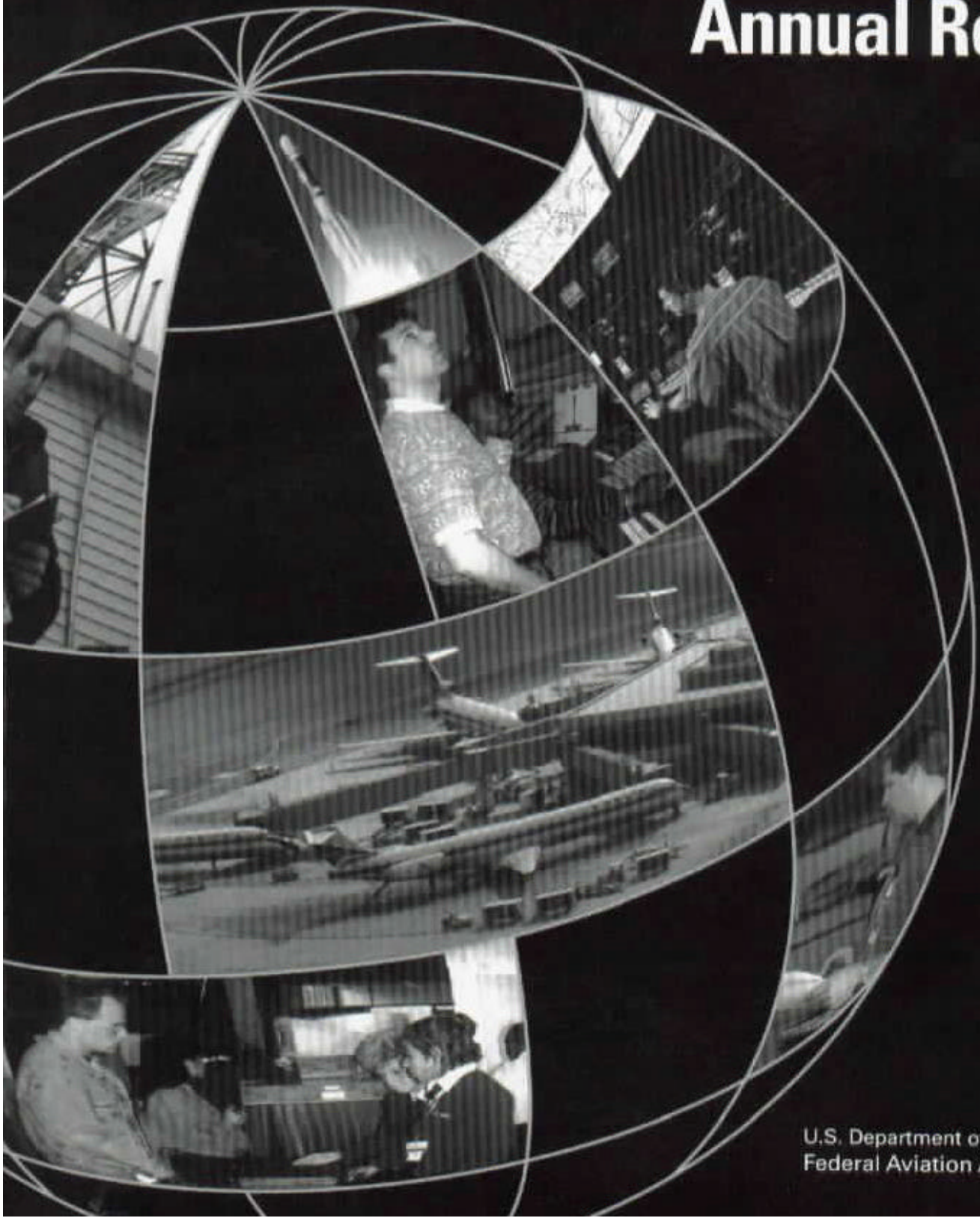
Federal Aviation Administration

1998

Annual Report



U.S. Department of Transportation
Federal Aviation Administration

A MESSAGE FROM THE ADMINISTRATOR

I am pleased to present the FY 1998 Annual Report of the Federal Aviation Administration (FAA). Along with our financial statements, it impressively sums up the year's work of our 48,000 skilled and dedicated employees — those responsible for managing the flow of air traffic, enacting and enforcing aviation and space transportation safety regulations, inspecting aircraft, maintaining equipment, and safeguarding passengers' security.

Much of our work is behind the scenes, rarely noticed by the business traveler or the family on vacation. But while often out of sight, everything we do improves the three aspects of flying most important to everyone—safety, security, and the efficiency of the airspace system. These are the goals central to our mission and, in all three, 1998 has been a year of achievement.

Safety

In April 1998, the FAA announced *Safer Skies* – a focused safety agenda developed in concert with the aviation community. *Safer Skies* is a data-driven approach to identify the leading causes of accidents and the solutions that can make the biggest difference in preventing them. Since announcing *Safer Skies*, the FAA has issued nine airworthiness directives to guard against uncontained engine failure — the leading engine-related safety hazard to commercial aircraft. We also adopted new measures to reduce potential ignition sources in Boeing 747 center wing tanks and issued a Notice of Proposed Rulemaking on terrain awareness and warning systems.

As we go forward with *Safer Skies*, we will be demonstrating exactly what we had in mind when we proposed this focused and prioritized approach: that is, as we complete an item, we check it off and then move on to the next priority item.

Security

For the past several years, the FAA has engaged in a massive campaign to provide additional security for the Nation's air travelers. To date, we have purchased 117 bulk explosive detectors for examining checked baggage and 462 trace detection devices for screening carry-on bags. Thirty airports have already installed the bulk explosive detectors, and 50 airports have trace detection devices. Many more of these security devices will soon be in operation. We are also working with airlines and airports on a variety of ways to improve the performance of checkpoint screeners. In May 1998, we introduced a computer-based training program designed specifically for security screening personnel and have made this training available at the Nation's busiest airports. In separate actions, we issued a rule requiring employment background checks for checkpoint screeners and their supervisors and proposed a new rule that would require airlines to apply additional security to the checked baggage of some passengers.

National Airspace System Modernization

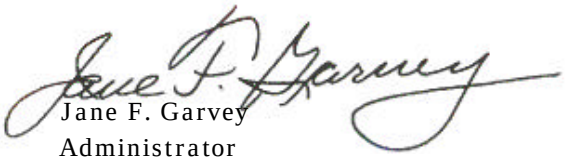
Two years ago, the FAA restructured its approach for NAS modernization. Our new approach — fielding new technology one building block at a time — continues to produce excellent results. At the same time, we have refocused our efforts on three basic elements of modernization.

The first element of modernization is driven by the constant need to introduce new technologies that will improve on our Nation's excellent safety performance. Among the highest priorities of our *Safer Skies* agenda are new capabilities to warn pilots of severe weather and to prevent runway incursions. The terminal Doppler weather radar (TDWR) program begun in 1994 is in the final stages of completion, and we are investing hundreds of million of dollars in advanced weather radar, automated weather observation systems, and new weather displays for controllers. We are aggressively pursuing our commitment to reduce runway incursions by fielding ground radar and automated position reporting systems that aid controllers in safely moving vehicles on the airport surface, especially at complex, high volume airports.

Second, we must maintain the integrity and reliability of the system by replenishing our infrastructure. We are doing this by replacing controller displays and computers in our en route centers and terminal areas, by deploying new generations of radar, and by upgrading our communications systems and other vital NAS components. In FY 1998, the FAA installed over 2,300 pieces of new equipment – from items as basic as radios and distance measuring equipment to airport surveillance and long-range radar.

Our third element of NAS modernization is to increase flight efficiency and flexibility for those who use our airports and airspace. The objective is to evolve to a system based on the "free flight" concept – where pilots and airline operators have greater flexibility in choosing the route, altitude, and speeds to fly their aircraft. We began the Free Flight Phase 1 (FFP1) program just over a year ago to deliver early benefits of free flight to users. FFP1 concentrates on making a specific set of automated decisionmaking tools available to controllers by the end of 2002. A number of these tools are already in place.

One change in the strategic plan is evident in this year's annual report. We continue to shift the emphasis from describing process to reporting results. What matters most is measurable success, and we are proud to document in the following pages the achievements we have made this past year in meeting the very high standards we set for ourselves. I am confident that these attainments will provide critical momentum for even greater progress in the coming decade.



Jane F. Garvey
Administrator

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MANAGEMENT DISCUSSION AND ANALYSIS

INTRODUCTION

The Federal Aviation Administration (FAA) operates the Nation's air traffic control system and regulates aviation safety, security, and the U.S. commercial space industry. In its position on the front line of aviation safety, the FAA works with the air transportation industry, other agencies at the Federal, state, and local level, the academic community, and with its international counterparts. The goal of this wide-ranging collaboration is to provide a technically advanced airspace system that meets the highest attainable levels of safety, security, and efficiency.

In each year of its four-decade history, the FAA has undergone significant change. An account of this continuous change parallels the story of American aviation, as this dynamic industry has rapidly evolved in response to calls for higher levels of safety, technological innovation, and surging growth. These events have given the FAA the organizational focus and discipline that are necessary for an agency born in the mid-20th century to meet the challenges of aviation in the 21st century.

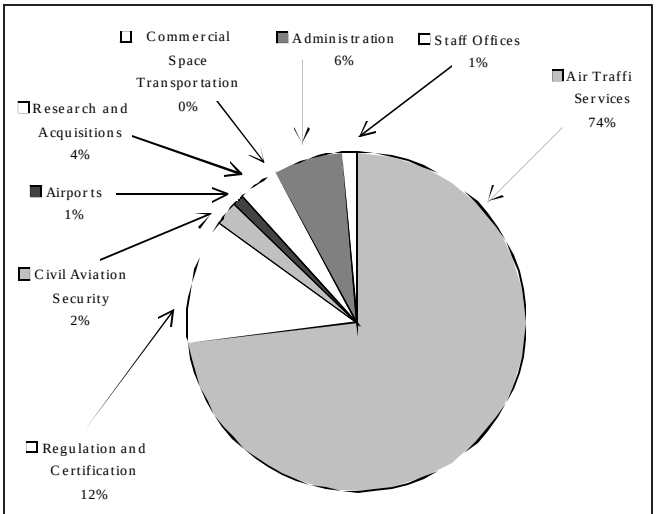
The 1998 Annual Report adds to the cumulative record of the FAA's progressive adaptation to the demands of the time. Prepared in conformity with the Chief Financial Officer's Act of 1990, it contains the financial statements of the agency and presents a comprehensive overview of the FAA's stewardship of its resources. It also documents the FAA's prodigious workload — around the clock and border to border:

- in managing the safe, efficient flow of aircraft through the Nation's air space;
- in performing the thousands of regulatory actions and inspections which are necessary to maintain the integrity and reliability of the U.S. aviation system;
- in carrying out aggressive security measures to protect air travelers from acts of terrorism and criminal misconduct;
- in promoting global aviation safety in collaboration with the International Civil Aviation Organization (ICAO) and other civil aviation authorities abroad;
- in upgrading facilities and expanding the capacity of U.S. airports;
- in speeding the transition to the next generation of air traffic control technology;
- in minimizing the environmental impact of aviation; and
- in licensing and regulating the commercial space industry.

FAA ORGANIZATION

The FAA team includes over 48,000 employees concentrated in seven strategically focused lines of business. Together, they administer the world's busiest civil aviation system. In FY 1998, over 643 million passengers flew in the Nation's skies, and the number continues to grow. The FAA annual aviation forecast, released in March 1999, predicts that U.S. commercial air carrier enplanements will reach almost 1 billion in 2010 - an annual growth rate of 3.4 percent over the next dozen years. During the same period, the number of aircraft operations handled is forecast to grow 1.8 percent annually, for a projected total of 81.2 million in 2010.

In fulfilling its responsibilities to the American people, the FAA is focusing its attention and



FAA Employment
(Permanent Employees)

concentrating its resources on those opportunities with the greatest potential to bring the greatest benefits. One goal, in particular, takes precedence over all others: by the year 2007, the FAA, in collaboration with other Federal agencies and its industry partners, aims to reduce the number of fatal aviation accidents per 100,000 departures by 80 percent.

Air Traffic Services

From the time pilots begin pre-flight activities until they shut down the aircraft at their destination, Air Traffic Services employees provide an integrated set of services to ensure that each aircraft operation is safe. Air traffic controllers at local airports direct airplanes that are taking off, landing, or flying within the visual range of their tower - usually about 5 miles. Controllers in terminal radar control (TRACON) facilities handle aircraft for one or more airports in a large metropolitan area, generally within 30 to 40 miles of the area's major airport. Controllers at 21 air route traffic control centers (ARTCC) guide airplanes in flight from one city to another. Flight Service Stations (FSS) provide flight plan filing, weather data, and aeronautical information briefings to pilots. On a typical day, FAA controllers will handle over 200,000 takeoffs and landings, moving some 1.6 million passengers. Services are available 24 hours a day, 365 days a year. A staff of highly skilled engineers and system specialists maintain and troubleshoot some 38,000 items of equipment, software, and hardware; assign and protect more than 50,000 aeronautical radio frequencies; and conduct over 11,000 flight inspections annually to preserve the safety, quality, and reliability of the National Airspace System (NAS).

In FY 1998, FAA established the Free Flight Phase 1 (FFP1) program to speed the deployment of automation and decisionmaking tools that will increase system safety and capacity and bring benefits to users in the form of fuel and crew cost savings. These include tools to aid controllers in aircraft sequencing, conflict detection, and collaborative decisionmaking. The tools will be introduced incrementally, at selected locations, from the present to the end of 2002.

Regulation and Certification

The FAA oversees the safety of planes and the credentials and competency of pilots and mechanics, develops mandatory safety rules, and sets high standards for civil aviation. Each year, the FAA performs more than 347,000 inspections and investigations and takes approximately 12,000 enforcement actions, helping to make air travel among the safest modes of transportation. The FAA also evaluates foreign governments' oversight of their airlines serving U.S. airports. These results are published so that the public can know which countries meet international safety standards.

Two initiatives were begun during FY 1998 to raise the bar on safety. *Safer Skies*, a focused data-driven safety agenda, seeks out the root cause of accidents, then targets resources to find and apply the right interventions. The Air Transportation Oversight System (ATOS), complements the *Safer Skies* agenda and will change how the FAA oversees and inspects air carriers. As part of the *Safer Skies* agenda, the FAA, in July 1998, provided expanded guidance for passengers and airlines on carry-on baggage regulations. The agency also announced that, at the close of FY 1998, it had doubled the number of cabin safety inspectors, assigning, for the first time, one for each of the major carriers. Also, in July, the FAA proposed eight airworthiness directives that call for the industry to inspect engine parts more closely, using new methods developed through FAA and industry research. Early that month, the FAA proposed new measures to reduce potential ignition sources in Boeing 747 center wing tanks. And, in August 1998, the FAA announced a proposed rule that would require all airplanes with turbine engines and six or more passenger seats to carry a terrain awareness warning system.

Civil Aviation Security

The FAA works with local security, intelligence, and law enforcement agencies to protect passengers, personnel, aircraft, and critical national airspace facilities against terrorist and other criminal acts. Threats are monitored continuously and, when necessary, the FAA orders heightened precautions. As part of a massive overhaul of the U.S. aviation security system, the FAA has deployed nearly 400 trace detection devices and 65 explosive detection and advanced technology systems at airports nationwide. In addition, the number of canine teams, trained to search out hidden explosives, has grown from 87 teams at 26 airports in 1996 to 140 teams at 38 airports. For the first time in the history of this

program, FAA K-9 explosive detection teams now are stationed at each of the Nation's largest airports.

In January 1998, Secretary Slater announced additional surveillance of commercial air courier shipments. The announcement followed an intensive inspection and tests of accompanied commercial air courier shipments presented for flight aboard passenger aircraft. In addition, in May 1998, the FAA announced that the introduction of a new computer-based tool to help airlines improve the selection and training of employees who operate the x-ray screening checkpoints at the Nation's busiest airports. The new system was available in up to 79 airports by year-end 1998.

Along with these initiatives, the FAA has a cadre of 130 security inspectors who oversee the movement of hazardous materials by air. Trained both in hazardous materials regulations and cargo security procedures, these agents work to prevent the transportation of dangerous goods in a manner that could jeopardize flight safety.

Airports

Airports, like the airlines, are vital links in the air transportation network. The FAA works in partnership with airport authorities, local units of government, metropolitan planning organizations, and states to revitalize and expand the Nation's airports. As part of its safety oversight mission, the FAA certifies airports serving air carrier operations and inspects those airports for compliance with established safety standards.

In FY 1998, FAA's Airports personnel awarded an estimated $1.7 billion in grants to eligible airports to enhance capacity, improve safety and security, and mitigate noise. The collection of passenger facilities charges (PFC) provides an additional source of funding for airport expansion and preservation. PFC's, which must be approved by the FAA, currently produce revenue for airports totaling approximately $1.2 billion each year. In order to increase the investment options available to airports, the Clinton Administration has proposed raising the cap on PFC's from $3 to $4.

The level of noise at the Nation's airports and surrounding areas continues to decline as airlines take older, noisier airplanes out of service. In a Report to Congress released in September 1998, the FAA reported that the proportion of quieter airplanes used by U.S. airlines increased from 75.5 percent to 79.8 percent during 1997. The improvement reflects compliance by the airlines with legislation passed in 1990 requiring that older, noisier airplanes be replaced by quieter airplanes by the year 2000.

Research and Acquisitions

The FAA conducts research and invests in essential infrastructure to meet the demand for higher levels of safety, security, capacity, and efficiency. Research priorities include explosive detection, weather, aircraft structures, noise mitigation, human factors, and satellite navigation. The FAA is in the midst of major acquisitions to modernize the Nation's air traffic control (ATC) system. In FY 1998, over 2,300 pieces of new equipment were installed - ranging from basic equipment such as radios and distance-measuring equipment to systems as new and complex as the long-range and airport surveillance radar. The agency also completed ground-based hardware and software installations for the wide area augmentation system (WAAS) and has two leased geostationary communications satellites in orbit operating successfully. This milestone marks an essential step toward using the global positioning system (GPS) for precision approaches at U.S. airports. The replacement of aging display equipment at the FAA's 21 ARTCC's also continued to move forward. At the close of FY 1998, the display system replacement (DSR) had been installed at 12 ARTCC's.

Commercial Space Transportation

The Office of the Associate Administrator for Commercial Space Transportation licenses commercial space launches and sites to protect public health and safety of property. During FY 1998, the U.S. commercial space transportation industry conducted its 100th DOT/FAA-licensed launch when Boeing successfully launched its sixth Delta II vehicle of the year. The landmark launch carried five satellites for the Iridium global wireless telephone system into low earth orbit. Lockheed Martin launched an Athena-2 carrying Lunar Prospector to lunar orbit from Spaceport, Florida. The Athena-2 was the first FAA-licensed launch beyond earth orbit as well as the first launch from an FAA-licensed site. The office issued two launch site operator licenses: the Virginia Space Flight Center and the Alaska Spaceport at Kodiak Island joined the Florida and California spaceports as FAA-licensed facilities. Also

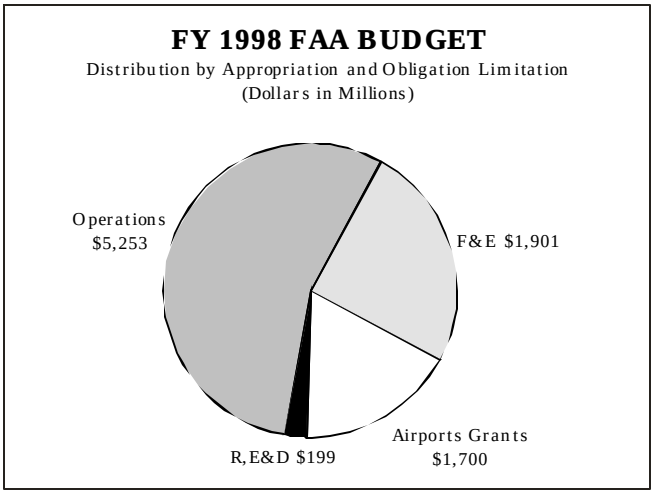
during FY 1998, the office monitored 22 licensed launches, issued four license renewals, and issued five license amendments.

Administration

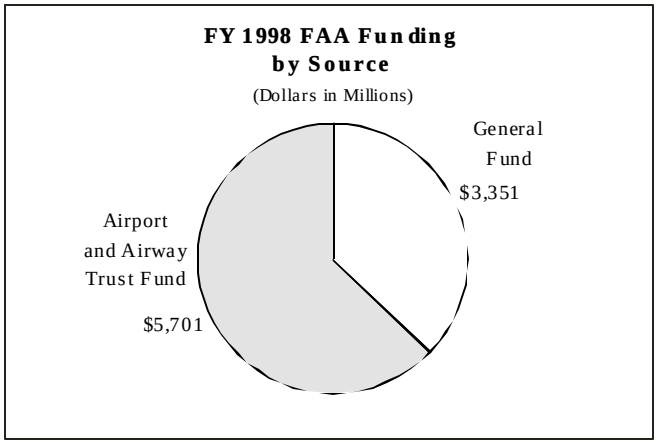
FAA strives to make its operations more efficient and responsive by employing sound business practices, introducing advanced information technology, maintaining a highly skilled workforce, and operating a model workplace. An effort is underway to put in place a comprehensive cost-accounting system. Phased implementation of the system began on October 1, 1998. In June 1998, the FAA began testing an innovative compensation plan designed to provide more flexibility in hiring, pay and placement, and the recognition of employee contributions. The new plan will replace the traditional grade-and-step base pay method with a simplified structure of pay bands whose value is determined by comparison with similar jobs in Government and private industry. The test directly links compensation with the performance of employees and the success of the organization as a whole. About 1,200 employees in the FAA's Research and Acquisitions organization were the first to operate under the compensation pilot, which is expected to run for 18 months.

FAA BUDGET

The greatest part of the FAA's budget is used for salaries and associated costs to operate and maintain the air traffic control system and to carry out its safety inspection, regulatory, and security responsibilities. The FAA budget also includes three capital investment programs: (1) the Facilities and Equipment (F&E) appropriation authorizes funds to modernize and expand the air traffic control system; (2) the Airport Improvement Program (AIP) provides grants funding to expand and improve the Nation's public-use airports; and (3) the Research, Engineering, and Development appropriation provides funds to develop new aviation technology and systems.



Congress approves the FAA budget through annual, multi-year, and no-year appropriations. The Airport and Airway Trust Fund, maintained through the deposit of aviation excise taxes, finances 100 percent of the F&E, AIP, and R,E&D capital investment programs. The Trust Fund also covers a portion of the costs to operate the air traffic control system. In FY 1998, the Trust Fund financed nearly 62 percent of the FAA's total budget.



Airport and Airway Trust Fund. The Airport and Airway Revenue Act of 1970 created the Aviation Trust Fund to provide a stable source of funding to finance investments in the airport and airway system and, to the extent funds were available, cover the operating costs of the airway system. The Act provided for the deposit of aviation excise taxes into the Trust Fund. Since its establishment, various changes have been made to the rate structure supporting the Trust Fund. The most recent changes were centered in the Taxpayer Relief Act of 1997 (P.L. 105-34), effective October 1, 1997:

- Extends aviation taxes for 10 years (through September 30, 2007).
- Retains existing freight weighbill, general aviation fuel/gas taxes, and $6 departure tax on domestic flights to and from Alaska and Hawaii.
- Converts the 10 percent ad valorem tax on domestic passenger tickets to a combination ad

valorem/flight segment tax over 3 years beginning October 1, 1997, where a domestic flight segment is a flight involving a single takeoff and a single landing. The timetable for these taxes is as follows:

9% plus $1 per seg ment from Oct.1, 1997, through Sept. 30, 1998;

8% plus $2 per seg ment from Oct.1, 1998, through Sept. 30, 1999;

7.5% plus $2.25 per seg ment from Oct.1, 1999, through Dec. 31, 1999;

7.5% plus $2.5 per seg ment from Jan.1, 2000, through Dec. 31, 2000;

7.5% plus $2.75 per seg ment from Jan.1, 2001, through Dec. 31, 2001;

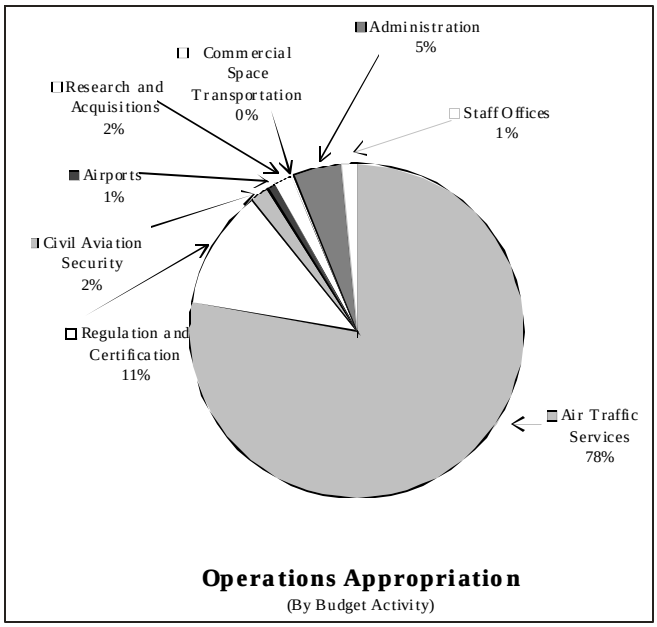
7.5% plus $3 per seg ment from Jan.1, 2002, through Dec. 31, 2002.

- Imposes a new 7.5 percent tax on payments to airlines for frequent flyer and similar awards by banks and credit card companies, merchants, frequent flyer program partners - other airlines, hotels, or rental car companies, and other businesses.
- Increases the current $6 international departure tax to $12 per passenger and adds a $12 international arrival tax. If an intermediate stop exceeds 12 hours, subsequent domestic segments are taxed as domestic transportation. These taxes were indexed to the Consumer Price Index as of January 1, 1999.
- Lowers tax rate on flights to certain rural airports to 7.5 percent, omits flight segment tax component.
- Transfers revenues from the 4.3 cents-per-gallon aviation fuel tax formerly dedicated to reduce the national U.S. deficit from the General Fund to the Airport and Airway Trust Fund.

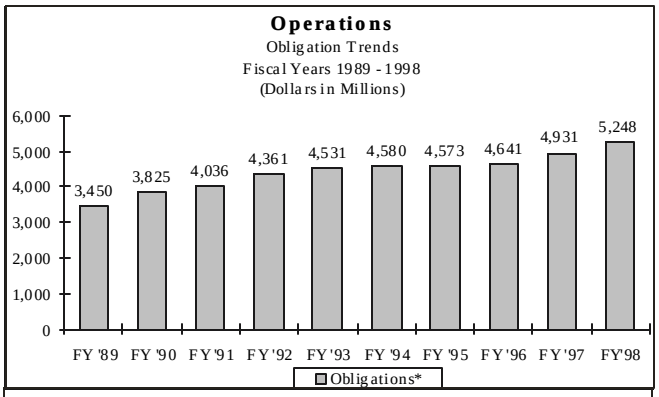
The FAA's three capital programs—Facilities & Equipment (F&E), Research, Engineering & Development (R,E,&D), and the Airport Improvement Program (AIP)—receive 100 percent of their funding from the Trust Fund. These critical capital investment programs are described in three regularly issued plans: the Aviation System Capital Investment Plan (CIP); the FAA Plan for Research, Engineering and Development; and the National Plan of Integrated Airport Systems (NPIAS). In addition to funding the capital programs, the Trust Fund pays a portion of the FAA's operating cost. Since 1995, the Operations appropriation has received approximately 57 percent of its funding from the Trust Fund and the balance from the General Fund.

While held by Treasury, Trust Fund monies are invested in Government securities. Any interest earned is deposited into the Trust Fund. Amounts are withdrawn from the Trust Fund as it is needed and transferred into each FAA appropriation to cover necessary outlays. The uncommitted balance in the Trust Fund, which was $4.34 billion at the end of FY 1998, is expected to increase to $6.76 billion in FY 1999.

Operations. Funds from the Operations appropriation are used to pay salaries and other costs required to operate and maintain the ATC system on a 24-hour basis. Other mission-critical expenses financed by this appropriation include salaries and associated costs for: (1) the planning, direction, and evaluation of FAA programs; (2) engineering for the establishment of air navigation facilities; (3) the development and enforcement of flight standards and civil air regulations; (4) the promulgation and enforcement of standards, rules, and regulations governing the physical fitness of airmen; (5) the administration of research and development programs; (6) the protection of the traveling public in commercial U.S. air transportation against terrorist and other criminal acts; (7) regulating commercial space transportation industrie;snd (8) national integrated airport planning and the supervision of grants-in-aid for airport construction.



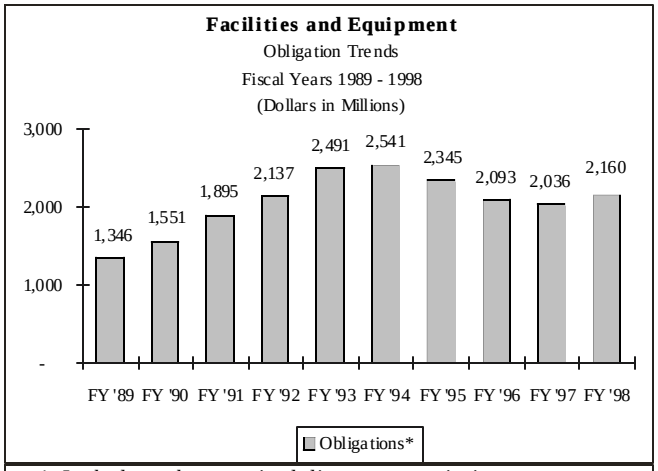
Operations Appropriation
(By Budget Activity)



** Includes only unexpired direct appropriations*

Facilities and Equipment (F&E). Funds from the F&E appropriation are used to modernize, expand, and replenish the ATC infrastructure. Examples of F&E programs include the deployment of the next generation air/ground communications system to provide digital communications capabilities between pilots and air traffic controllers; the replacement of aging ATC computer hardware and software; the installation of advanced radar for airport surveillance to help prevent runway incursions and to warn of hazardous weather; the augmentation of GPS; the fielding of automated decision support tools that will enable controllers to allow users greater freedom to fly more direct routes; deployment of explosive detection systems and devices to ensure passenger safety; and sustaining current infrastructure facilities.

The CIP is the agency's primary mechanism for documenting current and future F&E requirements. It describes some 100 near-, mid-, and long-term capital investment projects that will require funding from the Airport and Airway Trust Fund.

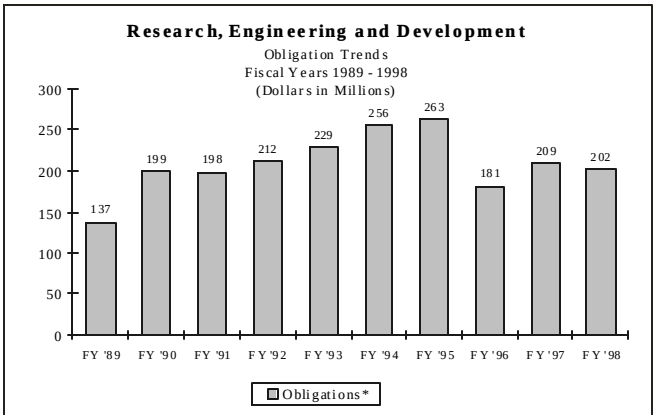


** Includes only unexpired direct appropriations*

Implementation of the projects defined in the CIP will improve safety, security and efficiency while accommodating increased demands on the NAS.

Research, Engineering and Development (R,E&D). The FAA's R,E&D programs are directed toward improving safety, security, capacity, and efficiency in the NAS. Areas of primary focus include advanced air traffic management systems, human factors and aviation medicine research to improve efficiency and reduce the risk of human error by agency personnel and air crewmembers; development and testing of aircraft safety and fire protection methods; aviation weather research to develop advance forecasting and weather dissemination products; development and testing of explosive and weapons detection devices, and studies to improve the environment through quieter engines and reduced aircraft emissions**.** In FY 1998, Congress authorized $199 million for the R,E&D program.

The obligation rate was 98 percent. The FAA publishes an annual R,E&D Plan which describes initiatives for NAS service improvements and development of the next generation air traffic management system. The NAS Architecture is the principal framework of NAS infrastructure investment decisions. This rationale includes criteria for selection of R,E&D programs that exploit technologies and techniques compatible with validated architectural alternatives.



** Includes only unexpired direct appropriations*

Airport Improvement Program (AIP). Section 47104 of Title 49, U.S.C., authorizes the Secretary of Transportation to make project grants for airport planning and development under the AIP to maintain a safe and efficient nationwide system of public-use airports that meets both present and future needs of civil aeronautics. The payment of user taxes to the

Federal Government by air travelers and shippers contributes to the Airport and Airway Trust Fund and makes it possible to fund one-fourth to one-third of all capital development at the Nation's public-use airports. Consequently, no Federal monies are withdrawn from the General Fund for federally assisted projects to maintain and enhance airport safety, preserve existing airport infrastructure, and expand capacity and efficiency throughout the airport system.

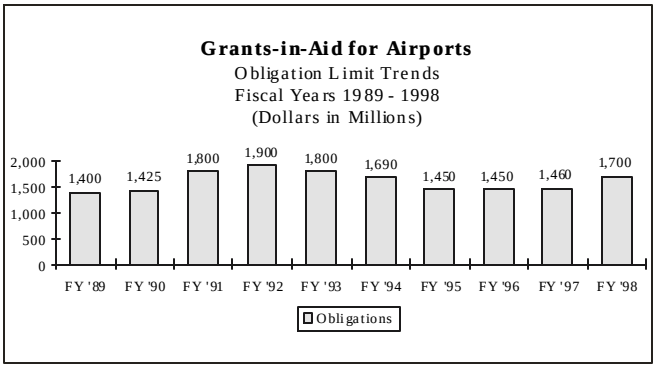
The National Plan of Integrated Airport Systems (NPIAS) draws selectively from local, regional, and state planning studies to estimate the costs associated with establishing a system of airports adequate to meet the needs of civil aviation. Costs identified in the NPIAS are nominally eligible for Federal grants-in-aid. Over the next 5 years, airport development to keep pace with growing aviation demands will cost $30 billion.

In FY 1998, FAA's Office of the Associate Administrator for Airports awarded approximately $1.70 billion in new AIP grants-in-aid obligations to improve and expand the Nation's airports. New grants awarded this fiscal year included the following: 503 grants totaling $1,036.7 billion for primary airports; 48 grants and $39.1 million for nonprimary commercial service airports; 122 grants totaling $127.8 million for reliever airports; 304 grants and $185.5 million for general aviation airports; 43 grants worth $9.3 million for airport system planning; and $105 million in 20 State Block Grant Program grants. In addition, $211.9 million was awarded for 81 grants to achieve noise compatibility for communities near airports. This amount included $84.2 million for the purchase of noise-impacted land adjacent to airports, $89.2 million for soundproofing residences and schools, and $38.5 million for other efforts to reduce noise.

The Passenger Facility Charge (PFC) Program, authorized by the Aviation, Safety and Capacity Expansion Act of 1990, provides an additional source of capital funding for the expansion and preservation of airport infrastructure in the national air transportation system. This legislation allows public agencies controlling commercial service airports, after receiving approval from the FAA, to charge enplaning passengers a $1, $2, or $3 facility charge.

PFC collections and AIP funds are complementary in the overall funding of airport improvements. The majority of PFC approved projects are also eligible for further funding under the AIP. As of September 30, 1998, authorized collections for the 296 approved locations since 1992 totaled over $21.9 billion. As of September 30, 1998, 69 percent of those primary airports eligible to collect PFC's were approved to do so. Collections, which first began on June 1, 1992, now produce revenue for airports at a rate exceeding $1.3 billion per year.

Although these revenues are not considered Federal funds, the public agency's application to impose a PFC must be approved by the FAA. During FY 1998, the FAA's airport personnel processed over 100 PFC applications, approving over $5.8 billion in PFC collections to fund approximately 900 projects.



FAA Budget Request for FY 1999. The Fiscal Year 1999 budget agreement reached on October 15, 1998, included more than $7.3 billion for aviation, including air traffic operations, capital improvements, and research and more than $1.9 billion for airport improvement grants. The agreement included a short-term reauthorization of some FAA programs to improve aviation safety and security, to modernize the air traffic control system, and to improve airports. It is hoped that the Congress will act swiftly to send a bill to the President to ensure that these crucial programs are continued.

YEAR 2000 (Y2K) COMPLIANCE

FAA Y2K Readiness

The FAA has established an aggressive program to ensure that all its computer systems will properly recognize the year 2000 data codes. The FAA has identified 645 systems, 430 mission critical and 215 nonmission critical, all of which have been assessed. The FAA determined that 226 of the 430 mission critical systems did not require renovation, 48 will be replaced with compliant systems, 5 will be retired, and 151 require renovation. As of December 31, 1998,

100 percent of FAA systems had successfully completed the renovation phase. Of the 215 nonmission critical systems, 99 were found to be compliant, 6 will be replaced, 16 will be retired, and 94 needed repair. All of the 94 nonmission critical systems that were found to be noncompliant had been renovated as of the end of December 1998. Independent validation and verification of the renovated systems are underway.

The FAA is currently in the fifth phase of the project, which is implementation. As of March 31, 1999, all FAA systems completed the validation phase which was the largest single effort within the Y2K five-phase repair process. This was due to the need to test all applications and the complex interactions between scores of converted or replaced computer platforms, operating systems, utilities, applications, databases, and interfaces. The FAA has developed an overall end-to-end testing strategy and will oversee its implementation. The agency is on schedule to complete the implementation phase by June 30, 1999.

The Costs to Address the Agency's Y2K Issues:

The FAA's Y2K program cost estimates (data as of December 31, 1998) are as follows:

Program Cost Estimates, by Fiscal Year	FY 1997	FY 1998	FY 1999	FY 2000	Total
	$6.3 M	$105.8 M	$184 M	$4 M	$300.1 M

The Risks of Y2K Issues to the Agency, Including Any Anticipated Effects on Agency Operations:

The Y2K problem could have an impact on the following major business processes:

Air Traffic Services (such as navigation, surveillance, flight services, weather, air traffic control and management, and communications)

Industry Regulation and Certification

Airport Regulation and Certification

Administrative Services

Commercial Space Transportation

Research and Acquisition

Civil Aviation Security and

System and Safety Analysis.

The worst-case scenario is wide-area loss of communications. Business impact analysis indicates that loss of communications has the greatest potential for disruption of national airspace system (NAS) operations because so many of the NAS air traffic control systems are dependent on communications, especially ground-to-air communications.

Impact of Nonreadiness of Third Parties

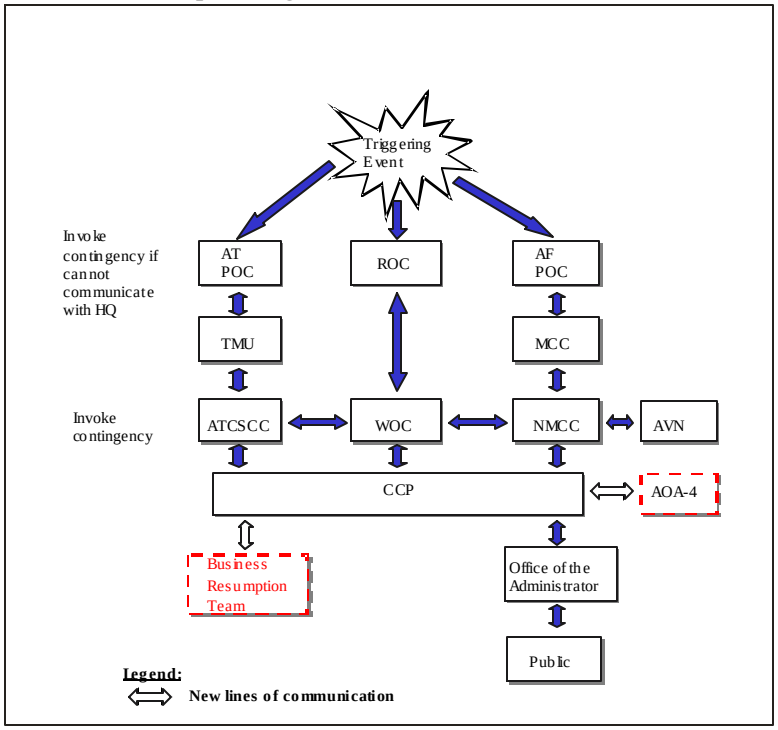
The FAA could be impacted by systems that use commercial off-the-shelf (COTS) software or hardware which, according to the information provided by the manufacturer, are not fully compliant (e.g., compliant with minor issues, not tested, no statements at all). In the instance of Microsoft, the impact of compliance with exceptions could create extra effort during the validation phase to ensure that there are no Y2K-related impacts to systems or application-based exceptions declared by the manufacturers.

The Agency's Contingency Plan(s), Including How the Agency is Preparing to Handle Most Likely Worst-Case Scenarios

Because communications systems are so important to the NAS, there are several backup communication alternatives available. The figure below presents the proposed coordination and communication structure. As stated earlier, the existing structure for responding to a contingency has proven to be effective and efficient for reporting and resolving system interruptions. This structure will be utilized to communicate and resolve year 2000 contingencies as well. Since the Year 2000 Program Office is responsible for all year 2000-related events, it will participate with problem restoration and return to normal procedures for all year 2000 contingencies.

When a trigger occurs such as a communications interruption, Air Traffic (AT) and Airway Facilities (AF) personnel are usually the first to become aware of the interruption. They will communicate the interruption to their respective Traffic Management Unit (TMU) and Maintenance Control Center (MCC). The Regional Operations Center (ROC) is also made aware of the interruption by either AF or AT. The ROC communicates the interruption information to the Washington Operations Center (WOC). Also, the TMU and the MCC will notify the Air Traffic Control Systems Command Center (ATCSCC) and National Maintenance Control Center (NMCC), respectively.

Proposed coordination and communication structure for responding to a NAS Year 2000 event.



The NMCC will notify Aviation System Standards (AVN). Once systems are repaired, AVN is available to perform rapid response flight checks. The ATCSCC and the NMCC also contact the WOC to ensure headquarters-level coordination is complete. The WOC, in turn, informs the emergency operations center of the problem. For interruptions that are believed to originate from year 2000 problems, the appropriate Business Resumption Team (one for each core business process) is responsible for invoking the contingency plan, monitoring problem status, and declaring return to normal operations. For NAS outages, the CCP informs the Year 2000 Program Office of the problem. For non-NAS outages, the Business Resumption Team manager is responsible for informing the Year 2000 Program Office of the problem. The Year 2000 Program Office will track problems and assist in reporting information on outages to upper management.

The Year 2000 Program Office has developed an FAA-wide Y2K Draft Business Continuity and Contingency Plan (BCCP) that builds on existing local facility contingency plans, system Y2K contingency plans, and agency emergency operations plans. The development of the BCCP involved the efforts of dozens of FAA subject matter experts to brainstorm and identify specific Y2K vulnerabilities, mitigating strategies, and modifications to current contingency plans. The resulting risk matrices comprise 176 pages of the draft BCCP. Special attention was paid to problems perceived to be characteristic of Y2K events, such as widespread power and communications failure and simultaneous failure of identical systems.

THE FAA'S STRATEGIC GOALS

In May 1998, the Administrator and her senior management team completed work on the goals that will carry the FAA and aerospace into the next century, from 1998 through 2003 and beyond. The 1998 FAA Strategic Plan lays out these goals, areas for strategic focus, projects to implement them, and outcome measures. The Strategic Plan is focused around three mission goals:

MISSION	*GOAL*
Safety	Reduce U.S. aviation fatal accident rates by 80 percent from 1996 levels by 2007.
Security	Prevent security incidents in the aviation system.
System Efficiency	Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

The 1998 Strategic Plan also includes four enabling goals that are not directly a part of the core FAA mission but are critical to accomplishing the mission. These enabling goals and the strategic focus areas supporting them cut across all three of the mission goals:

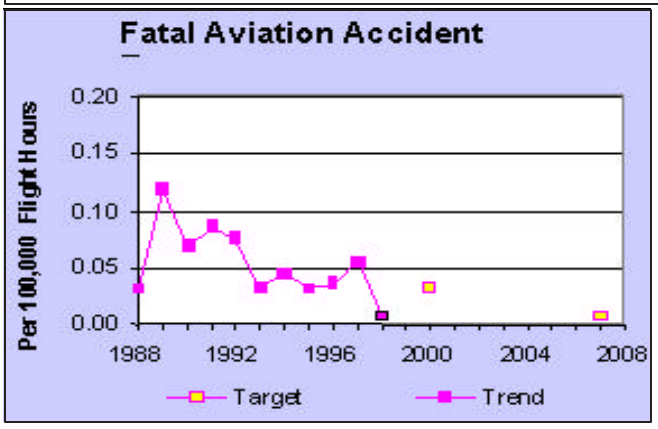
People: The foundation of accomplishment.
Reform: The framework for accomplishment.
The Environment: Our responsibility.
Global Leadership: Commitment to worldwide improvements.

In FY 1998, the FAA continued to channel its resources in directions dictated by its strategic plan and efforts by both the FAA and the Department of Transportation (DOT) under the Government Performance and Results Act of 1993. The performance measures on the next pages underscore the agency's commitment to each of its mission-based goals.

PROGRAM GOALS, MEASURES, AND PERFORMANCE

Air Carrier Fatal Accident Rate

Goal: By 2007, reduce the number of fatal aviation accidents by 80 percent.



Special Challenges: The fatal accident rate is very low, as most of the major causes of accidents have been identified, and FAA has either issued regulations or provided system improvements to reduce the accident risk.

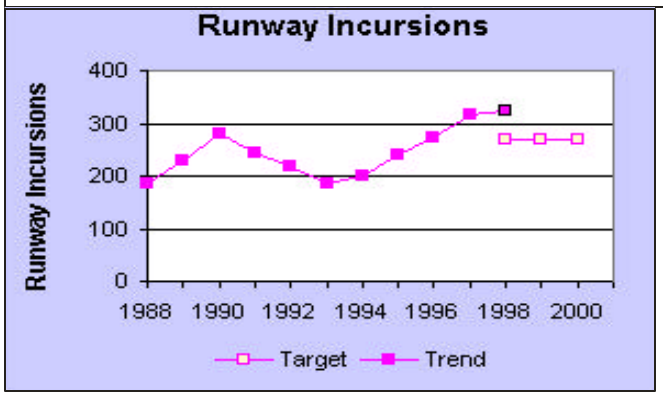
Strategies: FAA will continue to work with the aviation community and other governmental agencies to identify root causes of accidents and intervene accordingly to prevent potential causes of future accidents.

Current/Ongoing Activities:

- *Safer Skies* - conduct further research into the causal factors of accidents and identify and implement intervention strategies.
- Implement the new Air Transportation Oversight System (ATOS), which changes how the agency oversees and inspects air carriers.
- Issue a final rule on the terrain awareness and warning system (TAWS).
- Issue a policy statement for Flight Operations Quality Assurance (FOQA) programs.

Runway Incursions

Goal: Reduce the number of runway incursions by 15 percent in 1999 from a 1997 baseline of 318 total.



Special Challenges: Over the past two years, aviation operations at FAA and contract towers increased, on average, by 2.7 percent each year. With an increased tempo of operations, the risk of incursions increases. Runway incursions are most likely to occur at complex, high volume airports. These airports are characterized by multiple parallel or intersecting runways, multiple taxiway/runway intersections, complex traffic patterns and the need for traffic to cross active runways.

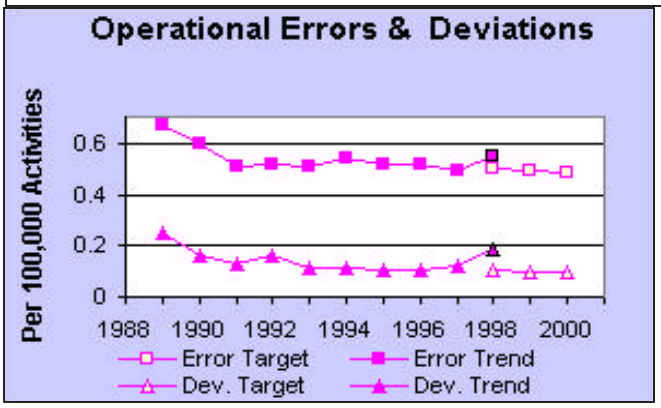
Strategies: FAA aims to reduce incursions by providing technologies that use multiple sensors including ground radars and automatic position reporting systems to detect the location of aircraft and vehicles, airport surface navigation aids, and enhanced software for detecting conflicts between aircraft on the runway and approaching aircraft, and signals at key points to warn pilots and ground equipment operators not to cross active runways.

Current/Ongoing Activities:

- Complete deployment of airport surface detection radar (ASDE)

Operational Errors and Deviations (Air Traffic)

Goal: Reduce the rate of operational errors and deviations to 0.496 or less and 0.099 or less, respectively, in 1999, from a 1994 baseline of 0.541 (errors) and 0.108 (deviations).



Special Challenges: Operational errors and deviations are a result of human error. Studies have shown that five factors are significant: traffic management relationships, quality assurance programs, training, management involvement, and control room environment.

Strategies: One of the major approaches to reducing operational errors and deviations is to provide a common level of understanding of procedures and policies among controllers and users. Training for controllers and pilots is central to this and will continue to be the focus of the Air Traffic Services' safety strategy. Technological improvements such as deployment of modern displays, new software automation and decision tools, and improved communication systems will support better determination of aircraft location and resolution of potential conflicts between aircraft.

Current/Ongoing Activities:

- Continued focus on training for controllers and cross-educational programs between pilots and controllers to provide a common level of understanding of procedures and policies among NAS operators and users that ensure safe operations.
- Conduct operational error workshops to address those areas where performance trends show increases.
- Deployment of modern displays, automation tools, decision support tools, and communications to support better determination of aircraft location and resolution of potential conflicts both in the air and on the airport surface. These include the User Request Evaluation Tool (URET) — one of the first phases of a conflict probe capability, and the deployment of the airport movement area safety system AMASS to provide information on airport surface safety hazards.

Aviation Security

Goal: Increase the detection of explosive devices and weapons that may be brought aboard aircraft. (Detection rates are sensitive information protected under 14 CFR Part 191. The 1998 baseline and targeted increases will be made available to appropriate parties upon request.)

Special Challenges: Technology and human vigilance must keep pace with the increasing sophistication of explosive devices and other dangerous articles and techniques terrorists or criminals may use to threaten a flight. At the same time, the speed of processing passengers and baggage through screening checkpoints and other security measures must improve to accommodate the rapid growth in passenger traffic. These challenges must be met while protecting civil liberties.

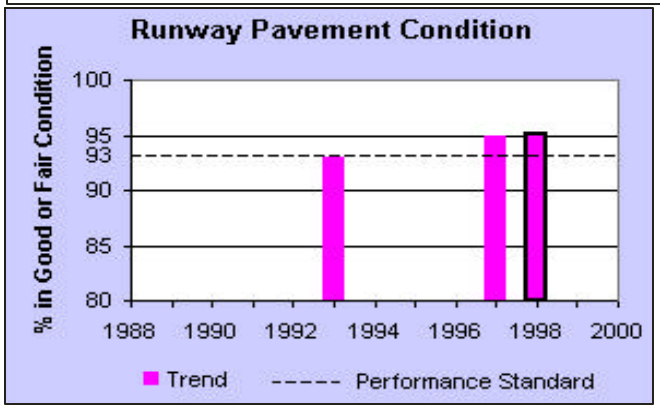
Strategies: FAA will conduct research to develop better technology and procedures to prevent weapons and explosive devices from being taken aboard aircraft. FAA will continue to purchase and deploy advanced aviation security equipment and monitor its use (and airline and airport security performance) through testing and assessments. The planned certification of screening companies is expected to increase levels of screener professionalism. A new performance-based approach to industry compliance with security requirements will encourage partnering to improve aviation security

Current/Ongoing Activities:

- In cooperation with the airlines, plan and deploy additional aviation security equipment, including trace detection devices, explosive detection systems, automated operator-assisted x-ray devices and advanced passenger screening units.
- Continue efforts leading to the purchase and installation of second-generation FAA-certified explosive detection systems to scan for explosives in checked baggage.
- Implement automated passenger profiling and bag match using the computer-assisted passenger screening (CAPS) system.
- In cooperation with the airlines, purchase and test hardened cargo containers designed to withstand bomb blasts.

Runway Pavement Condition

Goal: Maintain at least 93 percent of runway pavement in satisfactory condition.



Special Challenges: Airport budgets are often not adequate to meet all maintenance and rehabilitation requirements.

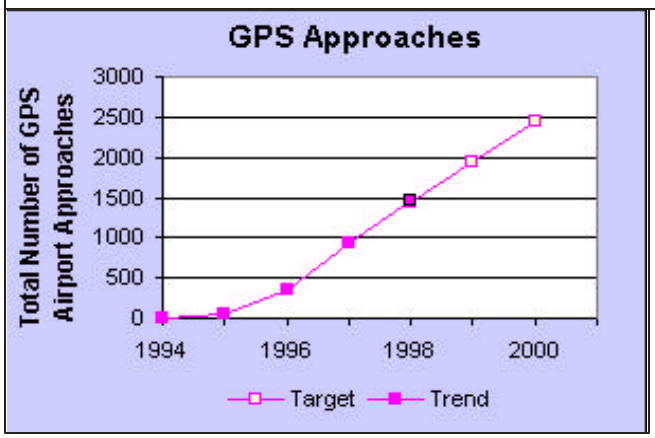
Strategies: FAA gives a high priority to AIP grants for pavement rehabilitation, and requires all grant recipients to have an airport maintenance management plan that includes pavement.

Current/Ongoing Activities:

- Based on past years' averages, approximately 24 percent of available AIP grant funds will be directed toward runway construction projects.
- An AIP demonstration program is underway to fund crack sealing at nonprimary airports.

GPS Landing Approaches

Goal: Increase the number of landing approaches using GPS technology by 500.



Special Challenges: Developing the approaches requires accurate survey information for airport runway location and any obstacles near the flightpath for approach. To use the approaches, aircraft will have to be equipped with GPS receivers and pilots will require appropriate training. To maximize the benefits to aviation users, FAA will need to develop approaches for airports that have electronic aids and those that do not.

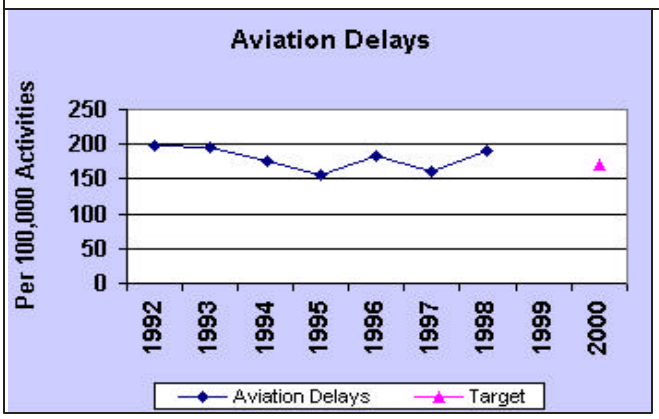
Strategies: FAA is using automated tools to incorporate airport and obstruction data into the printed approach plates used by pilots. A large number of approaches are being developed each year to ensure that precision approach guidance can be used.

Current/Ongoing Activities:

- In 1998, 531 GPS procedures were developed, 528 were successfully flight inspected, and 516 were published for operational use, bringing the nationwide total to 1484 published standard instrument approach procedures (SIAPS).
- The FAA has identified approximately 4,100 runway ends for which satellite-based approaches will be developed through a combination of GPS, WAAS, and local area augmentation systems (LAAS).

Aviation Delays

Goal: Reduce the number of volume- and equipment-related delays to 30.7 per 100,000 flight operations, from a 1994 base level of 36.9.



Special Challenges: Capacity-related delays are most prevalent at large hub airports that have significant constraints on increasing runway capacity. Equipment failures, volume of air traffic, and runway closures are other significant causes of delays.

Strategies: With Free Flight Phase I, FAA is aiming to improve the spacing of traffic streams into major airports and maximize the use of available capacity. FAA is also developing improved weather reporting.

Current/Ongoing Activities:

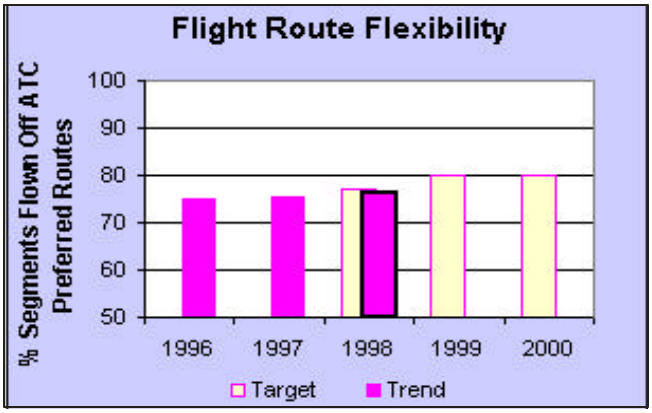
- Bring on-line and make operational air traffic control (ATC) and aeronautical navigation equipment now being delivered as part of the modernization of the NAS.
- Replace the aging computer equipment at all en route centers with the display system replacement (DSR) and in terminal facilities with the standard terminal automation replacement system (STARS). This new equipment will further reduce the number of outages, reduce delays, and allow optimum use of capacity to accommodate growth in operations.
- GPS satellite navigation.
- Implement, at various locations, new procedures that take advantage of additional runway and airport capacity increases.
- Deploy prototype automation tools, such as the passive final approach spacing tool (pFAST), to provide sequencing of arrival aircraft and increase airport acceptance rates.
- Replace obsolete long-range radar with an all solid-state system that offers enhanced range, extended coverage, and vastly improved weather detection.
- Develop the integrated terminal weather system (ITWS) to link all relevant weather data available in the terminal area.
- Deploy improved weather systems, such as the terminal Doppler weather radar (TDWR), automated surface observing system (ASOS), and the weather and radar processor (WARP) to detect and mitigate the impacts of weather.

Note 1. Summary of Significant Accounting Policies

A. Basis of Presentation

Flight Route Flexibility

Goal: Increase the number of flights flown off ATC-preferred routes to 80 percent from a 1996 baseline of 75 percent. The 2000 goal is 80 percent.



Special Challenges: Airport budgets are often not adequate to meet all maintenance and rehabilitation requirements.

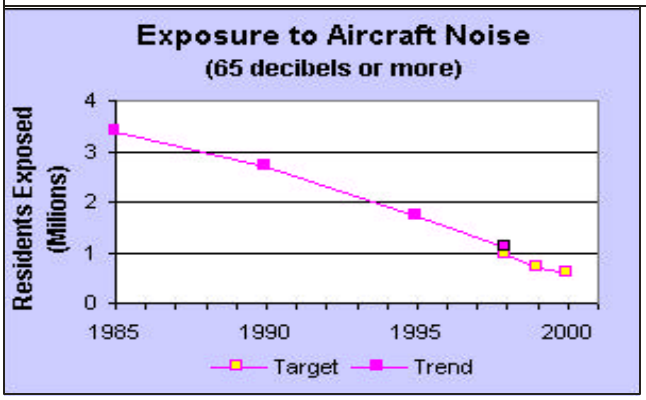
Strategies: FAA gives a high priority to AIP grants for pavement rehabilitation and requires all grant recipients to have an airport maintenance management plan that includes pavement.

Current/Ongoing Activities:

- Implement, by the end of year 2002, the core capabilities of Free Flight Phase 1 in partnership with the users and FAA labor organizations.
- Begin evaluation of two-way probe capability at both Indianapolis and Memphis Centers.
- Award the hardware procurement contract for the pFAST to aid controllers in making decisions more efficiently regarding the sequencing and runway assignment of terminal arrival aircraft.
- Award the hardware procurement contracts for the traffic management advisor (TMA) to aid controllers in the sequencing and spacing of en route arrival aircraft.
- Deploy the surface movement advisor (SMA) at Detroit Metro and Philadelphia Airports to facilitate the sharing of information to airlines and to enhance airline decisionmaking regarding the surface movement of aircraft.

Aircraft Noise Exposure

Goal: Reduce by 60 percent the number of residents exposed to significant aircraft noise (65 dB or greater), from an estimated baseline of 1.7 million in 1995.



Special Challenges: Much of the recent progress has been achieved by legislatively mandated transition of airplane fleets to newer-generation aircraft that produce less noise. Most of the gains from this change will have been achieved by FY 2000. The Airport Noise and Capacity Act of 1990 set December 31, 1999, as the deadline for elimination of Stage 2 (older, noisier) aircraft weighing more than 75,000 pounds. Growth in aviation activity also works against easy progress.

Strategies: FAA pursues a program of aircraft noise control in cooperation with the aviation community through noise reduction at the source (development and adoption of buildings near airports, operational flight control measures, and land use planning strategies.

Current/Ongoing Activities:

- Administer the grants-in-aid program to make funds available for projects mitigating the impacts of air transportation on communities.
- Continue research programs with the National Aeronautics and Space Administration to achieve significant noise reduction technology advances.
- Monitor compliance by the airlines with legislation passed in 1990 requiring that older, noisier (Stage 2) airplanes be replaced by quieter (Stage 3) airplanes by the year 2000

MANAGEMENT REPORT OF THE CHIEF FINANCIAL OFFICER

This past year, 1998, has been a year of significant progress toward improved financial management at the Federal Aviation Administration (FAA). While the FAA has received another disclaimer opinion from the Office of the Inspector General this year, FAA has taken major steps toward meeting the challenges necessary to bring this financial statement in compliance with the Chief Financial Officer's Act and implement full costing to enhance cost-effective mission performance.

The FAA has made significant progress in substantiating property, plant, and equipment since the last reporting period. We have developed a comprehensive schedule and are aggressively working to clean up our backlogs in Work in Process and document or model other assets by September 30, 1999. The success that we now can foresee is the result of efforts by hundreds of people across the FAA regions, centers, headquarters, and lines of businesses (LOB), as well as the result of a joint, collaborative, working partnership between the FAA, the Department of Transportation's Office of the Secretary (OST) and Office of the Inspector General (OIG), and the General Accounting Office (GAO). In the atmosphere of tight Federal funds, we have established three separate teams and are closely monitoring progress against assigned monthly goals. During FY 1998, we reduced our Work in Process accounts by $1.7 billion and have targeted another $1.3 billion for cleanup by March 31, 1999. Great strides were made in our inventory accounts, because we have conducted physical inventories of depot and field spares and changed our inventory pricing methodology to weighted average cost.

The FAA improved its financial management reporting and processes. In addition to the Balance Sheet, the agency included four new financial statements—the Statement of Net Cost, the Statement of Financing, the Statement of Budgetary Resources, and the Statement of Changes in Net Position and required supplementary stewardship information on investments for non-Federal physical property and research and acquisitions in the annual report. During FY 1998, the agency implemented a new off-the-shelf procurement system, ACQUIRE, which will enhance financial management reporting with its integration and conversion to the agency accounting system. We also initiated a project team to support the Office of the Secretary's implementation of a new off-the-shelf financial management system, DELPHI.

During FY 1998, FAA also made significant progress in implementing the Cost Accounting System (CAS). In acknowledgement of the size and complexity of the project, we enhanced and restructured CAS project management. After reassessing the project schedule and funding, we substantially increased both personnel and financial resources and adopted a phased approach to implementing the CAS FAA-wide. Programmatic accomplishments included implementing labor distribution in one of our major LOB's on a pilot basis, completing one full allocation cycle, and providing data in support of the Statement of Net Cost by LOB's. We also developed a project plan and methodology to ensure implementation within all LOB's by the end of FY 2001.

By the end of FY 1999, FAA anticipates charging for overflight services, i.e., flights which cross U.S. controlled airspace but which neither takeoff nor land in the United States. Unlike FAA's previous attempt to charge for overflights, the new fees will be based on the costs required to provide this service based upon financial information provided by the FAA's new CAS. The implementation of overflight fees is one of the first steps in making the agency more responsive to user needs and more accountable to our stakeholders.

The accompanying financial statements for FY 1998 have been prepared in accordance with the Chief Financial Officer's Act of 1990 with the form and content guidance provided by the Office of Management and Budget (OMB) and the Federal accounting standards provided by the Federal Accounting Standards Advisory Board

(FASAB). Questions regarding this annual report may be directed to the Financial Statements, Analysis, and Control Branch, AFM-310, 800 Independence Avenue, S.W., Washington, D.C., 20591

Carl B. Schellenberg
Chief Financial Officer

Memorandum

U.S. Department of Transportation
Office of the Secretary of Transportation
Office of Inspector General

Subject: INFORMATION: Report on Fiscal Year 1998 Financial Statements, Federal Aviation Administration FE-1999-070

Date: March 8, 1999

From: Kenneth M. Mead
Inspector General

Reply To Attn Of: Meche:x61496

To: The Secretary
Thru: The Deputy Secretary

I respectfully submit the Office of Inspector General (OIG) report on the Federal Aviation Administration (FAA) Financial Statements for the Fiscal Year (FY) 1998 ended September 30, 1998. This report is required by the Chief Financial Officers Act of 1990, as amended by the Government Management Reform Act of 1994.

The audit report is the responsibility of the OIG. All other information--including the Management Discussion and Analysis, Financial Statements, Notes, and Supplemental Information--is the responsibility of FAA. Our audit was limited to the Financial Statements as of, and for the year ended, September 30, 1998.

Our efforts this year focused on actions taken on five previously reported material weaknesses that included real property (land, buildings, and structures), personal property (equipment), work-in-process, accounting for field spares, and inventory valuation. FAA also prepared, for the first time, and we audited the Statement of Net Cost, Statement of Changes in Net Position, Statement of Budgetary Resources, and Statement of Financing.

During FY 1998, FAA completed significant corrective actions on its inventory. FAA revised inventory prices from standard cost to weighted average cost and performed a "wall to wall" inventory of spare parts at over 800 field units. As a result, FAA improved the accountability and overall management of its spare part inventories located throughout the country. FAA is establishing a perpetual accounting system for the field spares to correct its control weaknesses.

Real property, personal property, and work-in-process, reported at $11.9 billion, still could not be substantiated. We were unable to substantiate the acquisition cost of real property reported at $2.5 billion. For 117 real property items valued at

$790 million, we found 41 items recorded at $419 million were not properly valued; 34 items recorded at $141 million could not be supported; and 4 items valued at $50 million should be removed from property records. For example, a critical power system installed in 1992 was reported at $20 million. FAA was only able to provide contracts, purchase orders, payment records, and other support for $3.6 million. We also identified a building that was demolished over 10 years ago was still on FAA's records at $1 million.

A comparison of contracts for new equipment to personal property records showed FAA's equipment account was understated by at least $1 billion. The understatement of these assets primarily resulted from improper expensing of capital costs. For example, the voice switching control systems installed at 23 locations were recorded at $234 million, instead of the true cost of $1.1 billion. Unless FAA establishes supportable values for its substantial property investments, it will be unable to accurately compute depreciation and recoup its full cost through user fees.

FAA was unable to provide supporting cost documentation to substantiate the $2.1 billion recorded in the work-in-process account. As property is acquired and buildings are constructed for specific projects, associated costs are charged to, and accumulated in, a work-in-process account until projects are completed and systems are placed in service. FAA estimates there was $1.3 billion of completed projects in backlog as of September 30, 1998. For example, FAA completed construction of an air navigation facility in 1995 at a cost of $746,000. As of December 31, 1998, the facility remained in the work-in-process account. This backlog causes an understatement of depreciation expenses.

We also reviewed 185 projects from 7,345 active projects in the work-in-process account, and found 34 percent did not have transaction histories. Without transaction histories, recorded amounts cannot be traced to supporting documentation, such as invoices or contracts. For example, FAA spent $1.2 million on a flight service station during FY 1998. FAA could only provide transaction histories for costs of $123,000, leaving $1.1 million unsupported. As a result, we were unable to substantiate the accumulated costs for active projects.

FAA agrees property weaknesses exist, and initiated plans to correct these material weaknesses by September 30, 1999. We agree with FAA's corrective action plans, and we are closely monitoring resolution of the property issues.

We encountered problems with the new statements required for FY 1998. The presentation of the Statement of Net Cost by each FAA line of business was a giant step towards development of cost accounting information that would relate to operational data supporting performance measures. However, the Statement of Net Cost could not be substantiated because of delays in implementation of the cost

accounting system which led to the late completion of the statement. Since the system was in the development stage, we did not determine if expense transactions were charged to correct cost centers, whether total expenses charged to costs centers were accurately accumulated to the six lines of business, and whether administrative overhead expenses were accurately distributed.

We also could not substantiate material items on the Statement of Budgetary Resources and Statement of Changes in Net Position. The Statement of Financing showed an $877 million unexplained difference between the Statement of Budgetary Resources and Statement of Net Cost.

Correction of these material weaknesses will improve FAA's accountability and financial credibility, and provide accurate financial data to support budget requests, management decisions, and user fees.

FAA also is required to include excise tax revenues (revenues) in its Financial Statements. However, the Department of Treasury (Treasury) has control over collecting and reporting of revenues for the Airport and Airway Trust Fund. Last year, we asked the General Accounting Office (GAO) to review Treasury procedures for estimating and certifying revenues. GAO found errors and internal control weaknesses related to reporting and certifying total government excise tax revenues, and estimated these revenues were potentially overstated by as much as $571 million.

For FY 1998, we again asked GAO to review the Treasury's Office of Tax Analysis (OTA) estimating process and the Internal Revenue Service (IRS) quarterly certification process. GAO concluded internal control weaknesses still exist. Major weaknesses included IRS written procedures for certifying revenues and timely processing of tax returns. We again found significant variances between OTA estimates and IRS-certified revenues. For the five quarters ended June 1998, variances between estimated and actual revenues ranged from an understatement of $598 million to an overstatement of $276 million. This Treasury issue is totally outside the control of FAA and the Department of Transportation (DOT).

Because we could not determine the reliability of significant portions of the Financial Statements, we are unable to express, and we do not express, an opinion (commonly called a disclaimer of opinion) on the FAA Financial Statements as of, and for the year ended, September 30, 1998.

We identified three other significant issues. Although these issues are important, they would not necessarily prevent FAA from receiving an unqualified audit opinion.

- The National Civil Aviation Review Commission called for strong financial controls, including a reliable cost accounting system by October 1998, so that FAA could manage its resources in a businesslike manner, and allocate its cost correctly and fairly as the basis for a cost-based user fee system. FAA still lacks the detailed and reliable cost data to accurately distribute its cost. The FAA cost accounting system was scheduled to be operational by October 1, 1998, but will not be fully implemented until March 31, 2001. Consequently, FAA may not be able to realize the $1.5 billion in user fees proposed in its FY 2000 budget.

- FAA was not in compliance with the Federal Financial Management Improvement Act of 1996 because the Department's accounting system was not used to prepare the Financial Statements, and the accounting system was not the only source of financial information. FAA made 349 closing and adjusting entries, totaling $51 billion, outside the accounting system to prepare the Financial Statements.

- The performance measures presented in the Management Discussion and Analysis did not provide information about the cost effectiveness of FAA programs, and did not relate to the information presented in the Statement of Net Cost. Only two of the nine performance measures included FY 1998 performance data.

Our report on the FY 1997 FAA Financial Statements disclosed efforts were in process to complete corrective action on 21 prior recommendations. We are not making new recommendations this year because efforts are still underway on 17 recommendations. Since problems with the new statements and trust fund revenues are common to FAA and other DOT Operating Administrations, recommendations addressing these issues will be made in our report on the DOT Consolidated Financial Statements.

A draft of this report was provided to the FAA Assistant Administrator for Financial Services on February 24, 1999. We considered his comments in preparing this report. He agreed with the issues, and said FAA expects to have all corrective actions completed by September 30, 1999.

We appreciate the cooperation and assistance of FAA and DOT representatives. If we can answer questions or be of any further assistance, please call me at (202) 366-1959, or John Meche at (202) 366-1496.

Attachments

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DEPARTMENT OF TRANSPORTATION
INSPECTOR GENERAL'S INDEPENDENT REPORT ON
FEDERAL AVIATION ADMINISTRATION
FISCAL YEAR 1998 FINANCIAL STATEMENTS

To the Federal Aviation Administrator

The Department of Transportation (DOT), Office of Inspector General (OIG), audited the Federal Aviation Administration (FAA) Financial Statements as of, and for the year ended, September 30, 1998. We were unable to express an opinion on the Financial Statements because we could not substantiate the acquisition value for property, plant, and equipment reported at $11.9 billion. The Statement of Net Cost could not be substantiated because of delays in the implementation of the cost accounting system which led to the late completion of the statement. We also could not substantiate material items on the Statement of Budgetary Resources and Statement of Changes in Net Position. The Statement of Financing showed there was an $877 million unexplained difference between the Statement of Budgetary Resources and the Statement of Net Cost.

We also are reporting on internal accounting and administrative control systems, and compliance with laws and regulations, as applicable to the FAA Financial Statements. We performed the audit in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States, and the Office of Management and Budget (OMB) Bulletin 98-08, Audit Requirements for Federal Financial Statements, as amended on January 25, 1999.

Our audit objectives for the FY 1998 Financial Statements were to determine whether (1) the principal Financial Statements are presented fairly in accordance with OMB Bulletin 97-01 as amended on November 20, 1998; (2) FAA has an adequate internal accounting and administrative control structure; (3) FAA has complied with laws and regulations which (a) could have a direct and material effect on the Financial Statements or (b) have been specified by OMB; (4) the information and manner of presentation in the Management Discussion and Analysis is materially consistent with the information in the Financial Statements; and (5) the internal control structure ensured the existence and completeness of reported data supporting performance measures.

This report presents our disclaimer of opinion on the FAA Financial Statements as of, and for the year ended, September 30, 1998. The financial information in the Management Discussion and Analysis and Supplemental Information was materially consistent with the Financial Statements. We are including our reports on the internal control structure, and compliance with laws and regulations, in Sections B and C of this report.

A. DISCLAIMER OF OPINION ON FINANCIAL STATEMENTS

Property, plant, and equipment, reported at $11.9 billion on the Balance Sheet, could not be substantiated. We were able to determine that personal property (equipment) is significantly understated. The Statement of Net Cost could not be substantiated because of delays in the implementation of the cost accounting system which led to the late completion of the statement. Consequently, we did not determine if expense transactions were charged to correct cost centers, whether total expenses charged to costs centers were accurately accumulated, and whether administrative overhead expenses were accurately distributed. The understatement of equipment, and the backlog in the work-in-process account, cause an understatement of depreciation expense on the Statement of Net Cost.

We also could not substantiate material items on the Statement of Budgetary Resources such as Unobligated Balance ($7.2 billion), and Statement of Changes in Net Position such as Increase (Decrease) in Unexpended Appropriations ($380 million). We again found significant variances between the Department of Treasury estimated and certified excise tax revenues for the Airport and Airway Trust Fund. The Statement of Financing showed there was an $877 million unexplained difference between the Statement of Budgetary Resources and the Statement of Net Cost.

Because we could not determine the reliability of significant portions of the Financial Statements, we are unable to express, and we do not express, an opinion on the FAA Financial Statements as of, and for the year ended, September 30, 1998.

B. REPORT ON INTERNAL CONTROL STRUCTURE

While the purpose of our work was not to express, and we do not express, an opinion on internal controls, we found material internal control weaknesses that contributed to reportable conditions. Our work would not necessarily disclose all material internal control weaknesses.

MATERIAL WEAKNESSES

The following sections describe material weaknesses we identified, and their effect on the Financial Statements and management of FAA operations. The financial statement weaknesses were reported to OMB and Congress as part of the Department's reporting under the Federal Managers' Financial Integrity Act.

Accounting for Property, Plant, and Equipment

Real Property

We were unable to substantiate the acquisition cost of real property (land, buildings, and structures) reported at $2.5 billion. Improvements continue to be needed in the accuracy and reliability of real property records. The FAA Real Property Record System includes property that is not valued correctly or whose stated value is not supported. We also found unrecorded property during our site visits. As of April 30, 1998, real property records contained 11,132 property items, recorded at $25,000 or greater. We sampled 117 items with a recorded value of $790 million and found:

- 41 items, recorded at $419 million, were not properly valued,
- 34 items, recorded at $141 million, could not be supported, and
- 4 items, valued at $50 million, should be removed from property records.

For example, a critical power system installed in 1992 was reported at $20 million. FAA was only able to provide contracts, purchase orders, payment records, and other support for $3.6 million. In another example, a building demolished over 10 years ago was still on FAA's records at $1 million.

We also identified 52 items, owned by FAA, that were not recorded in the Real Property Record System. FAA could not provide documentation to support the value of these items.

Personal Property

FAA recognizes the reported $4.1 billion acquisition value for its personal property (equipment) is materially understated as disclosed in Note 9 to its Financial Statements. The understatement of equipment is the result of years of expensing contract costs, associated with bringing equipment into operational status, that should have been added (capitalized) to the asset value. We have preliminarily identified that the value for five of the most costly equipment systems, currently in operation, needs to be increased by at least $1 billion. For example, the voice switching control systems installed at 23 locations were recorded at a total cost of $234 million, instead of the true cost of $1.1 billion. Unless FAA establishes supportable values for its substantial property investments, it will be unable to accurately compute depreciation and recoup its full cost through user fees. The exact amount of the undervaluation for the five systems, and other less expensive systems, is unknown at this time. As a result,

personal property and its related accumulated depreciation are understated on the Balance Sheet, and depreciation expense is understated on the Statement of Net Cost.

Work-in-Process

FAA was unable to provide supporting cost documentation to substantiate the $2.1 billion recorded in the work-in-process account. As property is acquired and buildings are constructed for specific projects, associated costs are charged to, and accumulated in, a work-in-process account until the projects are completed and systems are placed in service. When completed, the project costs should be transferred to the appropriate real or personal property accounts. Project costs are considered backlog if not removed from the work-in-process account within 6 months after project completion. FAA estimates there was $1.3 billion in backlog as of September 30, 1998.

We statistically sampled 185 projects from 7,345 active work-in-process projects with accumulated costs estimated at $887 million. We were unable to obtain transaction histories on 34 percent of the projects. Without transaction histories, recorded amounts cannot be traced to supporting documentation, such as invoices or contracts. For example, FAA spent $1.2 million on a flight service station during FY 1998. FAA could only provide transaction histories for costs of $123,000, leaving $1.1 million unsupported. As a result, we were unable to substantiate the accumulated costs for active projects.

The remaining $1.3 billion of accumulated project costs, determined by FAA as backlog, also could materially affect the Financial Statements. Depreciation of assets begins only when completed projects are transferred to the appropriate asset account (real or personal property). For example, FAA completed construction of an air navigation facility in 1995 at a cost of $746,000. As of December 31, 1998, the facility remained in the work-in-process account. Consequently, the backlog in the work-in-process account causes an understatement of depreciation expenses on the Statement of Net Cost. For a sample of 251 backlog projects, we found unrecorded depreciation was at least $62 million.

The Departmental Accounting and Financial Information System (DAFIS) does not provide detailed information and audit trails to trace transactions to source documents to support the work-in-process balance. Instead, FAA relies on a cost report that has two major deficiencies. The report captures costs which are expensed, and therefore should not be recorded in the work-in-process account. The report also contains costs associated with completed work that should be recorded in the personal or real property accounts. In our report on the FY 1996 Financial Statements, we recommended the cost report be reconciled to summary

account records, or a new database be created to support the work-in-process balance. FAA elected to reconcile the cost report to the work-in-process balance. Over the past 2 years, FAA has been unable to demonstrate that the cost report can be reconciled to the work-in-process balance. FAA has agreed to improve the work-in-process database.

Capitalization Process

FAA does not have an effective process for accumulating costs for acquiring property, and eventually recording these costs in the appropriate real and personal property accounts. This process is commonly referred to as the capitalization process. The most recent study of the capitalization process was conducted by an independent public accounting firm under contract to FAA. The study found FAA Regional Offices were not performing timely closeout of facilities and equipment projects, leaving projects open and accumulated costs in regional work-in-process accounts. The study included 89 recommendations. FAA has implemented some recommendations, but has no comprehensive plan in place to monitor corrective actions taken, to evaluate the impact on the capitalization process, or to evaluate other recommendations to automate this labor-intensive process. FAA has agreed to form a process improvement team to streamline capitalization procedures.

Corrective Action Plans on Property

Elimination of these material weaknesses in its property accounts is essential if FAA is to obtain an unqualified opinion on its FY 1999 Financial Statements. FAA agrees the material weaknesses exist, and has initiated corrective actions. Plans are developed to correct the real property, personal property, and work-in-process weaknesses by September 30, 1999. We agree with the corrective action plans, and we are closely monitoring the work to ensure resolution of issues with property, plant, and equipment.

Cost Accounting Information

The Statement of Net Cost is one of the new Financial Statements required by OMB Bulletin 97-01 for FY 1998. According to the Managerial Cost Accounting Implementation Guide, issued by the Joint Financial Management Improvement Program, the Statement of Net Cost is pertinent to reporting performance results, and provides financial information that can be related to outputs and outcomes of an entity's programs and activities. According to OMB Bulletin 97-01, an entity should report performance measures that provide information about the cost effectiveness of programs, and should be linked to the programs featured in the Statement of Net Cost.

The Federal Aviation Reauthorization Act of 1996 required FAA to establish a cost accounting system. The FAA cost accounting system was to be fully operational by October 1, 1998. However, as of March 1, 1999, the FAA cost accounting system is not expected to be fully operational for all lines of business until March 31, 2001.

FAA decided to present the Statement of Net Cost by its six lines of business. This was a giant step towards development of cost accounting information that relates to operational data supporting performance measures. However, the Statement of Net Cost could not be substantiated because of delays in implementation of the cost accounting system which led to late completion of the statement.

DAFIS does not perform cost accounting, the Department's Financial Statements Module does not produce the Statement of Net Cost, and the FAA cost accounting system was not operational. Although operating costs were distributed among the six lines of business, the statement did not present operating cost for major programs and activities under each line of business. Therefore, the Statement of Net Cost did not relate to the performance measures presented in the Management Discussion and Analysis.

The Statement of Net Cost included an accumulation of expenses for each line of business using an analysis of over one million expense transactions charged to about 9,000 cost centers by the FAA cost accounting system, which was still under development. Consquently, we did not determine if expense transactions were charged to correct cost centers, and whether total expenses charged to cost centers were accurately accumulated to the six lines of business.

Administrative overhead expenses were manually distributed to the six lines of business. After we questioned the basis for distribution of these costs, FAA manually re-distributed nearly $1.3 billion, increasing costs for Air Traffic Services and reducing costs for the five other lines of business by $647 million. We did not determine if the administrative overhead expenses were accurately distributed to the lines of business because of the unavailability of the cost accounting system to test distribution of costs.

Using statistical sampling techniques, we estimated FAA overstated current year expenses for airport grants by $146 million. This overstatement represented prior year grant expenses that were not presented to FAA for payment until FY 1998. For example, on May 20, 1998, the City and County of Denver requested reimbursement of expenses totaling $30 million for the Denver International Airport, for January 1992 through December 1995. While these expenses were for prior periods, they were reported on the Statement of Net Cost as expenses of

FY 1998. Since the statement is to show cost components for the current reporting period, these expenses were distorting costs for the Airports line of business. FAA was aware of this problem and made the correct adjustment. Unless FAA establishes a process to estimate and report grant expenses at yearend, the Statement of Net Cost will continue to misstate current costs for Airports.

As discussed earlier, FAA continues to have property accounting weaknesses that impact the Statement of Net Cost. The understatement of equipment, and the backlog in work-in-process, cause an understatement of depreciation expense on the Statement of Net Cost.

Budgetary Accounting Information

Three of the new statements for FY 1998 are dependent on budgetary accounting information. The Statement of Budgetary Resources provides information about how budgetary resources were made available, as well as their status at yearend. The Statement of Changes in Net Position reports the beginning net position, the items which caused net position to change, ending net position, and reports on appropriations used as a financing source. The Statement of Financing is a reconciliation of the budgetary information in the Statement of Budgetary Resources and the operating expense information in the Statement of Net Cost. The reconciliation ensures there is a proper relationship between financial and budgetary accounts in the entity's financial management system.

FAA made the following disclosure in Footnote 24, Statement of Budgetary Resources Disclosures,

> In an effort to accurately reflect the status of budgetary resources, FAA compiled data from the SF-132, Apportionment, and Reapportionment Schedule, and the SF-133, Report on Budget Execution, to prepare the Statement of Budgetary Resources. Some of the budgetary account balances from the (DAFIS) general ledger were not accurate or were incomplete because the processes to record specific transactions were not available in the accounting system.

Consequently, the Department's accounting system was not the source of the budgetary accounting information reported in the Financial Statements.

We could not substantiate material items on the Statement of Budgetary Resources, such as Unobligated Balance ($7.2 billion), and Statement of Changes in Net Position, such as Increase (Decrease) in Unexpended Appropriations ($380 million). The Statement of Financing showed there was an $877 million unexplained difference between the Statement of Budgetary Resources and the

Statement of Net Cost. FAA stated this discrepancy was identified during the reconciliation of the two statements, but could not provide any other information. Therefore, FAA was unable to determine if there was a proper relationship between its financial and budgetary records.

FAA is aware of these budgetary accounting issues, and has hired an independent contractor to assist in correcting them. We support this effort and will work with FAA and the contractor to correct this weakness.

Excise Tax Revenues

FAA is required to include excise tax revenues (revenues) in its Financial Statements. However, the Department of Treasury (Treasury) has control over collecting and reporting of revenues for FAA. The Internal Revenue Service (IRS) collects revenues and makes daily deposits into the General Fund of the United States (General Fund). Upon receipt, IRS cannot differentiate between revenues for the Airport and Airway Trust Fund (AATF) and other government trust funds. IRS places these funds in a "holding" account until tax returns are filed, usually several months later. IRS then uses tax returns to certify the amount of revenues that should have been distributed to the AATF.

Congress, recognizing that trust funds cannot wait months for revenues, directed the Secretary of the Treasury to make monthly transfers, based on estimated revenues, from the General Fund to the appropriate trust funds. Within Treasury, the Office of Tax Analysis (OTA) makes these monthly estimates, and the Bureau of Public Debt transfers estimated amounts to the AATF. Estimates are adjusted later based on actual tax returns.

Last year, we asked GAO to review the Treasury procedures for estimating and certifying revenues. The GAO contractor was unable to complete the review of the estimating process, and terminated its work because information on how estimates were made was not available. GAO also found errors and internal control weaknesses related to reporting and certifying of total government excise tax revenues, and estimated these revenues were potentially overstated by as much as $571 million.

For FY 1998, we again asked GAO to review the OTA estimating process and the IRS quarterly certification process. GAO concluded internal control weaknesses still exist. Major weaknesses included IRS written procedures for certifying revenues and timely processing of tax returns.

We again found significant variances between OTA estimates and IRS-certified revenues. For the five quarters ended June 1998, variances between estimated and

actual revenues ranged from an understatement of $598 million to an overstatement of $276 million. Details follow:

Quarter Ending	OTA Estimate (Thousands)	IRS Certification (Thousands)	Difference (Thousands)
June 1997	$1,433,442	$1,533,890	$(100,448)
September 1997	1,829,463	1,722,851	106,612
December 1997	2,016,322	1,980,573	35,749
March 1998	1,778,504	1,502,650	275,854
June 1998	2,212,434	2,810,497	(598,063)

During this year's audit, GAO found internal control weaknesses. For example, the December 1997 certification was understated by $57 million because IRS omitted collections for aviation gas from its certification. IRS subsequently made adjustments and corrected the error in December 1998.

In the past, the transfer of revenues, based on estimates, to the AATF exceeded aviation tax revenues. On January 1, 1996, legislation authorizing collection of aviation taxes lapsed. The Small Business Job Protection Act of 1996 reinstated the aviation taxes from August 27 to December 31, 1996. Revenues were transferred to the AATF during this period, although airlines were not making deposits. Excess transfers totaled $1.2 billion. Legislation was needed to avoid a shortfall in the AATF, and allow the trust fund to retain the $1.2 billion.

Considering the internal control weaknesses, and the Treasury's past performance, one additional area causes concern. The AATF receives about nine percent of excise tax revenues collected by IRS. As of September 30, 1998, the IRS "holding" account has a $9.2 billion balance awaiting the receipt of tax returns. If tax returns are not filed or otherwise matched to receipts, the money remains in the General Fund. We were concerned that this "holding" account might contain revenues for the AATF. At our request, GAO asked IRS to age this account. As of February 26, 1999, IRS had not responded.

OTA also has noticed a consistent residual amount of about $1 billion annually in the "holding" account with no liability to trust funds. This "holding" account could contain revenues for the AATF.

C. REPORT ON COMPLIANCE WITH LAWS AND REGULATIONS

Our objective was not to express, and we do not express, an opinion on overall compliance with laws and regulations. Our work would not necessarily disclose all material noncompliance.

Federal Financial Management Improvement Act of 1996

The Federal Financial Management Improvement Act of 1996 requires auditors to report whether agencies' financial management systems comply substantially with federal accounting standards, financial systems requirements, the government's standard general ledger at the transaction level, and Federal Financial Management Systems Requirements issued by the Joint Financial Management Improvement Program. FAA continues to be in noncompliance because (1) property, plant, and equipment amounts presented on the Balance Sheet were inaccurate and not supported by financial records, (2) DAFIS was not used for preparation of the Financial Statements, and (3) a cost accounting system had not been implemented.

Acquisition value of property and equipment could not be substantiated. For example, FAA was unable to provide supporting cost documentation to substantiate the $2.1 billion recorded in the work-in-process account. Personal property reported at $4.1 billion was materially understated. We also were unable to substantiate real property reported at $2.5 billion.

DAFIS was not the only source of financial information used to prepare the FAA Financial Statements. OMB implementation guidance states that to be in substantial compliance with the Federal Financial Management Systems Requirements, the "agency core financial system, supported by other systems containing detail data summarized in the core financial system, is the source of information used in the preparation of the annual financial statements. . . ." Because the core accounting system did not contain the most current financial information, FAA made 349 closing and adjusting entries, totaling $51 billion, outside DAFIS to prepare the Financial Statements. The 349 entries were recorded in the Financial Statement Module, a tool used to generate the Financial Statements. These adjustments, at a minimum, should be recorded in DAFIS at the summary level. However, FAA could not record these adjustments in DAFIS because FY 1998 records were closed within 5 days after yearend. DAFIS also did not account for Appropriations Used activity and was not in compliance with the Standard General Ledger. These issues will be addressed in the new Departmental accounting system currently expected to be fully operational by June 2001.

Federal Financial Accounting Standards Number 4 requires all Federal departments to have the capability in place, beginning in FY 1998, to meet requirements of the managerial cost accounting standards. Cost accounting is needed in the Federal Government to provide reliable and timely information on the full cost of Federal programs. The National Civil Aviation Review Commission called for strong financial controls, including a reliable cost

accounting system for FAA by October 1998, so that FAA could manage its resources in a businesslike manner, and allocate its cost correctly and fairly as the basis for a cost-based user fee system. FAA still lacks the detailed and reliable cost data to accurately distribute operating cost. The FAA cost accounting system was scheduled to be operational by October 1, 1998, but will not be implemented in all lines of business until March 31, 2001. Consequently, FAA may not be able to realize the $1.5 billion in user fees proposed in its FY 2000 budget.

Performance Data

Under OMB Bulletin 98-08, our responsibility was to obtain an understanding of internal controls relating to the existence and completion of performance data. The nine performance measures presented by FAA in the Management Discussion and Analysis were consistent with the measures under development by FAA as part of its implementation of the Government Performance and Results Act. The performance measures also complied with requirements of OMB Bulletin 97-01 to report performance measures consistent with goals and objectives in the agency's strategic plan.

OMB Bulletin 97-01 also requires entities to strive to develop performance measures that provide information about cost effectiveness of programs, and link to the programs presented in the Statement of Net Cost. However, as we reported in our finding on Cost Accounting Information, FAA did not accumulate or report costs by major program under each line of business, or provide information about the cost effectiveness of FAA programs. Furthermore, the performance measures did not relate to the information presented in the Statement of Net Cost. The cost accounting information, needed to link the performance measures with the Statement of Net Cost and provide information on cost effectiveness of FAA's programs, was not available because the FAA cost accounting system was still under development.

The performance measures also were not based on current performance data. While only two of the nine performance measures were based on FY 1998 operational data, five were based on 1997 data, one was based on 1996 data, and one was based on 1995 data. For example, FAA presented a performance goal of reducing the number of residents exposed to significant aircraft noise by 60 percent. However, statistics were only presented through 1995, so current performance could not be evaluated. Five of the nine measures relied on data from sources outside the Department. Consequently, we could not determine if the data were complete.

As part of our Financial Statement audit, we did not test the validity or accuracy of the performance data. This will be accomplished as part of selected program

audits during FY 1999. The Department is in process of implementing a comprehensive system to control the quality of performance data. Without timely and complete data, FAA will be unable to compare performance results with current year financial data.

D. PRIOR AUDIT COVERAGE

The OIG has issued audit reports on the FAA Financial Statements for the past 6 years. The FYs 1992 and 1993 audits were limited to the Airport and Airway Trust Fund. The subsequent audits included all FAA funding and activities, but were limited to the Statements of Financial Position (Balance Sheet). The FY 1996 audit report included 35 recommendations to strengthen internal controls and establish the correctness of financial statement balances. The FY 1997 audit report stated efforts were still in process to complete corrective action on 21 recommendations. Efforts are still underway to complete action on 17 of our prior recommendations.

Since our report on the FY 1997 Financial Statements was issued, we issued five financial-related audit reports, three of which related to FAA inventory issues. The reports on inventory were:

Replenishing Logistics Center Inventory, Report Number FE-1998-136, dated May 15, 1998.

Valuation of Logistics Center Inventory, Report Number FE-1998-202, dated September 10, 1998.

Inventory of Field Spare Parts, Report Number FE-1998-209, dated September 29, 1998.

On July 6, 1998, in Report Number FE-1998-167, we reported that while FAA established automated fund control systems to track reprogramming of appropriated funding, FAA (1) exceeded Congressionally established internal reprogramming thresholds in FY 1997 for three budget line items by $8.7 million, (2) processed reprogramming actions in FYs 1997 and 1998 that resulted in "assessments," (3) charged at least $2 million to the wrong appropriation during FYs 1997 and 1998, and (4) permitted employees to work during FY 1998 on a program that did not receive FY 1998 funding.

On August 10, 1998, in Report Number FE-1998-186, we reported FAA needed to address four system design issues, potentially involving billions of dollars of transactions, in the development of its cost accounting system. We reported that FAA had not decided how to allocate facilities and equipment costs to operating

facilities throughout FAA. We also reported that much work needed to be done to meet the very ambitious goal of having a fully operational cost accounting system by March 31, 1999.

This report is intended for the information of FAA and DOT management. However, this report is a matter of public record, and its distribution is not limited.

Kenneth M. Mead
Inspector General

LIMITATIONS OF THE FINANCIAL STATEMENT

- The financial statements have been prepared to report the financial position and results of operations of the Federal Aviation Administration, pursuant to the requirements of 31 U.S.C., 3515(b).
- While the statements have been prepared from the books and records of the FAA in accordance with the formats prescribed by the Office of Management and Budget (OMB), the statements are in addition to the financial reports used to monitor and control budgetary resources which are prepared from the same books and records.
- The statements should be read with the realization that they are for a component of the U.S. Government, a sovereign entity. One implication of this is that liabilities cannot be liquidated without legislation that provides resources to do so.

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
CONSOLIDATED BALANCE SHEET
As of September 30, 1998

(Dollars in Thousands)

Assets		
Entity Assets:		
Intragovernmental		
Fund Balance with Treasury (Note 2)	$	1,569,560
Investments (Note 3)		8,752,638
Accounts Receivable, Net (Note 4)		54,894
Other Assets (Note 5)		160,330
Total Intragovernmental Assets	$	10,537,422
Accounts Receivable, Net (Note 4)		26,318
Loans Receivables and Related		-
Foreclosed Property, Net (Note 6)		394
Cash and Other Monetary Assets (Note7)		59,710
Inventory and Related Property, Net (Note 8)		819,580
General Property, Plant, and Equipment, Net (Note 9)		8,375,113
Other Assets (Note 5)		8,462
Total Entity Assets:	$	19,826,999
Total Assets	$	19,826,999
Liabilities		
Liabilities Covered by Budgetary Resources:		
Intragovernmental Liabilities:		
Accounts Payable	$	179,788
Other Intragovernmental Liabilities (Note 11)		69,097
Total Intragovernmental Liabilities		248,885
Accounts Payable		505,979
Lease Liability (Note 12)		687
Other Liabilities (Note 11)		189,008
Total Liabilities Covered by Budgetary Resources	$	944,559
Liabilities Not Covered by Budgetary Resources:		
Intragovermental Liabilities:		
Debt (Note 10)	$	24
Other Intragovernmental Liabilities (Note 11)		181,065
Total Intragovermental Liabilities		181,089
Lease Liabilities (Note 12)		103,532
Environmental and Disposal Liabilities (Note 13)		3,244,300
Federal Employees and Veterans Benefits Payable (Note 14)		926,780
Contingent Liabilities (Note 15)		465,394
Other Liabilities (11)		408,072
Total Liabilities Not Covered by Budgetary Resources	$	5,329,167
Total Liabilities	$	6,273,726
Net Position Balances:		
Unexpended Appropriations (Note 16)	$	336,470
Cumulative Results of Operations (Note 17)		13,216,803
Total Net Position	$	13,553,273
Total Liabilities and Net Position	$	19,826,999

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
CONSOLIDATED STATEMENT OF NET COST
For the year ended September 30, 1998

(Dollars in Thousands)

Costs: (Notes 18 and 19)		
Programs		
Air Traffic Services		
Intragovernmental	$	449,742
With the Public		5,299,603
Total		5,749,345
Less Earned Revenues		(21,149)
Net Air Traffic Services Costs	$	5,728,196
Regulation & Certification		
Intragovernmental	$	25,571
With the Public		664,827
Total		690,398
Less Earned Revenues		25
Net Regulation & Certification Costs	$	690,423
Research and Acquisition		
Intragovernmental	$	14,888
With the Public		1,076,509
Total		1,091,397
Less Earned Revenues		(47,015)
Net Research and Acquisition Costs	$	1,044,382
Airports		
With the Public		
Grant Program	$	1,384,466
Administration		52,075
Net Airports Costs	$	1,436,541
Civil Aviation Security		
Intragovernmental	$	4,144
With the Public		152,714
Total		156,858
Less Earned Revenues		(819)
Net Civil Aviation Security Costs	$	156,039
Commercial Space		
Intragovernmental		132
With the Public	$	6,895
Net Commercial Space Costs	$	7,027
Other Programs		
Intragovernmental	$	26,513
With the Public		23,398
Total		49,911
Less Earned Revenues		(33,950)
Net Other Program Costs	$	15,961
Costs Not Assigned to Programs	$	16,631
Less Earned Revenues Not Attributed to Programs	$	(13,388)
Deferred Maintenance, unaudited (Note 20)		
Net Cost Of Operations	$	9,081,812

U.S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
CONSOLIDATED STATEMENT OF CHANGES IN NET POSITION
For the year ended September 30, 1998

(Dollars in Thousands)

Net Cost of Operations	$	(9,081,812)
Financing Sources		
Appropriations Used		3,312,612
Taxes and Other Non-Exchange Revenues (Note 21)		8,725,972
Donations (Non-Exchange Revenue)		(774)
Imputed Financing (Note 22)		355,732
Transfers-In		11,691
Transfers-Out		(64,268)
Total Financing Sources	$	12,340,965
Net Results of Operations		3,259,153
Prior Period Adjustments (Note 23)		(5,528,065)
Net Change in Cumulative Results of Operations		(2,268,912)
Increase (Decrease) in Unexpended Appropriations (Note 24)		(380,032)
Change in Net Position		(2,648,944)
Net Position Beginning of Period		16,202,217
Net Position End of Period	$	13,553,273

FEDERAL AVIATION ADMINISTRATION
COMBINED STATEMENT OF BUDGETARY RESOURCES
For the year ended September 30, 1998

(Dollars in Thousands)

Budgetary Resources (Note 25)		
Budget Authority	$	11,184,553
Unobligated Balances - Beginning of Period		7,229,820
Spending Authority From Offsetting Collections		2,033,195
Adjustments		114,148
Total Budgetary Resources	$	20,561,716
Status Of Budgetary Resources		
Obligations Incurred	$	11,338,673
Unobligated Balances-Available		522,739
Unobligated Balances-Not Available		8,700,304
Total Status of Budgetary Resources	$	20,561,716
Outlays		
Obligations Incurred	$	11,338,673
Less: Spending Authority From Offsetting Collections and Adjustments		(2,161,115)
Obligated Balance, Net Beginning of Period		5,074,554
Obligated Balance Transferred, Net		-
Less: Obligated Balance, Net - End of Period		(5,038,337)
Total Outlays	$	9,213,775

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
COMBINED STATEMENT OF FINANCING
For the year ended September 30, 1998

(Dollars in Thousands)

Obligations and Nonbudgetary Resources		
Obligations Incurred	$	11,338,673
Less: Spending Authority for Offsetting		
Collections and adjustments		(2,161,115)
Donations not in the Budget		(774)
Financing Sources for Cost Subsidies		355,732
Transfers-in (out)		(52,577)
Exchange Revenue not in the Budget		(40)
Other		20,736
Total Obligations as Adjusted, and Nonbudgetary Resources	$	9,500,635
Resources That Do Not Fund Net Cost of Operations		
Change in Amount of Goods, Services, and Benefits		
Ordered but not yet Received or Provided	$	(95,987)
Change in Unfilled Customer Orders		(26,288)
Costs Capitalized on the Balance Sheet (Note 26)		2,995,785
Financing Sources that Fund Costs of Prior Periods (Note 27)		(85,504)
Other - Identified Prior Period Adjustments		(3,517,446)
Reconciling Difference		(876,930)
Total Resources That Do Not Fund Net Cost of Operations	$	(1,606,370)
Costs That Do Not Require Resources		
Depreciation and Amortization	$	180,059
Revaluation of Assets and Liabilities		(483,498)
Loss on Disposition of Assets		511,737
Cost of Goods Sold		133,222
Total Costs That Do Not Require Resources	$	341,520
Financing Sources Yet To Be Provided (Note 27)	$	846,027
Net Cost Of Operations	$	9,081,812

These consolidated financial statements have been prepared to report the financial position, the net cost of operations, the changes in net position, the status and availability of budgetary resources and the reconciliation between proprietary and budgetary accounts of the Federal Aviation Administration (FAA), as required by 31 U.S.C. 3515, as added by the Chief Financial Officer's Act of 1990, and as amended by the Federal Financial Management Act of 1994, which is Title IV of the Government Management Reform Act of 1994. They have been prepared from the books and records of FAA in accordance with the hierarchy of accounting principles and standards approved by the principals of the Federal Accounting Standards Advisory Board, The Office of Management and Budget (OMB) Bulletin 97-01, Form and Content of Agency Financial Statement, the Department of Transportation (DOT) and the FAA's accounting policies which are summarized in this note. These statements, with the exception of the statement of Budgetary Resources, are, therefore, different from the financial management reports also prepared by the FAA pursuant to OMB directives that are used to monitor and control the FAA's use of budgetary resources.

The FAA applies accounting principles and standards and complies with operating policies and procedures established, issued, and implemented by the General Accounting Office (GAO), the OMB, and the Department of Treasury, as recommended by the Federal Accounting Standards Advisory Board (FASAB). The financial statements have been prepared in accordance with the following hierarchy of accounting principles and standards, which constitutes another comprehensive basis of accounting:

1. Individual Standards agreed to by the Director of OMB, the Comptroller General, and the Secretary of the Treasury and published by OMB and the General Accounting Office.

2. Interpretations related to the Statement of Federal Financial Accountings Standards (SFFAS) issued by OMB in accordance with the procedures outlined in OMB Circular A-134, "Financial Accounting Principles and Standards."

3. Requirements contained in OMB Bulletin 97-01, Form and Content and its amendments in effect for fiscal year 1998.

4. The DOT accounting policies and reporting requirements

5. FAA accounting policies summarized in this note and FAA Order No. 2700.31, Uniform Accounting Systems Operations Manual, and related documentation containing the FAA-specific accounting policy.

6. Accounting principles published by authoritative standard-setting bodies and other authoritative sources (1) in the absence of other guidance in the first five parts of this hierarchy, and (2) if the use of such accounting standards improve the meaningfulness of these financial statements.

B. Reporting Entity

The FAA was created in 1958. The FAA's mission is to operate the Nation's air traffic control system and to regulate the aviation's safety and security. FAA is responsible to provide U.S. air travelers with an efficient, safe, secure, and technically advanced airspace system.

The FAA activities as per Treasury designation can be grouped into four funds.

Entity	Title
1. Trust Fund	Airport and Airway Trust Fund Cash and Investments
	Grants-in-Aid
	Facilities and Equipment
	Research and Development
	Programs Administered by Other Agencies
2. Revolving Fund	Aviation Insurance Program
3. Franchise Fund	Administrative Services
4. All Others	Operations
(Unsegmented)	Facility and Equipment Development

	Aircraft Purchase Loan Guarantee - Borrowing Authority for Program Expenses - Appropriation to Liquidate Borrowed Funds and Accrued Interest
	General Fund Miscellaneous Receipts
	Suspense Clearing Accounts
	Items Not Classified by Financing Source

The Airport and Airway Trust Fund (Trust Fund) financed approximately 62 percent of the fiscal year (FY) 1998 total budget. The only appropriations receiving General Fund financing are the Operations appropriation and, when enacted, the appropriation to liquidate debts to the Treasury incurred for the Aircraft Purchase Loan Guarantee Program. (No such liquidating appropriation was enacted in FY 1998.) Approximately 37 percent of the FY 1998 funding of the Operations appropriation was financed by the General Fund, and the remainder was funded by the Trust Fund. Infusing funds from the Trust Fund to the Operations appropriation is accomplished by periodic transfers. Once a transfer is made, the corresponding portion of the Operations account derived from the Trust Fund is accounted for under the General Fund Operations appropriation symbol, thus losing the identity of the source.

C. Budgets and Budgetary Accounting

Congress annually enacts appropriations to permit the FAA to incur obligations for specified purposes. For FY 1998, the FAA was accountable for Trust Fund appropriations, General Fund appropriations, a Revolving Fund, a Franchise Fund, and borrowing authority. The FAA recognizes budgetary resources as assets when cash (funds held by Treasury) is made available through Treasury General Fund warrants and Trust Fund transfers. See paragraph B above.

D. Basis of Accounting

Transactions are recorded on an accrual accounting basis and a budgetary basis. Under the accrual method, revenues are recognized when earned, and expenses are recognized when a liability is incurred, without regard to receipt or payment of cash. Trust Fund revenues derived from excise taxes are treated differently. They are recorded on the basis of cash transferred from the General Fund to the Trust Fund. Transactions are also classified by fund account. This is accomplished by assigning to each transaction a unique attribute (Treasury symbol) identifying the corresponding appropriation and its period of availability.

Budgetary accounting facilitates complying with legal controls on the use of Federal funds.

E. Revenues and Other Financing Sources

Congress enacts annual, multi-year, and no-year appropriations to be used, within statutory limits, for operating and capital expenditures. Additional amounts are obtained from service fees (e.g., landing and registry fees) and through reimbursements for services performed for domestic and foreign governmental entities.

The Trust Fund is sustained by excise taxes collected by the Internal Revenue Service (IRS) from airway system users. The IRS records excise tax revenues deposited in the General Fund on a cash basis; Treasury transfers an equivalent amount from the General Fund to the Trust Fund. The Trust Fund also earns interest from investments in Treasury securities. Interest income is recognized as revenue on the accrual basis.

Appropriations are recognized as a financing source when expended. Revenues from service fees and reimbursements are recognized concurrently with the recognition of accrued expenditures for performing the services.

F. Fund Balances with the U.S. Treasury and Cash

The U.S. Treasury processes cash receipts and disbursements. Funds at the Treasury are available to pay agency liabilities. The FAA maintains petty cash (imprest funds) outside the Treasury to facilitate small purchases. The FAA does not maintain cash in commercial bank accounts. The FAA does not maintain any foreign currency balances. Foreign currency payments are made either by the Treasury or the Department of State and are reported by the FAA in the U.S. dollar equivalent.

G. Investment in U.S. Government Securities

Unexpended funds in the Trust Fund and Aviation Insurance Revolving Fund are invested in U.S. Government securities. A portion of the Trust Fund investments is liquidated semi-monthly in amounts needed to provide cash for the FAA appropriation accounts. The Revolving Fund investments are usually held to maturity. Investments, redemptions, and reinvestments are controlled and processed by the Treasury.

H. Accounts and Loans Receivable

The FAA's financial statement includes the activities and balances of relevant Treasury General Fund Miscellaneous Receipt accounts. The FAA maintains accountability for defaulted loans under the Aircraft Purchase Loan Guarantee Program. Upon default, the FAA established accounts receivable in the General Fund Miscellaneous Receipts account to reflect the amount due from the borrower for principal and interest. The FAA also established an intragovernmental liability to offset the accounts receivable which represents an asset of the Treasury, not the FAA.

I. Operating Materials and Supplies

Operating materials and supplies consist primarily of unissued materials and supplies that will be consumed in normal operations**.** In FY 1998, the FAA discontinued the use of standard cost and began valuing materials and supplies using moving weighted average. Other classifications of materials and supplies are valued on the basis of actual prices paid.

Adjustments for the proper valuation of reparable, excess, obsolete, and unserviceable items are made to the appropriate allowance account at fiscal yearend. The allowance for reparable items is recognized as a current period expense. The allowance for excess, obsolete, and unserviceable items is recognized as a gain or a loss. Operating materials and supplies are reclassified as expenses or work in progress when consumed or issued.

J. Property, Plant and Equipment (PP&E)

In FY 1998, the FAA increased the capitalization threshold from $5,000 to $25,000 for all PP&E. Acquisitions with costs exceeding $25,000 and a useful life exceeding 2 years are capitalized. Acquisitions not meeting these criteria are recorded as operating expenses. Capitalization thresholds differ from the thresholds for classifying property as accountable or sensitive. The FAA currently reports general PP&E at original acquisition cost.

In FY 1998, FAA fully implemented the depreciation of general PP&E. The depreciation expense is calculated using the straight-line method; except for aircraft that is depreciated to a 25 percent salvage value, the FAA does not recognize residual value for its PP&E. No depreciation expense is recognized on an asset during the fiscal year it is put in service. A full year's depreciation will be recognized during the asset's final year of use. The useful life classifications for capitalized assets are as follows:

Asset Classification	Useful Life (Years)
Offices, Buildings, Warehouse Buildings, Residential Properties, Air Traffic Control Towers, and Air RouteTraffic Control Centers	40
Mobile Homes, Aircraft	20
Original Roads, Sidewalks, Parking Lots, and All Other Structures	15
Printing, Photographic and Projection equipment	13
Capital Improvements, Facility Modifications, Leasehold Improvements (or expiration of lease whichever comes first), Portable and Installed Communications Equipment Excluding Air Navigation and Air Traffic Control Facilities and Avionics Equipment	10
Office Furniture and Equipment including the following categories: Prototype and Experimental, Research and Development Test, Shop, Emergency Readiness, Training, Portable Test and Rack Mounted Test equipment for Air Navigation and Air Traffic Control Facilities, Aircraft Test Equipment and Other nonclassified Equipment	7
Vehicles and Automatic Data Processing Equipment	5

The FAA has established two categories of economic service life for some of its personal property and facilities and equipment assets. The two categories are based on whether the assets were in service prior to the full implementation of the depreciation policy or they were put in service in the year of the depreciation implementation, as follows:

Functional Area	Economic Service Life (Range)	
	Existing	New
Decision Support Systems	4-20	2-20
Communications	10-20	10
Weather	15-20	10-20
Navigation/Landing	20	15-20
Surveillance	20	10-20
Facilities	40	40
Facilities' Support Equipment	20	20
Mission Support	20	20
User Equipment	10-20	7-10

Buildings acquired under capital leases are amortized over the lease term. If the lease agreement contains a bargain purchase option or otherwise provides for transferring title of the asset to the FAA, the building is depreciated over a 40-year service life.

Construction in progress is valued at direct (actual) costs, plus applied overhead and other indirect costs as accumulated by the regional project materiel system.

The General Services Administration (GSA) receives payment for real property that is under its control and is used by the FAA. Payments are made from an appropriation to the Office of the Secretary of Transportation (OST), part of which (corresponding to the FAA costs) is derived from the Trust Fund.

K. Prepaid and Deferred Charges

Advance payments are generally prohibited by law; there are some exceptions, such as subscriptions. When permitted, payments made in advance of the receipt of goods and services are recorded as prepaid charges at the time of prepayment and recognized as expenses when the related goods and services are received.

L. Liabilities

A liability represents the amount to be paid by the FAA as the result of a transaction or event that has already occurred. However, the FAA, absent of an appropriation, cannot liquidate any liabilities. Liabilities for which an appropriation has not yet been enacted are, therefore, classified as unfunded liabilities, and there is no certainty that such appropriation will be enacted.

M. Borrowing Payable to the Treasury

Borrowing involves loans from the Treasury to fund expenses in the Aircraft Purchase Loan Guarantee Program. Treasury renews the debt obligation until the FAA receives an appropriation to liquidate the principal and interest. No such appropriation was enacted for FY 1998.

N. Interest Payable to the Treasury

The FAA owes interest to the Treasury based on its debt to the Treasury as a result of borrowing for the Aircraft Purchase Loan Guarantee Program.

O. Annual, Sick, and Other Leave

Annual leave is accrued as it is earned, and the accrual is reduced as leave is taken. At each biweekly pay period, the balance in the accrued annual leave account is adjusted to reflect the latest pay rates and unused hours of leave. Funding will be obtained from future financing sources to the extent that current or prior year appropriations are not available to fund annual leave earned but not taken. Sick leave and other types of nonvested leave are expensed when taken.

In FY 1998, under the National Air Traffic Controller Association (NATCA) agreement, Article 25, Section 13, Air Traffic Controllers covered under the Federal Employees Retirement System (FERS) became eligible, upon retirement, for a sick leave buy back option.

P. Accrued Workers' Compensation

A liability is recorded for estimated and actual future payments to be made for workers' compensation pursuant to the Federal Employees' Compensation Act (FECA). The liability consists of the net present value of estimated future payments calculated by the U.S. Department of Labor (DOL) and the unreimbursed cost paid by DOL for compensation paid to recipients under FECA. The actual costs

incurred are reflected as a liability because FAA will reimburse DOL 2 years after the actual payment of expenses. Future appropriations will be used for DOL's reimbursement.

Q. Retirement Plan

The FAA employees who participate in the Civil Service Retirement System (CSRS) are beneficiaries of the FAA's matching contribution equal to 7 percent of pay to their annuity account in the Civil Service Retirement and Disability Fund.

On January 1, 1987, the Federal Employees Retirement System (FERS) went into effect pursuant to Public Law 99-335. FERS and Social Security automatically cover most employees hired after December 31, 1983. Employees hired prior to January 1, 1984, could elect either to join FERS and Social Security or to remain in CSRS. FERS offers a savings plan to which the FAA automatically contributes 1 percent of pay and matches any employee contribution up to an additional 4 percent of pay. For FERS participants, the FAA also contributes the employer's matching share for Social Security.

Beginning in fiscal year 1997, the FAA began to recognize the cost of pensions and other retirement benefits during the employees' active years of service. The Office of Personnel and Management (OPM) actuaries determine pension cost factors by calculating the value of pension benefits expected to be paid in the future and communicate these factors to the FAA for current period expense reporting. OPM also provides information regarding the full cost of health and life insurance benefits. The FAA recognized an offsetting revenue as imputed financing sources for the extent of these additional expenses that will be paid by OPM.

R. Contingencies

The FAA recognizes losses for contingent liabilities when such losses are probable and reasonably estimable. The FAA recognizes material contingent liabilities in the form of claims that have been brought to the attention of the Office of Chief Counsel (OCC) and: (1) have been asserted, or, if not yet asserted, in the opinion of the OCC are more likely to be asserted than not; (2) in the opinion of the OCC are more likely to be paid than not; and (3) for which the OCC can estimate the probable payment.

Note 2. Fund Balances with Treasury

(Dollars in Thousands)

	Obligated	Unobligated & Available	Unobligated & Restricted	Total
Trust Fund	$2,174,366	$ (1,049,195)	$ (276,524)	$ 848,647
Operations General Fund	676,299	(6,699)	30,753	$ 700,353
Franchise Fund	3,954	2,178	-	6,132
Revolving Fund	189	73	-	262
Other Funds	390	13,776	-	14,166
Total	$2,855,198	$ (1,039,867)	$ (245,771)	$1,569,560

Unobligated and restricted fund balances represent balances of appropriations for which the period of availability for (voluntary) obligation has expired. These balances are only available for upward adjustments of obligations incurred during the period for which the appropriation was available for obligation or for paying claims attributable to the appropriation. Pursuant to 31 U.S.C. 1552, appropriation accounts are canceled at the close of the fifth fiscal year following the last fiscal year for which they were available for obligation. Fund balances in the amount of $27.6 million in canceled appropriations at fiscal yearend were removed from the balance sheet.

The amount withdrawn biweekly from the Trust Fund is based on cash outlays, not on obligational authority, to minimize interest costs. Negative unobligated balances are covered by invested funds in the Airport and Airway Trust Fund.

Note 3. Investments

(Dollars in Thousands)

	Cost	Amortization Method	Unamortized (Premium) Discount	Investments Net	Other Adjustments	Market Value Disclosure
Intragovernmental Securities:						
Nonmarketable, Par Value						
Trust Fund (1)	$ 8,549,630		$ -	$ 8,549,630		$ -
Nonmarketable, Market-Based						
Aviation Insurance Revolving Fund (2)	71,029	Straight Line	(2,149)	68,880	-	-
Subtotal	8,620,659		(2,149)	8,618,510	-	-
Accrued Interest	134,128			134,128		-
Total	$ 8,754,787			$ 8,752,638		$ -

A total of $8.5 billion was invested in U.S. Treasury Certificates of Indebtedness as of September 30, 1998, at a rate of 6.5 percent, maturing June 30, 1999.

(1) Nonmarketable par value Treasury securities are special series debt securities, issued by the Bureau of the Public Debt to Federal accounts, and are purchased and redeemed at par (face value) exclusively through Treasury's Finance and Funding Branch. The securities are redeemed at face value on demand; thus, investing entities recover the full amount invested, plus interest. The Trust Fund investments are made by the Fund's trustee, the Secretary of the Treasury.

(2) Nonmarketable, market-based Treasury securities are debt securities that the Treasury issues to Federal entities without statutorily fixed interest rates. Although the securities are not marketable, their terms (prices and interest rates) mirror the terms of marketable Treasury securities. FAA amortizes premiums and discounts on market-based Treasury securities over the life of the security using the interest method. The following amounts are invested in market-based Treasury securities:

	Maturity Date	Effective Interest Rate	Amount
1	12/10/98	5.17%	$ 13,505
2	4/01/99	5.07%	23,565
3	6/24/99	5.12%	16,000
4	9/16/99	4.46%	17,959
			$ 71,029

Note 4. Accounts Receivable

(Dollars in Thousands)

	Gross Accounts Due	Allowance for Uncollectible Amounts	Net Amount Due
Intragovernmental Receivables	$ 54,894	$ -	$ 54,894
Other Receivables	32,186	(5,868)	26,318
Total Receivables	$ 87,080	$ (5,868)	$ 81,212

Reconciliation of Uncollectible Amounts:

	Intragovernmental	Other
Beginning Balance	$ -	$ (5,012)
Additions	-	(3,151)
Reductions	-	2,295
Ending balance	-	(5,868)

Delinquency notices are sent to debtors when billings remain uncollected for 30 days. Followup notices are sent if the debtor does not respond. Additional actions, such as salary or retirement offset (when the debtor is a current or former Federal employee), as well as tax refund offset, consumer reporting, and referral to collection agencies may be taken, depending on the circumstances of each case. An allowance for uncollectible accounts receivable is established when, based upon a monthly review of outstanding accounts and the failure of all collection efforts, management determines that collection is unlikely to occur. Accounts receivable in appropriations canceled pursuant to 31 U.S.C. 1552 on September 30, 1998, are no longer FAA assets. An accounts receivable balance in the amount of $235,000 for canceled appropriations at fiscal yearend was removed from the balance sheet.

Note 5. Other Assets

(Dollars in Tousands)

Other Entity Assets Intagovernmental		
Advances and Prepayments	$ 106,203	(1)
Undistributed Foreign Costs	191	
Undistributed Costs - Treasury Clearing	1,098	
Other Assets - Undistributed	52,838	(2)
Total Intragovernmental	$ 160,330	
Advances and Prepayments	$ 8,462	(3)
Total Other Entity Assets	$ 168,792	

(1) Represents advance payments to other Federal Government entities under the 31 U.S.C., 1535 for agency expenses not yet incurred or for goods or services not yet received.

(2) Includes assets transferred between FAA regions. Transferred items remain in the undistributed asset account until removed by the recipient region. Transfer transactions may include some expenses.

(3) Represents advance payments to employees for agency expenses not yet incurred.

Note 6. Loans and Loan Guarantees, Non-Federal Borrowers

(Dollars in Thousands)

Defaults on Pre-1992 Guaranteed Loans:

Aircraft Purchase Loan Guarantee Program	Defaulted Guaranteed Loans Receivable, Gross	Interest Receivable	Allowance for Loan Losses	Foreclosed Property	Defaulted Guaranteed Loans Receivable, Net
	$ 496	$ 235	$ (337)	$ -	$ 394

FAA has no direct loan programs, but FAA administers the Aircraft Purchase Loan Guarantee Program. Authorization for issuing new loan guarantees expired in 1988. The only remaining program function is to maximize recoveries from defaulted loans.

Accounts receivable from debtors on account of defaulted guaranteed loans are reported net of an allowance for estimated uncollectible amounts. The Federal Credit Reform Act was enacted after the authority to issue new guarantees expired and, therefore, does not apply to FAA's loan guarantees.

Administrative expenses to maintain residual values in this program are minimal. FAA has no full-time employees administering the program.

Note 7. Cash, Foreign Currency and Other Monetary Assets

(Dollars in Thousands)

Imprest Fund Cash	$ 60
Undeposited Collection	59,650
Total Cash, Foreign Currency, and Other Monetary Assets	$ 59,710

Note 8. Inventory and Related Property

Operating Materials and Supplies:

(Dollars in Thousands)

	Value	Allowance	Net Value	Valuation Method
Items Held For Use	$ 732,137	$ -	$ 732,137	Moving Weighted Average
Excess, Obsolete, and Unserviceable	18,553	6,417	12,136	Moving Weighted Average
Items Held for Repair	215,160	139,854	75,306	Moving Weighted Average
Total Inventory and Related Property	$ 965,850	$ 146,271	$ 819,579	

Inventory and related property consist of general operating material and supplies, aircraft parts, and spare parts located at field facilities. Effective in FY 1998, FAA began using the moving weighted average cost method to value operating materials and supplies**.** This change resulted in $64.7 million decrease in the value of inventory. In FY 1998, FAA conducted an inventory of 100 percent of its spare parts, which resulted in an increase of $118 million in spare parts recorded as a prior period adjustment. FAA currently expenses operating materials and supplies as issued or consumed.

(1) In FY 1998, FAA recognized a $21.9 million gain as a result of a decrease in the allowance for excess, obsolete, and unserviceable items.

(2) Items are considered for repair based on condition levels and if the maximum repair cost does not exceed 65 percent of the original cost. The allowance method is used to account for operating materials and supplies held for repair, reducing the net carrying value of such items to 35 percent of their original cost. Current period expenses are recognized for the amount of the annual increase or decrease to the allowance account. In FY 1998, FAA recognized $11.2 million decrease in the allowance for items held for repair.

(3) FAA increased its operating material and supplies as a result of an adjustment of a $146 million in its inventory clearing accounts. FAA is assessing the clearing account process and will modify the process based on its evaluation.

Scrap and salvage items are written down to zero value and may be sold for nominal amounts. FAA transfers excess items for disposal into the Governmentwide automated disposal system. Disposal proceeds may go to the General Fund or to an FAA appropriation, depending on the nature of the item and the disposal method. FAA may not donate items.

Note 9. Property, Plant and Equipment, Net

(Dollars in Thousands)

Classes of Fixed Assets	Depreciation Method	Service Life (yrs)	Acquisition Value	Accumulated Deprec.	Net Book Value
Land	None	None	$ 76,742	-	$ 76,742
Buildings and Structures	SL	15-40	$ 2,480,938	(1,232,989)	1,247,949
Leasehold Improvements	SL	*	27,861	-	27,861
Aircraft	SL	20	320,827	(69,159)	251,668
Aircraft Engines	SL	7	2,761	-	2,761
ADP Software	SL	*	33,419	-	33,419
Equipment	SL	5-13	4,149,372	(2,100,470)	2,048,902
Assets Under Capital Lease	SL	Term-40	192,008	(91,888)	100,120
Construction in Progress	None	None	4,497,220	-	4,497,220
Property Not in Use	*	*	88,471	-	88,471
Total			$ 11,869,619	$(3,494,506)	$ 8,375,113

(1) In FY 1998, FAA changed its real property capitalization threshold from $5,000 to $25,000. This resulted in a prior period adjustment of $238.8 million. In addition, FAA made a $104.6 million prior period adjustment as a result of the change in the personal property capitalization threshold.

(2) In FY 1998, FAA fully implemented depreciation of general PP&E. This implementation resulted in a prior period adjustment of $3,171 million. The depreciation of aircraft and assets acquired under capital lease was implemented in FY 1996.

(3) In FY 1998, a reconciliation of the property systems to the general ledger was performed. This reconciliation resulted in a prior period adjustment of $228 million for real property and a $13.9 million adjustment for personal property.

(4) Currently, FAA is in the process of reconciling its construction in progress accounts. This requires extensive reconciliation that includes identifying those items that are actually work in progress and those t hat have been commissioned. It also involves reconciliation of the purchases-in-transit account.

(5) In FY 1998, FAA recognized a loss on fixed assets of $14.8 million for excess and surplus property in the Utilization Screening and Disposition (USD) system.

(6) Documentation to support the historical costs of real property assets that were placed in use between 1960 and 1980 were not readily available, and what was available was inconsistent. Alternative methods t o estimate historical costs, such as the use of modeling techniques, will be used when actual documentation cannot be found. Real property records will be adjusted in FY 1999 to reflect results of modeling/documentation efforts.

(7) Personal property is understated by a significant amount as a result of FASAB requirements and change in the capitalization policy. Adjustments to personal property will be made in FY 1999, based on an analysis of related contract costs, e.g., common contract costs that were previously expensed because there was no applicable FAA capitalization policy. The understatement of personal property will also have a corresponding impact on accumulated depreciation.

Note 10. Debt

(Dollars in Thousands)

	Beginning Balance	Net Borrowing	Ending Balance
Other Debt:			
Aircraft Purchase Loan Guarantee Program			
Debt to the Treasury	$ 21	$ 3	$ 24
Total Debt	$ 21	$ 3	$ 24

Note 11. Other Liabilities

(Dollars in Thousands)

Other Liabilities Covered by Budgetary Resources

	Noncurrent Liability	Current Liability	Total	
Intragovernmental:				
Advances from Others	$ -	$ 24,315	$ 24,315	
Accrued Payroll & Benefits to Other Agencies	-	38,504	38,504	
Proceeds From Replacement of Property	-	12	12	
	-	6,266	6,266	
Total Intragovernmental	$ -	$ 69,097	$ 69,097	
Other Liabilities				
Advances from Others, Unclassified	$ -	$ 7,747	$ 7,747	
Accrued Payroll & Benefits to the Employees	-	165,462	165,462	(1)
Liability for Unapplied Collections	-	15,933	15,933	
Other		(134)	(134)	
Total Other Liabilities	$ -	$189,008	$189,008	

(Dollars in Thousands)

Other Liabilities Not Covered by Budgetary Resources

	Noncurrent Liability	Current Liability	Total	
Intragovernmental:				
Federal Employees Compensation Act	$ 102,978	$ 78,087	181,065	(2)
Total Intragovernmental Liabilities	$ 102,978	$ 78,087	$181,065	
Accrued Unfunded Annual Leave & Assoc. Benefits	$ 351,646	$ -	$351,646	(3)
Sick Leave Compensation Benefits for Air Traffic Controllers	56,426	-	56,426	(4)
Total	$ 408,072	$ -	$408,072	

(1) Accrued payroll and employee benefits represent the unpaid pay period September 23 through September 30, 1998.

(2) An unfunded liability is recorded for unreimbursed actual cost to be made for workers' compensation pursuant to the Federal Employees' Compensation Act (FECA) to the Department of Labor (DOL), that administers the Federal Employees' Compensation Fund. Funding for the amount charged to FAA is normally appropriated for the fiscal year ending 2 years after the FAA accounting period in which the expense was incurred. Therefore, FAA's FY 1998 accrued liability includes workers' compensation benefits paid by DOL for the periods July 1, 1996, through June 30, 1997; July 1, 1997, through June 30, 1998; and July 1, 1998, through September 30, 1998.

(3) The estimated liability for accrued wages includes annual, home, and military and compensatory hours plus the agency's cost of employee benefits associated with such compensated absences for the period ending September 30, 1998.

(4) In FY 1998, under the National Air Traffic Controller Association (NATCA) agreement, Article 25, Section 13, Air Traffic Controllers covered under the Federal Employees Retirement Systems (FERS) became eligible, upon retirement, for a Sick Leave Buy Back Option. Under this option, an employee who attains the required number of years of service for retirement shall receive a lump sum payment for forty (40) percent of the value of his or her accumulated sick leave as of the effective date of his or her retirement. The total estimated sick leave buy back contingency for FAA for those air traffic controllers eligible for retirement, based on current sick leave balances, for FY 1998 is $56.4 million.

Note 12. Leases

FAA as Lessee:

Capital Leases:

(Dollars in Thousands)

Summary of Assets Under Capital Lease:

Land and Buildings:	$ 192,008
Accumulated Amortization	(91,888)
Net Assets Under Capital Lease	$ 100,120

Future Payments Due: Fiscal Year	Land and Buildings
Year 1 (FY 1999)	$ 19,452
Year 2 (FY 2000)	14,308
Year 3 (FY 2001)	12,862
Year 4 (FY 2002)	12,867
Year 5 (FY 2003)	12,735
After 5 Years (FY 2004 to Contract End)	78,813
Less: Imputed Interest	(46,818)
Total Capital Lease Liability	$104,219
Liabilities Covered by Budgetary Resources	$ 687
Liabilities Not Covered by Budgetary Resources	$103,532

Capital leases cover land and buildings at the Mike Monroney Aeronautical Center (MMAC) in Oklahoma City, Oklahoma, and at the William J. Hughes Technica Center (WJHTC) in Pomona, New Jersey. (Operating leases discussed in the following section cover other real property.) FAA leases the MMAC land and buildings from the Oklahoma City Airport Trust at $12 million per year. FAA leases real property, including the WJHTC technical building, from the Atlantic County Improvement Authority at $4.8 million per year.

FAA's capital lease payments are funded annually. The following represents capital lease accounting treatment under generally accepted accounting principles:

(1) Capital lease assets are recorded at the net present value of the total minimum lease payments over the lease duration, valued at the lease inception.

(2) In FY 1996, FAA implemented the depreciation/amortization provision of Statement of Federal Financial Accounting Standards (SFFAS) No. 6, which is applicable to assets acquired under capital lease. In FY 1998, FAA identified and recorded capital leases that represented a $12.1 increase in Assets Under Capital Leases.

(3) Amounts due within the current fiscal year corresponding to the principal portion of the lease payments are recorded as current year obligations. The remaining principal payments are recorded as unfunded lease liabilities. The imputed interest is funded and expensed annually. Interest amounts imputed to subsequent years (aggregating $46.8 million) are not recorded as unfunded liabilities in the Departmental Accounting and Financial Information System (DAFIS).

Operating Leases:

(Dollars in Thousands)

Future Payments Due:

Fiscal Year	Land & Buildings	Mach. & Equipment	Other	Total	
Year 1 (1999)	$ 44,762	$ 322	$ 2,708	$ 47,792	
Year 2 (2000)	39,038	228	1,909	41,175	
Year 3 (2001)	32,628	235	1,905	34,768	
Year 4 (2002)	27,465	242	1,877	29,584	
Year 5 (2003)	21,495	249	1,885	23,629	
After 5 Years (2004 to Contract End)	56,446	3,643	11,772	71,861	(1)
Total Future Operating Lease Payments	$ 221,834	$ 4,919	$22,056	$ 248,809	

FAA leases property, aircraft, equipment, and telecommunications under operating leases. Such leases are funded annually and expensed as recurring charges in DAFIS. Unfunded liabilities and future funding requirements for operating lease payments due in future years are not recorded in DAFIS.

(1) The cumulative amount due on operating leases after 5 years does not include estimated payments for leases with annual renewal options. Estimates of the lease termination dates are subjective, and any projection of future lease payments would be arbitrary.

FAA as Lessor:

Capital Leases:

In March 1998, FAA entered into a capital lease agreement with the South Jersey Transit Authority (SJTA) for the sum of $1 for a term of 50 years. The properties under the lease will be transferred to SJTA at the end of the lease term or upon compliance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), Section 120. FAA recognized a loss $27.4 million for buildings and other structures and $.7 million for equipment as a result of this capital lease.

Operating Leases:

(Dollars in Thousands)

Future Projected Receipts:

Fiscal Year	Land & Buildings	Mach. & Equipment	Other	Total
Year 1 (1999)	$ 4,193	$ 90	$ 2	$ 4,285
Year 2 (2000)	4,279	90	2	4,371
Year 3 (2001)	4,297	90	2	4,389
Year 4 (2002)	4,712	90	2	4,804
Year 5 (2003)	5,169	90	2	5,261
After 5 Years (2004 to Contract End)	170,750	90	2	170,842
Total Future Operating Lease Receivables	$ 193,400	$ 540	$12	$ 193,952

FAA leases Ronald Reagan Washington National Airport and Washington Dulles International Airport to the Metropolitan Washington Airports Authority, the airports' sponsor. The lease took effect in March 1987 at $3 million per year for a 50-year term. Subsequent annual rental payments are adjusted by applying the Implicit Price Deflator for the Gross National Product published by the Department of Commerce. Additionally, the parties may renegotiate the level of lease payments attributable to inflation costs every 10 years.

Upon lease expiration, the airports and facilities, originally valued at $244 million, together with any improvements thereto, will revert to the Federal Government. In addition, FAA leases equipment to foreign governments and leases parcels of Government-owned land, generally for agriculture.

Note 13. Environmental and Disposal Liabilities

(Dollars in Thousands)

Environmental Remediation	$ 828,900	(1)
OSHA & Environmental Compliance	512,200	(2)
Decommissioning Cleanup	1,900,000	(3)
Air Traffic Control at Closed DOD Bases	3,200	(4)
Total Environmental and Disposal Liabilities	$ 3,244,300	

(1) Environmental remediation includes fuel storage tank program and environmental cleanup, associated with normal part of operations or as a result of an accident, e.g., the superfund cleanup.

(2) Occupational Safety and Health Administration (OSHA) and environmental compliance includes environmental, occupational safety and health compliance, and energy conservation. In FY 1996, OSHA and environmental compliance were combined with environmental remediation.

(3) SFFAS #6 defines cleanup costs as the "cost of removing, containing, and/or disposing of (1) hazardous waste from property, or (2) material and/or property that consist of hazardous waste at permanent or temporary closure or shutdown of associated property, plant, or equipment. As of September 30, 1998, the total liability for the estimated cleanup costs was $1.9 billion that will result from future decommissioning of FAA facilities and equipment. Of that amount, $1.5 billion was recorded as prior period adjustment, and $376 million was previously recognized as a liability in FY 1997. FAA complies with the Federal Facilities Compliance Act, 40 CFR, specifically the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and RCRA, as well as all state and local environmental regulations.

(4) Providing air traffic control (ATC) services, where needed, is FAA's responsibility under 49 U.S.C. 44502(a)(1)(B). FAA will continue providing ATC functions for civilian users of the National Airspace System near certain DOD bases scheduled for closure. FAA's costs include those for national air space equipment, real property, and personnel relocation.

Note 14. Federal Employee and Veterans Benefits Payable

(Dollars in Thousands)

Other Post-Employment Benefits	
Federal Employees Compensation Act:	
Actuarial Liabilities	$ 926,780
Total	$ 926,780

The liability consists of the net present value of estimated future payments calculated by the DOL. The liability estimates include death, disability, medical, and miscellaneous costs for approved compensation cases.

Note 15. Contingent Liabilities

(Dollars in Thousands)

	Noncurrent Liability	Current Liability	Total
Contingent Liabilities for Legal Claims	$ 433,444	$ -	$ 433,444
Contingent Liabilities for Return Rights Program	22,150	9,800	31,950
Total Contingent Liabilities	$ 455,594	$ 9,800	$ 465,394

(1) In FY 1997, FAA recognized contingent liabilities of $438.3 million associated with claims that had been brought to the attention of the OCC and that: (a) had been asserted, or, if not yet asserted, in the opinion of the OCC were more likely to be asserted than not; (b) in the opinion of the OCC were more likely to be paid than not; and (c) for which the OCC could estimate probable payment. Such claims represent a variety of administrative proceedings and legal actions against which the OCC was then defending or then expected to defend. During FY 1998, contingent liabilities for legal claims decreased by the amount of $4.8 million.

Of the contingent liabilities recognized, approximately $96.1 million could be payable from agency appropriations, and approximately $337.3 million could be payable from the permanent appropriation for judgments, awards, and compromise settlements (Judgment Fund) administered by the Department of Justice.

OMB issues official interpretations to provide agencies clarification on the SFFAS's. OMB has issued Interpretation No. 2, on SFFAS Nos. 4 and 5 (effective for fiscal years beginning after September 30, 1996), which requires agencies to recognize an expense and a liability for the full amount of an expected loss, whether payable from agency appropriations or from the Judgment Fund. In accordance with Interpretation No. 2, "once the claim is either settled or a court judgment is assessed against the Federal entity and the Judgment Fund is determined to be the appropriate source for the payment of the claim, liability should be removed from the financial statements of the entity that incurred the liability and another financing source amount (which represents the amount to be paid by the Judgment Fund) would be recognized." The amount of the legal liabilities recognized by FAA during FY 1998 known to be paid or payable from the Judgment Fund iscontingent upon a final claim settlement or court assessment. FAA did recognize other financing sources in the amount of $39 million for claims paid by the Judgment Fund during FY 1998.

(2) Contingent liabilities for the Return Rights Program decreased by $9.6 million from $41.5 million i n FY 1997 to $31.9 million in FY 1998. The program covers temporary assignments for 2 to 4 years. At the beginning of FY 1998, approximately 854 employees who previously had accepted transfers to overseas or certain domestic locations were contractually entitled to a future return move at Government expense. The typical cost per move is $50,000. The liability may be overstated because not every employee remaining in the program w ill exercise his or her right. If every employee in the program did exercise his or her right, the liability would be as follows:

FY 1999	9,800,000
FY 2000	8,600,000
FY 2001	13,550,000
	$31,950.000

Note 16. Unexpended Appropriations

(Dollars in Thousands)

	Operations General Fund	Other Funds	Total
(1)Unobligated			
(a) Available	$ 4,014	$ 1,878	$ 5,892
(b) Unavailable	42,853	-	42,853
(2) Undelivered Orders	302,992	77	303,069
Sub-total	$ 349,859	$ 1,955	$351,814
Less: Other Differences	(15,841)	497	(15,344)
Total Unexpended Appropriations	$ 334,018	$ 2,452	$336,470

The differences represent the amount of undelivered orders and accounts payable that exceeds the total amount of unrequisitioned cash authority, the Treasury cash balance and the unobligated authority, and other differences carried forward from prior years.

Note 17. Cumulative Results of Operations

FAA's Cumulative Results of Operations is $13,216,803,000 which includes unexpended appropriation a mounts associated with the Trust Fund activity. Appropriations were issued for the Airport Improvement Program (grants) in the amount of $1,640,000,000 for paying (liquidating appropriations) claims resulting from authorizations to enter into agreements (contract authority). Appropriations were also issued for the Facilities and Equipment, Research, Engineering and Development, and Operations programs in the amount of $11,616,412,486. The unexpended appropriations included undelivered orders for $4,080,237,911 and unobligated balances of $9,176,174,575. Of the unobligated portion, $518,724,722 is unavailable for obligation and $8,657,450,053 is available for obligation.

Note 18. Total Cost and Earned Revenue by Budget Functional Classification

(Dollars in Thousands)

	Total Cost	Earned Revenue	Net Cost
Functional Classification:			
Transportation Programs	$ 9,197,759	$ (116,296)	$9,081,463
Community and Regional Development Programs	302	-	302
General Government Programs	47	-	47
Total Cost	$ 9,198,108	$ (116,296)	$9,081,812

Note 19. Net Cost by Programs

FAA's six lines of business represent the programs reported on the Statement of Net Cost. Assigned cost centers to each line of business permit the direct accumulation of costs. Other costs that are not directly traced to each line of business, such as agency overhead, are allocated by applying ratios representing the cost for each line of business' cost compared to total expenses excluding grants expenses.

Note 20. Deferred maintenance (unaudited)

Information on FAA's deferred maintenance is based on condition assessment survey (annual inspection). Standards (orders) are provided for evaluating the fixed assets condition. These standards are combined with FAA's technicians' knowledge, past experiences, and judgment to provide the following:

- Minimum and desirable condition descriptions
- Suggested maintenance schedules
- Standard costs for maintenance actions
- Standardized condition codes

There have not been material changes in the standards in recent years.

FAA recognizes maintenance expense as incurred. However, maintenance was insufficient during the past several years and resulted in deferred maintenance on Buildings and Other Structure and Facilities. The following table presents information on deferred maintenance on major categories of the FAA's PP&E:

(Dollars in Thousands)

Category	Method	Asset Condition *	Cost to Return to Acceptable Condition	
Land				(1)
Buildings	Condition Assessment Survey	4 & 5	18,214	
Other Structures and Facilities	Condition Assessment Survey	4&5	1,231	
Aircraft and Aircraft Engines			-	(2)
National Airspace System (NAS) Equipment			-	(3)
General Purpose Equipment			-	(4)
Assets Under Capital Lease			-	
Total			19,445	

*Condition Rating Scale
1: Excellent
2: Good
3: Fair
4: Poor
5: Very Poor

(1) No material maintenance was deferred on land.

(2) Maintenance was not deferred on the FAA aircraft. The aircraft maintenance was insured through the aircraft maintenance, inspection, preventive maintenance, and alteration programs of the Flight Inspection Maintenance Division programs.

(3) The FAA did not defer maintenance on NAS equipment. The maintenance of the Airway Facilities (AF) systems, subsystems, and equipment in the NAS is guided by the general principle of ensuring availability and reliability of air traffic control, navigation, and communication services. In order to minimize the quantity and duration of service interruption and outages, both planned and unplanned, AF does not generally defer the maintenance of the electronic equipment. Various reasons may cause a maintenance cycle to be skipped, but the maintenance is performed during the next cycle. FAA Order 6000.30 states the minimum standards for reliability and availability of NAS equipment. AF's following initiatives ensure the highest possible levels of performance of NAS equipment:

- Periodic and preventive maintenance programs
- Maintenance of backup equipment for key services in case of equipment interruption or missed maintenance
- Competent technical maintenance staff

(4) The amount recorded as FAA's general-purpose equipment was not material; therefore, no material maintenance was deferred on this equipment.

Note 21. Taxes and Other Nonexchange Revenue

(Dollars in Thousands)

Passenger Ticket Tax	$ 6,190,226
Waybill Tax	313,503
International Departure Tax	947,775
Fuel Taxes	702,336
Tax Refunds and Credits	(43,191)
Investment Income	582,273
Other Nonexchange Revenue	33,050
Total Taxes and Other Nonexchange Revenue	$ 8,725,972

Taxes are collected by the Department of the Treasury (Treasury), Internal Revenue Service, for FAA's Airport and Airway Trust Fund. These taxes can be withdrawn only as authorized by various FAA appropriations. The amounts reflected above are taxes reported to FAA by Treasury. Treasury estimates taxes to be collected each quarter and adjusts the estimates by actual collections. The Taxpayer Act of 1997 (P.L. 105-34) delayed the collection date of excise taxes for the Airport and Airway Trust Fund until the first quarter of FY 1999. Because of the delayed deposit rule, these receipts, otherwise due in the fourth quarter of FY 1998, were not included in the tax receipt amounts reported for FY 1998. The Treasury, Office of Tax Analysis (OTA), estimated the tax receipt amount as approximately $1.1 billion for the tax quarter ending September 30, 1998, that would be due in October 1998.

Note 22. Imputed Financing:

Dollars in Thousands

Office of Personnel Management	316,853	(1)
Dept. of Justice Judgment Fund	38,879	(2)
Total Imputed Financing	355,732	

(1) In FY 1998, FAA recognized as imputed financing the amount of accrued pension and post-retirement benefit expenses for current employees. The assets and liabilities associated with such benefits are the responsibility of the administering agency, OPM.

(2) In FY 1998, amounts paid by the Judgment Fund in settlement of claims or court assessments against the FAA were recognized as imputed financing.

Note 23. Prior Period Adjustments

In FY 1998, FAA recorded the following prior period adjustments:

(Dollars in Thousands)

Implementation of Depreciation	$ (3,171,304)
Change in Capitalization Threshold	(343,389)
Reconciliation of Property Systems to General Ledger	(241,955)
Operating Materials and Supplies Price Adjustment	(32,479)
Operating Materials and Supplies Field Spares Inventory	265,604
Cleanup Cost Implementation	(1,524,000)
Correction of Airport Improvement Program Grants	(145,602)
Judgment Fund Correction	(38,879)
Other	(296,061)
Total Prior Period Adjustment	$ (5,528,065)

Note 24. Increase (Decrease) in Unexpended Appropriations

Upon receipt of the Apportionment and Reapportionment Schedule, SF-132, the Trust Fund activity is recorded in the FAA general ledger as appropriations. The Department of Treasury, which requested agencies *not* to report these amounts as unexpended appropriations, is in the process of working with OMB and FASAB to resolve the issue. In FY 1998, as directed by OMB and Treasury FAA reclassified these amounts from unexpended appropriations to cumulative results of operations. However, the year-to-date accounting of the Trust Fund activity (excluding closing entries) is included in the increase (decrease) of the unexpended appropriation amount.

Note 25. Statement of Budgetary Resources Disclosures

FAA reclassified $8.5 billion of Unobligated Balances-Available reported by the U.S. Department of Treasury for the Airport and Airway Trust Fund (Corpus) to Unobligated Balances-Not-Available. These invested amounts cannot be utilized by FAA for program purposes unless appropriated by Congress.

As of September 30, 1998, FAA recorded $337.3 million as the net amount of budgetary resources obligated for undelivered orders.

The Aircraft Purchase Guarantee Program is funded under the authority to borrow from the U.S. Treasury granted by Congress in the DOT and Related Agencies Appropriation Act, 1983. Borrowing authority is implemented through a blanket promissory note, which provides FAA with a line of credit for the full amount of borrowing authority granted by Congress. Because authorization for issuing new loan guarantees expired in 1988, FAA has not issued any new guaranteed loans. In FY 1998, FAA had an outstanding loan which it refinanced through an advance from Treasury, which is payable with interest on September 30, 2000. Although FAA does have borrowing authority, it is seeking a liquidating appropriation to pay off the remaining note with Treasury and end the program.

Under Congressional legislation in FY 1998, FAA was authorized $1.7 billion in contract authority and liquidating authority for $1.6 billion, which is derived from the Airport and Airway Trust Fund and available until expended, for the Grants-in-Aid Programs. The contact authority available as of September 30, 1998, was $75 million.

Congress mandated permanent indefinite appropriations for the Facilities and Equipment, Grants-in-Aid, and Research, Development and Engineering in order to fully fund special projects that were ongoing and spanned several years.

FAA does not have any differences between the information reported on the statement and the amounts described as "actual" in the Budget of the United States Government for FY 1998.

FAA incurred several adjustments to its budgetary resources in FY 1998. Contract authority for Grants-in-Aid program was reduced by a $412 million rescission (PL 105-66), and $295 million rescission for the Emergency Supplemental Bill (PL 105-174). The Operations appropriation was reduced by $.9 million for services associated with the Transportation Administration Service Center and $50 million for funds transferred to the Essential Air Service and Rural Airport Improvement Program Fund.

In an effort to accurately reflect the status of budgetary resources, FAA compiled data from the SF-132, Apportionment and Reapportionment Schedule, and the SF-133, Report on Budget Execution, to prepare the Statement of Budgetary Resources. Some of the budgetary account balances from the general ledger were not accurate or were incomplete because the processes to record specific transactions were not available in the accounting system.

Note 26. Costs Capitalized on the Balance Sheet

In FY 1998, FAA reported a decrease of $2.9 billion in costs capitalized on the balance sheet. This decrease resulted from the implementation of the depreciation policy, the change in capitalization threshold, reconciliation of the property systems to the general ledger, and the operating materials and supplies price adjustment.

Note 27. Financing Sources Yet to be Provided

(Dollars in Thousands)

Liabilities Not Covered By Budgetary Resources (FY 98)	$ 5,329,167	
Liabilities Not Covered By Budgetary Resources (FY 97)	3,061,782	
Financing Sources Yet to be Provided:		$ 2,267,385
Decreases:		
Federal Employee Compensation Act (FECA Actuarial)	$ (67,129)	
Contingent Liability for Legal Claims	(4,807)	
Contingent Liabilities for Return Rights	(9,600)	
Voluntary Separation	(3,968)	
Total Decreases		$ (85,504)
Increases:		
Debt	$ 3	
Federal Employee Compensation Act (FECA Actual)	5,811	
(Includes Prior Period Adjustment of $19,138)		
Accrued Unfunded Annual Leave	7,373	
Sick Leave Buy-Out for Air Traffic Controllers	56,426	
Capital Lease Liability	1,876	
Environmental and Disposal Liability	2,279,400	
(Includes Prior Period Adjustment of $1,524,000)		
Total Increases (Prior Period Adjustment Included)		$ 2,350,889
Prior Period Adjustment (Cleanup Cost Implementation)	$ (1,504,862)	
Financing Sources Yet To Be Provided (Increases less Prior Period Adjustment)		$ 846,027

Note 28. Custodial Activity

Revenue Activity:

Sources of Cash Collections:

(Dollars in Thousands)

Miscellaneous Receipts	$ 1,102
Fines	17,873
Penalties	59
Total Cash Collections	19,034
Accrual Adjustment	1,105
Total Custodial Revenue	$ 20,139
Disposition of Collections:	
Transferred to Others (by Recipient):	
Treasury (General Fund)	$ 19,034
Increase (Decrease) in Amounts Yet to be Transferred	1,105
Collections Used for Refunds and Other Payments	-
Retained by the Reporting Entity	-
Total Disposition of Custodial Revenue	$ 20,139
Net Custodial Activity	$ -

Note 29. Other Disclosures

Legal Proceedings. FAA recognized contingent liabilities of $433.4 million for certain claims. This represents a decrease in the amount of $4.8 million from FY 1997. Such claims are those that have been brought to the attention of the OCC and that (a) have been asserted, or, if not yet asserted, in the opinion of the OCC are more likely to be asserted than not; (b) in the opinion of the OCC are more likely to be paid than not; and (c) for which the OCC can estimate the probable payment. The maximum exposure associated with such claims is $81.4 billion. Therefore, FAA's exposure to loss for such contingent liabilities in excess of the amount recognized is $81 billion.

Contract Negotiations. FAA had a total of $73.1 million in commitments (funds reserved for possible future obligations) under unexpired Facilities and Equipment and Research, Engineering, and Development appropriations for purchases of goods and services for which contract negotiations have not been completed (i.e., agency obligations had not been incurred) at the end of FY 1998.

Contract Options. As of September 30, 1998, FAA had $2.8 billion in contract options that, if exercised, would require the obligation of funds in future years.

Letter of Intent. FAA has authority under 49 U.S.C. 47110(e) to issue letter of intent (LOI) to enter into AIP grant obligations; but, LOI's do not create obligations. FAA has issued LOI's covering FY 1988 through FY 2010 in the aggregate amount of $2.930 billion. FAA had obligated $1.655 billion of this total from FY 1988

through FY 1998, leaving $1.275 billion unobligated as of September 30, 1998. FAA anticipates obligating $183 million of this total in FY 1999.

AIP Grants. The FY 1998 AIP grant authority totaled $1.7 billion, including $989 million in entitlements to specific locations. The sponsors of these entitlements claimed all but $66 million. This amount will be available from unused or newly enacted contract authority to those sponsors through FY 2000, or 2001 in case of non-hub primary airport locations.

Aviation Insurance Program. FAA may issue aircraft hull and liability insurance under the Aviation Insurance Program for certain air carrier operations. FAA's authority to issue insurance is limited to situations where commercial insurance is not available on fair and reasonable terms and where the operation to be insured is necessary to carry out the U.S. Government's foreign policy. No claims for losses were pending as of September 30, 1998.

The categories of insurance issued by FAA are: (1) premium insurance, for which a risk-based premium is charged to the air carrier; and (2) nonpremium insurance. Nonpremium insurance, which represented all of the insurance issued by FAA in FY 1998, is issued for air carrier operations under contract to or on behalf of a U.S. Government agency, provided that the agency has an agreement with FAA to indemnify FAA against all losses covered by the insurance. FAA maintains standby nonpremium war-risk insurance policies for 48 air carriers having approximately 936 aircraft available for Defense or State Department charter operations.

FAA normally insures only a small number of air carrier operations at any time. Airspace and airport capacity in areas where FAA insurance coverage would apply is usually very limited, so that FAA expects to be able to terminate insurance coverage and/or insured air carrier operations in high-risk areas after the loss of no more than two aircraft. Thus, probably no more than two FAA-insured aircraft could be lost before the FAA exercises its regulatory authority to stop flights to the area of loss. FAA establishes maximum liability for losing one insured aircraft at the limit of commercial insurance that applied to that aircraft before FAA issued its insurance. This liability covers third party losses. In many cases, FAA's maximum liability is $1 billion; usually it is less. Assuming a loss of not more than two aircraft per year, the maximum expected insurance liability for any year would be $2 billion. Therefore, the range of possible liability to FAA is assumed to be between zero and $2 billion. Since inception of the program (including the predecessor Aviation War Risk Insurance Program, dating back to 1951), only four claims, ranging from $626 to $122,469, respectively, have been paid.

U.S. Department of Transportation
Federal Aviation Administration
Stewardship Investment
Non-Federal Physical Property
Airport Improvement Program
Current Year Expenses
For the Fiscal Year Ended September 30, 1998
(Dollars in Thousands)

State/Territory		State/Territory	
Alabama	15,556	New Hampshire	11,743
Alaska	77,949	New Jersey	9,918
Arizona	47,243	New Mexico	5,327
Arkansas	19,291	New York	67,664
California	101,896	North Carolina	31,226
Colorado	44,768	North Dakota	10,980
Connecticut	1,348	Ohio	33,843
Delaware	284	Oklahoma	5,240
District Of Columbia	206	Oregon	17,682
Florida	60,752	Pennsylvania	63,025
Georgia	41,604	Rhode Island	2,692
Hawaii	7,142	South Carolina	15,419
Idaho	12,532	South Dakota	10,112
Illinois	74,514	Tennessee	34,885
Indiana	21,213	Texas	98,154
Iowa	16,983	Utah	12,910
Kansas	11,250	Vermont	5,219
Kentucky	43,116	Virginia	21,733
Louisiana	20,338	Washington	18,405
Maine	5,505	West Virginia	19,564
Maryland	9,765	Wisconsin	30,406
Massachusetts	22,615	Wyoming	9,337
Michigan	47,890	American Samoa	1,329
Minnesota	23,430	Guam	1,260
Mississippi	9,788	North Mariana Island	3,272
Missouri	35,996	Puerto Rico	10,482
Montana	13,367	Trust Territory of Pacific	479
Nebraska	13,015	Virgin Island	2,384
Nevada	30,420	Administration	52,075
SUBTOTAL	829,777	SUBTOTAL	606,765
		GRAND TOTAL	**1,436,541**

STEWARDSHIP INVESTMENT

Non-Federal Physical Property.

Airport Improvement Program. The FAA makes project grants for airport planning and development to maintain a safe and efficient nationwide system of public-use airports that meets both present and future needs of civil aeronautics. The FAA works in partnership with airport authorities, local units of governmen t, metropolitan planning organizations, and states.

In FY 1998, FAA awarded a total of 1,040 new grants to improve and expand the Nation's airports. In FY 98 the FAA focused on award of grants to eligible airports to enhance capacity, improve safety and security, and mitigate noise.

U.S. Department Of Transportation
Federal Aviation Administration
Stewardship Investment
Research and Development
For the Fiscal Year Ended September 30, 1998

(Dollars in Thousands)

Expenses

Applied Research	$	103,274
Development		48,237
Research and Development Plant		11,254
Administration		54,179
Total	$	**216,944**

The classification of Applied and Development expenses were calculated using percentages from the National Science Foundation's fiscal year 1997 Survey of Federal Funds . for Research and Development Table II.

STEWARDSHIP INVESTMENT

Research and Development.

Research. The FAA conducts research and invests in essential infrastructure to meet increasing demands for higher levels of system safety, security, capacity, and efficiency. Critical areas of research and development include explosive detection, weather, aircraft structures, noise mitigation, human factors, and satellite navigation. For air traffic control, the FAA is introducing new technologies such as satellite navigation using the global positioning system (GPS), data link communications, and collaborative decisionmaking tools.

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
SUPPLEMENTARY STATEMENT OF BUDGETARY RESOURCES
As Of September 30, 1998

(Dollars in Thousands)

	Airport & Airway Trust Fund Corpus	Trust Fund Grants-in-Aid to Airports	Trust Fund Facilities & Equipment	Trust Fund Research, Eng.& Development
Budgetary Resources				
Budget Authority	$ 2,191,405	$ 1,640,000	$ 1,900,477	$ 199,183
Unobligated Balances - Beginning of Period	6,358,301	72,333	638,660	8,035
Spending Authority From Offsetting Collections	-	-	32,494	9,312
Adjustments	-	24,279	79,587	2,659
Total Budgetary Resources	$ 8,549,706	$ 1,736,612	$ 2,651,218	$ 219,189
Status Of Budgetary Resources				
Obligations Incurred	$ 75	$ 1,661,227	$ 2,201,874	$ 211,249
Unobligated Balances-Available	-	75,385	361,099	7,940
Unobligated Balances-Not Available	8,549,631	-	88,245	-
Total Status of Budgetary Resources	$ 8,549,706	$ 1,736,612	$ 2,651,218	$ 219,189
Outlays				
Obligations Incurred	$ 75	$ 1,661,227	$ 2,201,874	$ 211,249
Less: Spending Authority From Offsetting Collections and Adjustments	-	(36,612)	(112,081)	(11,971)
Obligated Balance, Net Beginning of Period		2,388,645	1,780,526	187,647
Obligated Balance Transferred, Net		-	-	-
Less: Obligated Balance, Net - End of Period	-	(2,502,678)	(1,643,899)	(184,340)
Total Outlays	$ 75	$ 1,510,582	$ 2,226,419	$ 202,584

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
SUPPLEMENTARY STATEMENT OF BUDGETARY RESOURCES
As Of September 30, 1998

(Dollars in Thousands)

Aviation Insurance Revolving	Franchise Fund	Operations	Other Funds	Combined Total
$ -	$ -	$ 5,253,488	$ -	$ 11,184,553
69,111	426.348	81,423	1,531	7,229,820
3,672	22,292	1,965,425	-	2,033,195
-	-	8,121	(498)	114,147
$ 72,782	$ 22,719	$ 7,308,458	$ 1,032	$ 20,561,716
$ 355	$ 21,767	$ 7,242,015	$ 111	$ 11,338,674
72,428	951	4,014	921	522,739
-	-	62,428	-	8,700,304
$ 72,783	$ 22,719	$ 7,308,458	$ 1,032	$ 20,561,716
$ 355	$ 21,767	$ 7,242,015	$ 111	$ 11,338,674
(3,672)	(22,292)	(1,974,486)	(2)	(2,161,115)
94	1,414	715,911	318	5,074,554
-	-	-	-	
(189)	(3,953)	(702,892)	(385)	(5,038,337)
-				
$ (3,412)	$ (3,065)	$ 5,280,549	$ 42	$ 9,213,775

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
AVIATION INSURANCE REVOLVING FUND
BALANCE SHEET
As of September 30, 1998

(Dollars in Thousands)

Assets		
Entity Assets:		
Intragovernmental		
Fund Balance with Treasury	$	262
Investments		68,880
Total Intragovernmental Assets	$	69,142
Total Entity Assets:	$	69,142
Total Assets	$	69,142
Liabilities		
Liabilities Covered by Budgetary Resources:		
Accounts Payable	$	3
Other Liabilities		21
Total Liabilities Covered by Budgetary Resources	$	24
Total Liabilities	$	24
Net Position Balances:		
Cumulative Results of Operations	$	69,118
Total Net Position	$	69,118
Total Liabilities and Net Position	$	69,142

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
AVIATION INSURANCE REVOLVING FUND
STATEMENT OF NET COST
For the Fiscal Year Ended September 30, 1998

(Dollars in Thousands)

Costs:		
Programs		
With the Public	$	288
Less Earned Revenues		-
Net Program Costs	$	288
Net Cost Of Operations	$	288

U.S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
AVIATION INSURANCE REVOLVING FUND
STATEMENT OF CHANGES IN NET POSITION
For the Fiscal Year Ended September 30, 1998

(Dollars in Thousands)

Net Cost of Operations	$	(288)
Financing Sources		
Taxes and Other Nonexchange Revenues		3,704
Net Results of Operations		3,416
Net Change in Cumulative Results of Operations		3,416
Change in Net Position		3,416
Net Position Beginning of Period		65,702
Net Position End of Period	$	69,118

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
FRANCHISE FUND
BALANCE SHEET
As of September 30, 1998

(Dollars in Thousands)

Assets		
Entity Assets:		
Intragovernmental		
Fund Balance with Treasury	$	6,132
Accounts Receivable, Net		57
Total Intragovernmental Assets	$	6,189
General Property, Plant, and Equipment, Net		910
Total Entity Assets:	$	7,099
Total Assets	$	7,099
Liabilities		
Liabilities Covered by Budgetary Resources:		
Intragovernmental Liabilities:		
Accounts Payable	$	(250)
Other Intragovernmental Liabilities		615
Total Intragovernmental Liabilities		365
Accounts Payable		440
Lease Liability		687
Other Liabilities		1,053
Total Liabilities Covered by Budgetary Resources	$	2,545
Total Liabilities	$	2,545
Net Position Balances:		
Cumulative Results of Operations	$	4,554
Total Net Position	$	4,554
Total Liabilities and Net Position	$	7,099

U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
FRANCHISE FUND
STATEMENT OF NET COST
For the Fiscal Year Ended September 30, 1998

(Dollars in Thousands)

Costs:		
Programs		
Multi-Media Services and Information Technology		
Intragovernmental	$	1,253
Less Earned Revenues		(1,353)
Net Multi-Media Services and Information Technology	$	(100)
Duplicating		
Intragovernmental	$	5,345
Less Earned Revenues		(5,429)
Net Duplicating	$	(84)
Financial Services		
Intragovernmental	$	9,771
Less Earned Revenues		(13,003)
Net Financial Services	$	(3,232)
International and Management Training		
Intragovernmental	$	2,261
Less Earned Revenues		(2,448)
Net International and Management Training	$	(187)
Net Cost of Operations	$	(3,603)

U.S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
FRANCHISE FUND
STATEMENT OF CHANGES IN NET POSITION
For the Fiscal Year Ended September 30, 1998

(Dollars in Thousands)

Net Cost of Operations	$	3,603
Financing Sources		-
Net Results of Operations		3,603
Prior Period Adjustments		(685)
Net Change in Cumulative Results of Operations		2,918
Change in Net Position		2,918
Net Position Beginning of Period		1,636
Net Position End of Period	$	4,554

REQUIRED SUPPLEMENTARY INFORMATION

ADMINISTRATIVE SERVICES FRANCHISE FUND

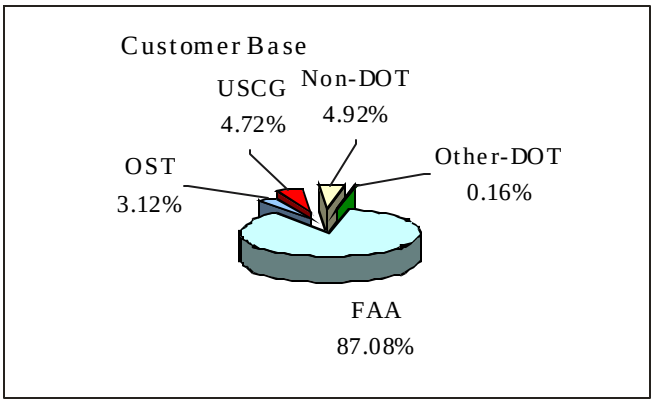
Background/Fund Establishment

The franchise concept is designed to create competition within the public sector for the performance of a variety of support services. This allows for the establishment of an environment to maximize the use of internal resources through the consolidation and joint-use of like functions and to gain the efficiencies and economies of scale associated with the competitive offering of services to other Government agencies.

The Government Management Reform Act (GMRA) of 1994, Public Law 103-356, provided for the establishment of six franchise fund pilot programs. The six pilots were authorized by the President's Chief Financial Officers (CFO) Council prior to submission of the FAA Franchise Fund proposal. However, the CFO Council's Franchise Fund Working Group strongly endorsed the FAA proposal and recommended submission to Congress as a franchise-like operation. This endorsement resulted in congressional approval, and the Administrative Services Franchise Fund was established in FY 1997.

Services

The Administrative Services Fund offers a wide variety of services. These include international training, accounting, payroll, travel, duplicating, multimedia, information technology, and management training. In addition, new services are planned for subsequent years including logistics support in FY 2000.



The customer base for Franchise Fund services includes DOT and non-DOT Government agencies. The FY 1998 revenue percentages by customer is identified in the pie chart.

Benefits/Accomplishments

Benefits from the franchise environment occur incrementally over time through efficiencies and economies of scale associated with development of partnerships and consolidation of like functions plus the addition of new customers. During the first 2 years of operation, activities within the Administrative Services Franchise Fund have identified a number of advantages, benefits, and results from participation in the Fund. The general impacts/benefits are:

- A more business-like orientation
- Customer-driven decisions
- Emphasis on the cost of doing business and the full recovery of costs
- Reduction in the delivery price of some products and services
- Flexibility of the revolving fund environment including reduction of yearend crunch
- Use of retained earnings to build a base for equipment upgrades, improved services, etc.
- Renewed employee enthusiasm and the sense of challenge
- Development and refinement of specific measurement processes
- Identification of partnering/consolidation opportunities
- Development of a set of operating principles for entrepreneurial activities

Specific accomplishments include:

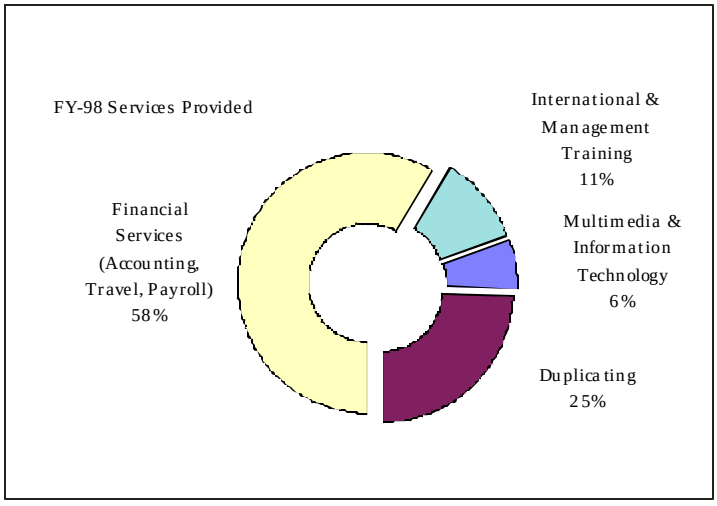
- Centralized/consolidated international training activities at the FAA Academy at no additional cost.
- Increased FAA influence on global aviation system and improvement of overall safety through advancement of the international training program.

- Absorption of a reduction in the printing budget allocation with no commensurate reduction in service level.
- Consolidation of two services (multimedia and printing) into one division with a single manager (instead of two) resulting in ability to shift resources to the working level.
- Purchase of equipment upgrades in printing and multimedia to improve technology, increase capability, and replace worn-out units through use of the retained earnings provisions of the revolving fund. This resulted in improved service delivery and would not have been possible using the annual appropriation cycle alone.
- A cost avoidance of approximately $2.8 million annually due to significantly lower prices than local quick print competitors ($0.025 versus $0.07 per impression.
- A proposed reduction in cost per impression from $0.025 to $0.023 (8 percent) in FY 1999 resulting from efficiencies gained through new technology and economies of scale associated with new customers and increased product output.
- Projected savings of $40,000 in FY 1999 maintenance costs through movement of mainframe printing to the printing and distribution team from another organization.
- Reduction of payroll technician personal compensation and benefit cost per payroll account by 17.5 percent over 2 years.
- Addition of a new customer for permanent change of station (PCS) processing and laid the groundwork for centralization of PCS processing within the agency.
- Negotiated an agreement with a new customer for collections processing.

FY 1998 Fund Activity

The fund provided services totaling $21,667,000 in FY 1998. The following is a graphic presentation of the distribution of customer reimbursement by service activity for FY 1998.

In addition, collections of $615,000 were made during FY 1998 for services to be performed in FY-99. The breakdown of this $615,000 deferred revenue is: $274,000 deferred revenue collected by International & Management Training; $204,000 deferred revenue collected by Multimedia & Information Technology, and $137,000 deferred revenue collected by Financial Services.



SUPPLEMENTAL PROGRAM INFORMATION

This chapter summarizes how the FAA invested its FY 1998 resources to advance the three goals central to its mission: safety, security, and system efficiency. Attaining each of these goals commits the agency to simultaneous action on several fronts and at many levels. Pursuing each of these objectives confronts the agency with complex issues involving our workforce, the reform of our regulatory procedures, our international role, and our responsibility to safeguard the environment. The four enabling goals - people, reform, global leadership, and the environment - support the broader effort and contribute to overall success.

From one perspective, the strategic plan is a simplifying vision of the FAA's future, defining the areas of activity where the agency will concentrate its efforts over the next 5 years. But from another perspective, it is a multidimensional master plan for coordinating the impressive diversity of the FAA's involvement in virtually every aspect of modern aviation.

This year's annual report allows the FAA to be viewed from both perspectives. It emphasizes the FAA's disciplined focus on its three mission-critical goals, while highlighting its wide-ranging contributions to the vitality of aviation around the world.

MISSION BASED GOALS

SAFETY: By 2007, reduce U.S. aviation fatal accident rates by 80 percent from 1996 levels.

REGULATORY REFORM

Rulemaking Process is Reengineered. Vice President Gore's National Performance Review directed the FAA to streamline its regulatory process to make it more responsive to public needs. Recent congressional action also required the FAA to issue a final rule 24 months after the publication of an Advanced Notice of Proposed Rulemaking (ANPRM) and 16 months after the comment period closes on a Notice of Proposed Rulemaking (NPRM). As a result, the FAA reengineered its rulemaking process in January 1998 to ensure that the agency meets these statutory requirements.

Terrain Awareness and Warning System (TAWS) NPRM is Published. Controlled flight into terrain (CFIT) remains one of the major causes of accidents. TAWS uses a computer database which can compare the aircraft's position with a database of the world's terrain, create a display, and sound a warning far sooner than the standard ground proximity warning system. An NPRM that proposed requiring the installation and use of TAWS on turbine-powered airplanes with six or more passenger seats was published in the Federal Register on August 26, 1998.

Low End Avionics to Become More Affordable. An NPRM published in the Federal Register on September 8, 1998, intends to make low-end avionics more affordable for small personal, business, and commuter airplanes. It is expected that the newly developed versions of two advisory circulars, AC 23.1309 and AC 23.1311, will provide more realistic standards for certification of this equipment in these airplanes, resulting in more widespread usage and safer operations of these airplanes.

Safety Regulation of Commercial Space Transportation. The Commercial Space Act of 1998, signed by President Clinton on October 28, 1998, provides explicit authority for the FAA to license reentry operations. The FAA is continuing research on public safety issues relating to reentry operations and issued an NPRM on April 21, 1998.

Also, on April 21, 1998, the FAA published a final rule on licensing requirements and for the launch of expendable vehicles from Federal launch sites. In August 1998, the FAA published a final rule on Financial Responsibility. The FAA is also developing NPRM's for licensing of commercial and state-sponsored launch sites and for launches from such sites.

Commercial Passenger-Carrying Operations in Single-Engine Aircraft Are Clarified. On May 4, 1998, the FAA issued a final rule revising and clarifying certain conditions and limitations in part 135 of the Federal Aviation Regulations (FAR) for instrument flight rule (IFR), passenger-carrying operations in single-engine aircraft. The rule will remove any ambiguity concerning the required power sources for the gyroscopic instruments required for flight under IFR for single-engine aircraft involved in commercial, passenger-carrying operations.

FAA Orders Fire Detection and Suppression Systems for Aircraft Cargo Compartments. The FAA issued a final rule on February 2, 1998, requiring fire detection and suppression systems in aircraft cargo compartments. The rule affects nearly 3,700 passenger aircraft and all newly manufactured aircraft. Most wide-body passenger aircraft have fire detection and suppression systems in inaccessible compartments. This rule requires that the remainder of the passenger fleet be equipped with the same systems. Approximately 300 all-cargo aircraft will also be required to have detection systems and a means to shut off the flow of air to the compartment. The rule meets a recommendation of the White House Commission on Aviation Safety and Security, which urged the installation of both fire detection and suppression systems in all aviation cargo holds.

The airline industry, through the Air Transport Association (ATA), announced in December 1996 that the industry would voluntarily speed the installation of these systems in commercial aircraft. The FAA continues to work in partnership with the airline industry to ensure that all affected aircraft are retrofitted within the next 3 years.

Prohibition on the Transportation of Devices Designed as Chemical Oxygen Generators as Cargo in Aircraft. NPRM 98-13 issued on August 21, 1998, proposes to ban, in certain U.S. air carrier operations, the transportation of devices designed to chemically generate oxygen, including devices that have been discharged and newly manufactured devices that have not yet been charged for the generation of oxygen. These devices could, if inadvertently transported when charged, initiate or provide a secondary source of oxygen to fuel a fire. This proposed ban would enhance aviation safety by reducing the risk of human error in recognizing whether such a device is charged or has been discharged.

FAA Acts To Increase Center Fuel Tank Safety. New measures have been adopted to reduce potential ignition sources in Boeing 747 center wing tanks. The airworthiness directive (AD) proposed in July 1998 and issued in March 1999 requires operators of U.S.-registered Boeing 747 aircraft to take the following actions:

- Inspect the center fuel tank to detect damage, disbonding or incorrect installation of wiring and components.
- Test the electrical bonding of center fuel tank components to the aircraft's structure to ensure it is within limits, reworking them if necessary.
- On certain 747's, measure the insulation resistance of the fuel quantity indication system (FQIS) to ensure that it is within limits, replace FQIS components with new hardware, and replace silver-plated FQIS wires with new nickel-plated wiring.
- In certain airplanes, install a flame arrestor into the inlet line of the scavenge pumps of the center fuel tank.

The rule is one of the latest proactive efforts by the FAA to reduce, or even eliminate, sources of ignition in aircraft fuel tanks. Since the TWA 800 accident in July 1996, the FAA has issued or proposed 13 separate AD's related to fuel tank systems in Boeing 737, 747, and 767 aircraft.

For example, in January 1999, the FAA issued an AD to enhance the protection of the FQIS on Boeing 737 aircraft against transient electrical voltage spikes or short circuits. The AD requires installing transient suppression components and/or shielding and separating the fuel system wiring that is routed to the fuel tanks from adjacent wiring. A transient suppression device is a current-protective component that limits amounts of electrical energy. The AD also requires installation of flame arrestors and pressure relief valves in the fuel vent system to prevent external flames from entering the fuel vent system through the overboard vent in the wing tip.

Child Restraint Systems. The FAA issued an Advance NPRM seeking public comment on issues relating to the use of child restraint systems (CRS) in aircraft during all phases of flight. Specifically, the agency sought crash performance and ease-of-use information about existing and new automotive CRS's, when used in aircraft, as well as the development of any other new or improved CRS's designed exclusively for aircraft use. This responds to a recommendation made by the White House Commission on Aviation Safety and Security and is intended to gather information about the technical practicality and cost feasibility of requiring small children and infants to be restrained in CRS's in aircraft. After reviewing the comments, the FAA may issue an NPRM with specific regulatory proposals that respond to the Commission's recommendations regarding the use of CRS's.

Guidance for Carry-On Baggage is Issued. As part of its *Safer Skies* agenda, the FAA provided expanded guidance for passengers and airlines on carry-on baggage regulations. The new advisory circular (AC) recommends that airlines' individual carry-on baggage programs contain descriptions of carry-on baggage, including the size and number of bags, how child safety seats should be treated, and the procedures for ensuring proper stowage.

FAA/Air Force National Launch Safety Requirements and Standards. Using the FAA's ongoing launch safety rulemaking as a vehicle, the Air Force and the FAA will develop common flight safety requirements that will be promulgated through FAA regulations. The Air Force will be able to reference these regulations in its own safety requirements, thus dispensing with duplicative requirements, easing the administrative burden for both Government and industry, and achieving one standard for industry. The FAA will benefit from its access to the Air Force's expertise and experience, and the public will benefit from the opportunities that a rulemaking offers for participating in the development of the standards that govern launch activities.

SAFETY INFORMATION SHARING AND ANALYSIS

Flight Operations Quality Assurance (FOQA) Program . The FAA has issued a policy statement that provides a means for the airlines to share with the FAA the routine flight operations data collected from flight data recorders as part of their FOQA programs. The FOQA data, combined with information from the FAA's databases, will present a comprehensive picture of flight operations that can then be analyzed to identify problems before they result in an accident. Demonstration programs with United, Continental, USAirways, and Alaska Airlines have all shown promising results. For example, based on FOQA analysis, the safety of approaches to more than a dozen airports in the United States and elsewhere in the world has been improved. Evidence of unstable approaches, collected through FOQA, gave airlines the information necessary to take effective corrective action. Under the new policy, which was published in the Federal Register on December 4, 1998, airline participation would be voluntary, and the FAA will not use safety data generated in an FOQA program for enforcement actions except in egregious cases.

Global Aviation Information Network (GAIN). The FAA continued to facilitate the development of GAIN as part of its Strategic Plan and the *Safer Skies* agenda. GAIN is designed to improve worldwide aviation safety through the collection, analysis, and dissemination of aviation safety information. The industry-led GAIN Steering Committee met throughout the year to develop strategies and prototypes to begin the implementation of GAIN. In addition, FAA supported the International Civil Aviation Organization (ICAO) in its efforts to implement the GAIN concept as the unified mode of global aviation safety information sharing.

FAA is in the process of publishing several NPRM's that will encourage GAIN implementation by protecting safety information voluntarily provided by industry. The FAA is also collaborating with NASA on research initiatives involving safety data sharing, analysis, and systemwide monitoring.

Safety Performance Analysis System (SPAS). The FAA is currently deploying SPAS, an automated risk-based analytical tool that enables aviation safety inspectors (ASI) to better target their surveillance and analyze critical safety performance indicators. At the end of FY 1998, over 2,300 ASI's, supervisors, and analysts had received training. SPAS continues to be enhanced with additional data sources and improved strategies for risk analysis and targeting. These enhancements, as well as technology and related developments, will allow SPAS to provide even more precise front-line support to the safety inspector work force, thus facilitating a greater degree of safety for the flying public.

Safety Training Outreach. The FAA's Civil Aeromedical Institute (CAMI) offered aeromedical safety courses in aviation physiology and global survival to 2,129 pilots and provided practical demonstrations of spatial disorientation to 2,732 pilots. Practical demonstrations of hypoxia in an altitude chamber were provided to 1,611 airmen through an FAA/USAF training agreement. A first-of-its-kind, virtual reality spatial disorientation demonstrator was designed by CAMI to support the National Accident Prevention Program throughout the United States. Also, 89,120 aeromedical safety brochures, 4 issues of the Federal Air Surgeon's Medical Bulletin, and 25 new Office of Aviation Medicine Technical Reports were distributed to civil aviation pilots, aviation medical examiners, pilot

schools, and others in the civil aviation community interested in safety.

Pilot Information Video. The FAA's Office of System Safety, in partnership with the Experimental Aircraft Association (EAA), released an informational video for pilots flying to the annual EAA Fly-In in Oshkosh, Wisconsin. The 1998 Oshkosh Visual Flight Rules procedures video was used to promote aviation safety for the world's premier general aviation event. The video was designed to help pilots follow special arrival and departure procedures that were in effect during the air show. The video was provided to pilots free of charge, along with a quick reference booklet for use in-flight. An electronic version was available for viewing on the Internet. Similar products were also provided for the Sun 'n Fun Fly-In 1998. Sun 'n Fun is the largest of EAA's regional fly-ins.

Safety Risk Management Order. In June 1998, the FAA established a formal safety risk management policy through Order 8040.4. The new policy provides for a formal but flexible approach for managing safety risks associated with high consequence decisions. Steps in the safety risk management process include case-specific safety risk management plans, hazard identification and analysis, risk assessment, and risk management decisions. The order establishes an FAA Safety Risk Management Committee to support its implementation.

Expansion of Safety Information Website. During FY 1998, the FAA incrementally expanded the sources of safety information available to air travelers via the Internet (www.faa.gov). By the end of the year the public could find, at a single website, press releases about significant FAA enforcement actions, quarterly reports of closed enforcement actions, searchable aviation accident and incident databases, the results of FAA assessments of foreign aviation authorities, and the preliminary edition of an airline resume database. The website recorded high levels of utilization, experiencing almost 100,000 "hits," or 4,500 user sessions a week.

NAS Modernization Safety Assessments. In order to build safety in at the beginning, the FAA has established and incorporated a comprehensive safety assessment process into the modernization of the NAS. Safety assessments will identify and address potential safety hazards through front-end analysis tied to investment decisions.

SURVEILLANCE AND INSPECTION

Aircraft Certification Systems Evaluation Program (ACSEP) Resource Targeting. The resource targeting model is an analytical tool that will be used by the Aircraft Certification Service to prioritize workload requirements associated with the ACSEP program. Its use is expected to improve both the effectiveness and efficiency of work program activities through the targeted allocation of resources against the Aircraft Certification Service's highest safety priorities. The primary objective of the program is to improve current levels of safety while maintaining or reducing overall ACSEP resource requirements. Any resource savings resulting from this approach will be devoted to other priority aviation safety functions, such as general certificate management. The model will be applied to all production approval certificate holders on an annual basis by the principal inspector. The notice that the FAA will implement ACSEP resource targeting was signed October 1, 1998.

Air Transportation Oversight System (ATOS) is Implemented. ATOS is a new air carrier oversight process developed by the FAA Flight Standards Service with the support of its labor partner, Professional Airways Systems Specialists, and Sandia National Laboratories. It embodies a systems approach to FAA certification and surveillance oversight, using system safety principles and risk management to ensure that air carriers have safety built into their operating systems.

The FAA implemented ATOS Phase 1 on October 1, 1998. This initial phase includes oversight of the ten airlines that carry approximately 90 percent of all U.S. passengers and new entrant air carriers, if any, certificated through the FAA's Certification, Standardization, and Evaluation Team process. The ten carriers having the largest number of passenger enplanements are Alaska, American West, American, Continental, Delta, Northwest, Southwest, Trans World Airlines, United, and USAirways. The training of approximately 900 employees who will be members of the certificate management teams for these air carriers began on September 15, 1998. Following training, each team will develop and implement a dynamic comprehensive surveillance plan for the carrier for which they have oversight.

Inspection of Boeing 737 Horizontal Stabilizers Ordered. In January 1998, the FAA issued an AD requiring operators of certain Boeing 737 aircraft to

check the horizontal stabilizers — a wing-like structure on both sides of an aircraft's tail — to make sure that all fasteners and elevator attachment fitting bolts were properly in place. The order affected 211 Boeing 737-300, -400 and -500 series aircraft delivered after September 20, 1995. The AD was a precautionary measure prompted by preliminary data from a Boeing 737-300 accident in Indonesia on December 19, 1997. The AD required a one-time detailed visual inspection of the horizontal stabilizers on these aircraft within 24 hours or five flights.

Improved Engine Inspections Are Proposed. In July 1998, the FAA proposed eight AD's which would require the aviation industry to inspect engine parts more closely, using new methods developed, in large part, through FAA and industry research. The enhanced inspections focus on certain high-energy components used in commercial aviation. Uncontained engine failure is the leading engine-related safety hazard to commercial aircraft. The failure of these parts can release high-energy fragments that can penetrate the cabin or otherwise damage the aircraft. The enhanced engine inspections could result in a reduction of up to 40 percent in the number of failures of high-energy components over the next decade.

FAA Calls for Inspections for Fatigue Cracks on Boeing 737's. The FAA issued an NPRM on October 8, 1998, to order inspections of Boeing 737-100, -200, -300, -400, and -500 series aircraft to detect and repair fatigue cracks on the forward pressure bulkhead. The proposed rule is prompted by reports of structural fatigue cracks in the fuselage bulkhead that could result in rapid decompression of the aircraft.

The FAA proposed that those aircraft with 60,000 or more total flight cycles be inspected within 1,500 flight cycles. Aircraft with less than 60,000 total flight cycles would receive initial inspection prior to the accumulation of 15,000 total flight cycles or within 3,000 flight cycles, whichever occurs later. All aircraft would then undergo repetitive inspections every 3,000 cycles. In addition, the proposed rule requires operators to modify the bulkhead prior to the accumulation of 75,000 total flight cycles or within 12,000 flight cycles, whichever occurs later. The modifications consist of replacing portions of the bulkhead center web area and installing certain angles and straps to strengthen the side and vertical chord areas. These modifications would eliminate the need for repetitive inspections on some bulkhead areas.

Boeing 737 Fuel Pumps, Wiring Inspection. In May 1998, the FAA ordered airlines to expeditiously inspect the wiring of fuel pumps in the Boeing 737 series after a check discovered fuel leakage, worn insulation on wires passing through metal conduits, and signs of electrical arcing. The order affected older planes (models 100 through 500) with between 30,000 and 50,000 flight hours. This action follows the FAA's decision in 1996, following the TWA 800 tragedy, to examine fuel tank wiring issues in greater detail throughout the commercial aviation fleet. Prior inspection notices were issued for the 747 and 767 aircraft, which have similar fuel pump wiring designs. In coming months, the FAA will propose a regular inspection schedule for these electrical circuits.

As part of its continuing efforts to ensure fuel tank safety, the FAA, on September 28, 1998, ordered airlines to inspect, within 60 days, fuel boost pump wiring on Boeing 737-100 through 500 series aircraft with 20,000 to 30,000 flight hours. The inspections are necessary to ensure that the aircraft do not have a problem with chafing and electrical arcing between the fuel boost pump wiring and the surrounding conduit.

Inspections of Boeing 737-700 and -800 Engine Gearboxes Ordered. On July 2, 1998, the FAA ordered the immediate inspection of Boeing 737-700 and -800 series aircraft equipped with CFM International CFM56-7B turbofan engines for problems with the engine accessory gearbox. CFM International is a joint venture of General Electric Company and Snecma, France. The agency's telegraphic AD followed two in-flight engine shutdowns on June 26, 1998, one on Transaero Airlines, Russia, and the other on Braathens Airlines, Norway. There were no injuries.

In both incidents, the accessory gearbox starter gearshaft failed due to inadequate fatigue capability caused by high stresses introduced during the manufacturing process. The AD requires immediate inspection of the magnetic chip detector on the No. 2 engine on all Boeing 737-700 and -800 aircraft prior to further flight. The operator was required to remove and replace the starter gearshaft if the detector found abnormal magnetic particles. Worldwide, there are 94 engines installed on 47 aircraft affected by the AD.

Of those, there are 46 engines on 23 U.S. registered aircraft.

Airworthiness Directive on General Aviation Aircraft Engines. The FAA issued an AD in February 1998 requiring general aviation operators to inspect their aircraft's piston engine crankshaft in Textron Lycoming engine models 320 with 160 horsepower or greater and 360 series engines with fixed-pitch propellers. If pits in the metal are found, a fluorescent penetrant inspection must be performed to determine if a crack is present that could result in engine failure, propeller separation, forced landing, and possible damage to the aircraft.

Ensuring Airport Safety. For the past 25 years, the FAA has managed a national airport certification program for air carrier airports. Through this certification program, a successful partnership has been established between the FAA and the airport community. This partnership strengthens safety by ensuring consistent application of safety measures and by providing a forum to address national safety concerns and priorities.

One component of this certification program is inspections. Most airports serving air carriers are subject to Federal regulations that require compliance with minimum safety and operational requirements. The FAA's Airport Certification Safety Inspectors (ACSI) conduct annual inspections to ensure that these airports comply with regulatory requirements. As time permits, ACSI's also conduct courtesy safety inspections of general aviation airports. In 1998, ACSI's inspected over 500 airports.

FAA Industry Substance Abuse Prevention Program. Approximately 6,600 aviation industry companies employing more than 442,000 safety-sensitive employees are affected by the FAA's drug and alcohol misuse prevention regulations. Safety-sensitive employees include flight crewmembers, flight attendants, flight instructors, aircraft dispatchers, aircraft maintenance personnel, aviation screeners, ground security coordinators, and contract air traffic controllers. Drug testing for safety-sensitive employees has been required since 1989 and alcohol testing since 1995.

In FY 1998, six notices of proposed certificate action (suspensions or revocations) and 156 notices of proposed civil penalty were initiated. Forty-five orders assessing civil penalties were issued for violations of the drug and alcohol misuse prevention regulations. Refusals to submit to drug and alcohol testing are resulting in a rising number of emergency revocations of airman certificates.

In another action, letters of investigation were sent to over 200 companies after a database search and comparison was conducted, at the request of the Inspector General, to identify U.S. air carriers that did not have FAA-approved programs for drug and alcohol misuse prevention.

Aircraft Fuselage Panel Tests. The WJHTC teamed with the NASA Langley Research Center to conduct fracture tests on 40-inch-wide sheets of 0.063-inch-thick 2024-T3 aluminum alloy. Researchers conducted the tests on panels containing a variety of crack damage and took measurements on load, crack extension, applied end displacement, strain, and displacement fields. In a related research effort, researchers conducted tests on full-scale, stiffened, curved panels to test the residual strength of aircraft panels with multiple cracking configurations.

In FY 1998, the FAA also completed construction of a full-scale fuselage panel test system, capable of testing curved panel specimens under conditions representative of those seen by an aircraft in actual operation. The FAA developed this test system under contract with the Boeing Company. The system features a unique adaptation of mechanical, fluid, and electronic components, which will be capable of applying pressurization, longitudinal, hoop, and shear loads to a curved panel test specimen.

Enhanced Turbine Rotor Structural Integrity. The FAA has a major, ongoing, multiyear program through an FAA cooperative grant to Southwest Research Institute, in partnership with major U.S. engine companies, to develop a standardized, damage tolerance-based, probabilistic code that addresses structural integrity issues relative to the failure of critical turbine rotors. Researchers have developed a methodology and computer software to assess rotor design, such as the uncertainties in titanium material defects, operational stresses, crack growth, inspection effectiveness, and shop visit time. During FY 1998, the agency completed Version 2 of the DARWIN (Design Assessment of Rotors with Inspection) code. The code integrates finite element stress analysis, defect growth analysis, nondestructive inspection simulation, and probabilistic analysis to assess the risk of rotor disk fracture with inservice inspection. In its final version,

the code will be the basis for an approved design and lifting method, specified in an advisory circular, that engine companies can incorporate into their design systems.

Joint FAA/NASA/DOD Aging Aircraft Conference. In September 1998, the FAA teamed with NASA and the Department of Defense to sponsor the Second Joint Conference on Aging Aircraft. Over 600 representatives of Government, military, and industry attended the conference, held in Williamsburg, Virginia. The FAA will host the Third Joint Conference on Aging Aircraft, scheduled for September 1999 in Albuquerque, New Mexico.

Finite Element Modeling of Cracks Emanating from Rivet Holes. The FAA conducted two extensive finite element modeling efforts to predict the stress intensity factors of cracks emanating from rivet holes. To predict crack growth and residual strengths of riveted joints subjected to widespread fatigue damage (WFD), accurate stress and fracture analyses of corner and surface cracks at a rivet hole are needed. The first modeling effort calculated the boundary correction factors for elliptical surface cracks emanating from countersunk rivet holes. A second modeling effort compared boundary correction factor solutions for two symmetric cracks in a straight shank hole.

Software for Damage Tolerant Aircraft Repair. A critical issue identified by the aviation industry is the need to examine the effects of repairs on the structural integrity of aircraft. The incorporation of damage tolerance methodologies in the maintenance and repair practices of aircraft is required in order to insure their continued airworthiness and operational safety. In conjunction with the U.S. Air Force, the FAA has developed a new user-friendly software tool, repair assessment procedure and integrated design (RAPID), capable of static strength and damage tolerance analysis of fuselage skin repairs. In April 1998, the FAA made available RAPID 2.1 software and supporting documentation, which may be downloaded from the web at: www.asp.tc.faa.gov/RAPID.

Flight Loads Data Collection Program. The FAA has reestablished a flight loads data collection program for large transport airplanes. The FAA system is operational, and the analysis procedures have been established and verified by industry. Presently, data from 21 B-737 airplanes, 6 MD-82 airplanes, and 12 B-767 airplanes are being received. The FAA published a Technical Report on the B-737 data, DOT/FAA/AR-98/28, "Statistical Loads Data for Boeing 737-400 Aircraft in Commercial Operations." This report, containing a summary of 11,721 flights, 19,105 flight hours of typical service for 17 B-737/400 airplanes, reported new and improved methods and criteria for processing and presenting large transport airplane flight and ground loads data.

FAA Landing Parameter Survey Facility. The WJHTC established a permanent video landing parameter data collection facility at Atlantic City International Airport, New Jersey, to collect operational landing impact parameters year round under a wide variety of weather conditions. In addition to the regular commercial airplane arrivals, frequent U.S. Air Force KC-10's and cargo jets conduct touch-and-go training operations at the airport. Inclement weather data collected at this facility will supplement regular survey data from high activity airports that were collected during prior surveys

ACCIDENT PREVENTION

***Safer Skies* – a Focused Safety Agenda.** In April 1998, the FAA adopted a focused priority safety agenda called *Safer Skies*, designed to achieve a five-fold reduction in fatal accidents over the next 10 years. *Safer Skies* will concentrate FAA resources on the most prevalent causes of aircraft accidents and use special teams of technical experts to identify the leading causes of aviation disasters and recommend safety advances. In partnership with industry, *Safer Skies* will use the latest technology to help analyze U.S. and global data to find the causal factors in commercial and general aviation accidents and recommend ways to break the chain of events that lead to accidents.

Now nearing completion are efforts to reduce uncontained engine failures and controlled flight into terrain – instances in which planes are unintentionally flown into the ground. (See also: Regulatory Reform.) Among other issues on the agenda are hazardous weather, loss of control, approach and landing, survivability, and runway incursion.

Safer Skies relies on sophisticated analytic tools to detect trends and patterns in databases maintained by the FAA and National Transportation Safety Board (NTSB), as well as the industry and international groups. The FAA is also introducing

major improvements in the collection and analysis of general aviation safety data.

The FAA's Role in Accident Investigation. Accident investigation is essential to the FAA's efforts to identify and eliminate hazards to air travel. During 1998, air safety investigators from the FAA's Office of Accident Investigation conducted 31 on-scene investigations of major or significant aircraft accidents; 21 in the United States and 10 elsewhere in the world. The office also performed 429 limited investigations and provided assistance on over a thousand accidents and incidents involving general aviation aircraft.

During 1998, information gathered through accident investigations and subsequent safety analyses was critical to initiating many corrective actions undertaken by the agency to improve safety. For example, as a result of the investigation of the Fine Air Flight 101 accident in Miami, Florida, on August 7, 1997, the FAA made significant improvements in its surveillance program for cargo transport operations. Also, during the year, the FAA performed extensive reviews of aircraft certification standards for in-flight icing conditions for Embraer EMB-120RT aircraft following the investigation of the Comair Flight 3272 accident near Monroe, Michigan, in 1997.

Based on findings of these investigations, many corrective steps were taken by the agency. For example, the surveillance of cargo transport operations was tightened following the Fine Air Flight 101 accident in Miami, Florida, on August 7, 1997. Another accident — the crash of Comair Flight 3272 near Monroe, Michigan, also in 1997 — led to extensive reviews of certification standards for in-flight icing conditions for Embraer EMB-120RT aircraft.

As the FAA's liaison with the NTSB, the Office of Accident Investigation acted upon more than 140 NTSB safety recommendations. FAA employees also made a large number of recommendations (about 350 last year) that were reviewed by the office.

Flightcrew/Vehicle Interface and Interaction. The FAA has identified safety issues and associated recommendations for flightcrews interacting with flight deck systems (FAA Human Factors Team Report). Implementation of recommendations is underway in design, training, crew qualification, and the associated regulatory material and processes. The first meeting of the Autopilot Review Team took place in July 1998. A set of accident and incident data, where the autopilot may have played a role in the event, was disseminated to team members. These data, coupled with expert opinion and experiences, will lay the foundation for the review of specific types of autopilot vulnerabilities. Coordination of the interim autopilot policy with the Flight Guidance System Harmonization Working Group of the Aviation Rulemaking Advisory Committee (ARAC) is underway to ensure standardized guidance and actions regarding autopilot certifications and airworthiness. Meetings with autopilot manufacturers will begin shortly.

Airport Surface Detection Equipment (ASDE-3). This equipment provides radar surveillance of aircraft and airport surface vehicles at high activity airports, aiding the air traffic controller in the orderly movement of these vehicles during periods of low visibility. The FAA is purchasing 40 ASDE's for installation at 34 airports and two support facilities. In FY 1998, ASDE-3 systems were commissioned at Memphis, Tennessee; Dallas/Fort Worth, Texas (second system); and Dulles International Airport, Virginia. This brings the total commissioned to 30 out of 40. A system was also accepted at Andrews Air Force Base, Maryland. At the close of FY 1998, 37 ASDE-3 systems had been delivered with the three remaining systems scheduled for delivery between January and June 1999.

Airport Movement Area Safety System (AMASS). This system uses ASDE radar data and flight information from the automated radar terminal system (ARTS) to enhance surface movement safety by visually and aurally prompting tower controllers to respond to situations which potentially may compromise safety. A pre-production AMASS was installed at San Francisco International Airport (SFO) in May 1996 for operational testing. The FAA has aggressively pursued its commitment to field AMASS and, in January 1997, awarded a production contract with options for the remaining systems. Subsequently, the product team successfully delivered full-scale development systems to Detroit in August 1997 and to St. Louis in January 1998. A production option was also exercised in January 1998. A total of 40 AMASS's are scheduled for deployment by August 2000.

Next Generation Weather Radar (NEXRAD) Deployment. The FAA, the National Weather

Service, and the Department of Defense have pooled their resources to install a nationwide network of 164 weather radar that greatly enhances weather detection capabilities for aviation and a wide range of other services. As part of this program, the FAA installed 12 of the new radar units at offshore sites: four in Hawaii at Molokai, Kauai, South Hawaii, and Kohala; seven in Alaska at Anchorage, Fairbanks, Bethel, King Salmon, Biorka Island (Sitka), Middleton Island, and Nome; and one in San Juan, Puerto Rico. As of September 1998, 11 of the 12 systems had been placed in service.

The FAA developed new software algorithms to help alleviate anomalous propagation (false echo) problems with NEXRAD. Efforts are also underway to install enhanced algorithms in future NEXRAD builds that will better detect aviation weather hazards. The revised algorithms are expected to improve the effectiveness of data for aviation users and extend the radar's useful life. Sequential upgrades to NEXRAD are also planned to reconfigure the product generator (RPG) processor and the radar data acquisition (RDA) unit to a state-of-the-art, open system architecture that will have greater processing capacity and improved logistics support.

Weather and Radar Processor (WARP). WARP is a weather information processing and display system located in the FAA's 21 ARTCC's and the David J. Hurley Air Traffic Control Systems Command Center (ATCSCC) in Herndon, Virginia. In FY 1998, the program continued Stage 0 operational service and Stage 1/2 development. WARP Stage 0 provides meteorologists and air traffic management personnel with improved weather information and graphical displays. WARP Stage 1/2 will further enhance en route weather information by providing controllers with next generation (NEXRAD) radar data via their display system replacement consoles. The program completed Stage 1/2 interoperability testing, including NEXRAD interface certification testing, completed the writing of software code, and began preparation for the testing phase to be completed in 1999. Deployment of Stage 1/2 will occur in the year 2000.

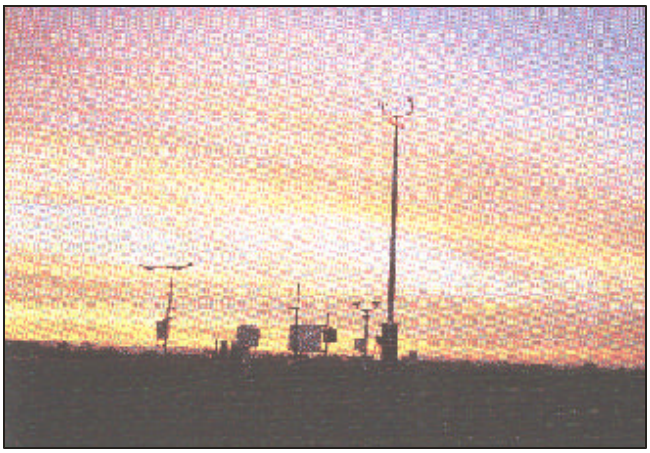
Weather Systems Processor (WSP) Contract Awarded. The FAA has awarded a $14.2 million contract to Northrop Grumman to develop equipment that will warn air traffic controllers and pilots of hazardous windshear and microburst conditions. The WSP forecasts the arrival of wind gust fronts and tracks storm motion, providing a complete picture of current and projected hazardous weather conditions that may jeopardize aircraft. The equipment, which is an enhancement to the airport surveillance radar (ASR-9), has been operationally evaluated in Orlando, Florida, and is currently operating in Albuquerque, New Mexico. The FAA plans to complete full-scale development activities in 1999, followed by full production deployment at 34 airports in years 2000 through 2001.

Terminal Doppler Weather Radar (TDWR) Deployment Nears Completion. This radar detects windshear, microbursts, gust fronts, and precipitation that could endanger landing or departing aircraft and reports that information to pilots and controllers. All 47 TDWR's purchased by the FAA have been delivered (43 to operational sites, 2 to support sites, and 2 are in storage until siting problems are resolved). Thirty-one of these have been commissioned. Deployment of all units will be complete by July 2000.

Low-Level Windshear Alert Systems (LLWAS) are Upgraded. LLWAS provides windshear and microburst detection similar to TDWR, although less comprehensively. The equipment, which is located at 110 airports, is between 15 and 20 years old. Eight airports have been upgraded to the LLWAS-Network Expansion (LLWAS NE) configuration, and installation of LLWAS-NE at LaGuardia Airport is scheduled for completion in FY 1999. The upgrade increases the probability of detecting microbursts and windshear on the airport and along the runway corridors. An additional 39 LLWAS's will receive the upgrade, which is expected to extend the life of the systems by 15 years.

Automated Surface Observing System (ASOS). This equipment supports aviation operations and weather forecast activities by measuring and reporting windspeed and direction, visibility, precipitation type and accumulation, cloud height and sky condition, temperature, dew point, pressure, and other conditions such as variable cloud height. These observations provide pilots with takeoff, en route, approach, and landing weather conditions enabling pilots to avoid severe weather conditions. The FAA commissioned 164 ASOS's in FY 1998 for a total of 352 commissioned systems. The FAA also completed purchase of 30 additional systems. All 569 ASOS's will be installed and accepted by November 1999.

The ASOS-to-automated terminal information service (ATIS) interface has completed prototype testing and is in the process of deployment. The FAA has deployed four low rate initial production ASOS controller equipment systems that display weather and airport information to tower controllers and TRACON personnel. This display system is in the process of being upgraded with improved software and will be deployed at four additional facilities.



ASOS, such as this one at Salinas, CA., provides pilots with vital information about current weather conditions

Snowfall Rate System. The FAA and the National Center for Atmospheric Research (NCAR) have teamed up to develop a snowfall rate and forecast system to provide data to aircraft deicing, airline station control, and airport operations decisionmakers. After successful demonstrations at three airports over the last 4 years, the weather support to deicing decisionmaking (WSDDM) initiative has been technologically transferred to a cooperative research and development agreement (CRDA) partner for operational implementation in FY 1999.

Turbulence Detection. FAA research at the National Center for Atmospheric Research (NCAR) has developed software that can transform commercial aircraft into in-flight "sensing platforms" to measure and report turbulence to help pilots steer clear of bumpy air. ICAO has selected the algorithm used for this measurement as the international standard. It is anticipated that this software will be deployed on United, Northwest, and American Airlines over the next year.

Engineered Materials Arresting Systems (EMAS). FAA standards call for a 1000-foot extended safety area beyond the end of transport category runways. Due to geographic and other limitations, however, this is not always possible at runways built before the standard was adopted. In August 1998, the Office of Airport Safety and Standards issued an advisory circular entitled "Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns." This advisory circular is the culmination of years of research and development that has led to a method of stopping a transport category aircraft that has rolled beyond the end of such a runway. The advisory circular provides guidance to airport operators and designers in installing materials in the available extended runway safety area that will bring the aircraft to a safe stop.

Aircraft Rescue and Firefighting (ARFF) Research. The FAA has completed the first phase of construction on the Full Scale Cabin Fire Research Facility, and tests are now underway in the Full Scale Interior Fire Suppression and Cabin Skin Penetration Facility located at the WJHTC. This facility will be utilized to perform interior cabin suppression tests exploring new technologies for better distribution of water into aircraft cabins using elevated booms and aircraft cabin skin penetration devices mounted on heavy rescue firefighting vehicles. Phase II construction will include a second level passenger-seating cabin configured like the very large transport aircraft (VLTA) designs being proposed. This same facility will allow simulated cargo-based container fires to be studied.

Aircraft Rescue and Firefighting Vehicles. Emergencies on airports occur frequently in conditions of low visibility. ARFF personnel need to get to the sites of such emergencies quickly and safely. FAA research and development has led to the development of a system known as the driver's enhanced vision system (DEVS). The various components of the system allow navigation via a forward-looking infrared (FLIR) camera and GPS. The system is such a revolutionary improvement that all future ARFF vehicles purchased with Federal funds will be equipped with an FLIR.

Jet Fuel Safety Research. As an outcome of the TWA Flight 800 investigation, the FAA began two studies of aviation fuel in FY 1998. The first is a survey of the volatility characteristics of Jet A from incoming aircraft and fuel suppliers and distributors. The second study, conducted at Arizona State University, is designed to determine the fundamental

ignition characteristics of Jet A vapor inside a fuel tank as a function of altitude and pressure. The results of these studies will be reported in FY 1999 and are part of a larger effort to minimize or eliminate the possibility of fuel tank explosions. Another question concerns the safe use of fuel containing red dye. Certain diesel fuels contain red dye to comply with IRS taxation requirements. The system of fuel distribution in the United States makes it possible for this fuel to be mixed inadvertently with turbine fuel, to which the addition of coloring agents is not permitted. Ongoing studies by the FAA, in collaboration with the industry, will determine the possible long-and short-term effects of red dye contamination on the operation of turbine engines.

HUMAN FACTOR RESEARCH

Eliminating Human Factors as a Causal Factor in Accidents and Incidents. While advanced technology has reduced or eliminated many of the hazards of air travel, new technology has also created new types of risks. In recent years, human error has been cited as a factor in between 60 and 80 percent of all aviation accidents. A clearer understanding of the human element in aviation is essential to future gains in safety. Consequently, in FY 1998, the FAA invested approximately $26.5 million on human factors research projects such as described below:

Shift Work and Fatigue Among Controllers. Human factors researchers at CAMI, the U.S. Air Force, and from Japan continued their assessments of the effects of bright lights as a potential fatigue countermeasure for personnel working midnight shifts. CAMI researchers gathered data from field facilities (en route and terminal) to better define the types of shift schedules utilized at ATC facilities. Work was also dedicated toward development of a CD-ROM for training of ATC and other personnel regarding the effects of shift work and fatigue on performance and the development of countermeasures to reduce the effects of fatigue associated with rotating shift schedules.

Measuring the Effects of Fatigue on Pilot Performance. The FAA completed a collaborative study with the U.S. Coast Guard and the U.S. Army, using activity monitors, an electroencephalograph (EEG), cognitive performance, a sleep and activity log book, and subjective measures to assess the effects of fatigue on flight operations at the Miami Air Station. Research findings suggested several ways to counter fatigue, including schedule modification.

Air Traffic Control Operational Incidents. Based on human factors principles, CAMI scientists developed a revision of air traffic's Final Operational Error/Deviation Report software. The system uses a more flexible and user-friendly platform. The next phase of the project will involve human factors assessments of the operational error database to improve overall categorization of incidents.

Controller Teamwork. A personal computer-based, multisector, air traffic control simulation developed by CAMI to assess the impact of teamwork on safety and efficiency performance measures was transferred to the FAA Academy for use in the air traffic team enhancement program (ATTEP). It will be used to provide an orientation on teamwork for new air traffic students. Research with the device has demonstrated that different team strategies significantly influence safety and efficiency measures.

Visual Scanning by Controllers. Vision is the primary source of controller information in the dynamic flow of traffic in the airspace. Research has learned a great deal about how controllers search their displays. For example, radar controllers spend most of their available search time scanning the radar and timesharing on other data displays. Scanning patterns develop which appear to be driven by traffic flow and airspace structure. Controller fixations on little-used airspace diminish over time, explaining, in part, why they may miss targets that appear unannounced in such airspace. Further, controllers are unaware of how frequently they scan adjacent airspace, and they do use some of their limited scan time checking targets over which they do not have control.

Systematic Air Traffic Operations Research Initiative (SATORI). Developed at CAMI, the en route SATORI system uses radar, weather, and voice data recorded at air traffic control facilities to graphically recreate operational errors and other events that occur within the NAS. This system provides a valuable new tool for assessing the dynamics of ATC situations at the ARTCC's. Deployment of SATORI to 20 ARTCC's in the continental United States, 8 regional offices, Washington headquarters, and the WJHTC has now been completed along with Intranet connections.

En Route Display Concepts. Based on previous research on air traffic control complexity, human factors specialists are exploring several display concepts designed to improve the quality of information available to the controller. It is expected

that these concepts will reduce cognitive demands and assist with managing complex air traffic situations. Using airspace and traffic data drawn from SATORI, prototype displays highlighting weather information, special use airspace, transitioning aircraft, and equipment outages have been created. Human factors researchers demonstrated these to en route controllers at Jacksonville Center. A simulation experiment will determine the objective benefits of the concepts.

Air Traffic Workload. FAA researchers are conducting development of a PC-based tool to compute sector and facility-level workload and performance measures. Data gathered from two ARTCC's were used to compare and contrast changes in various workload and performance indices. Baseline data will be used to assess changes in workload and performance associated with the implementation of new technologies and procedures.

General Aviation Human Factors. The FAA completed expansion of the CAMI advanced general aviation research simulator (AGARS) to host the multifunction displays planned for the future general aviation glass cockpit. The "pathway in the sky" display is operational and is being used to assess pilot performance gains using this format as compared with more traditional formats. A multiaxis flight performance controller is also functional, and preliminary evaluations of performance using the fuzzy-logic controller compared with performance involving conventional controls have been undertaken. Following completion of the assessments in the CAMI simulator, the displays and controls will be transferred to the test bed aircraft Raytheon's Bonanza. This research is in support of the Advanced General Aviation Technical Experiments project sponsored by NASA/FAA and a coalition of manufacturers. AGARS was also recently equipped with both head-up and head-mounted displays designed for human factors assessments in 1999.

GPS User-Interface Design. The FAA completed human factors assessments of standard GPS functions to (a) assist in the development of an enhanced GPS menu structure that would be based on cognitive factors and (b) determine GPS user-interface design problems associated with existing devices. Researchers completed surveys of pilots in Oklahoma and Alaska to evaluate current usage of GPS receivers and document human factors issues that impact overall performance. They combined this information with data from flight tests, flight simulations, and ASRS database reports that reveal similar human factors issues associated with GPS receiver usage. Combined information will be used to enhance current human factors supplements to certification materials for GPS receivers.

Free Flight. Researchers assessed human factors impacts of proposed Free Flight avionics devices on general aviation pilot functions (i.e., communication, navigation, and surveillance). Function analyses illustrated that, under certain Free Flight conditions, general aviation pilot workload may increase sufficiently to affect overall performance. Human factors specialists developed a research protocol to guide the collection of pilot performance data during AGARS flight simulations at CAMI as a means of evaluating the costs/benefits of selected avionics devices.

Evaluation of Digital Ground to Air Communications. Vocoders are devices that compress speech and provide more frequency spectrum for communications. This is especially vital in crowded metropolitan areas where aviation frequencies are very busy. Researchers at the WJHTC completed two studies comparing the performance and acceptability of several vocoder devices and current analog radio. The studies found that controllers could use both vocoders and analog radio.

Post Operations Flight Evaluation Tool (POET). POET is a software tool developed by the FAA and NASA as part of a study of information flow in the ATC system. POET merges flight information from three different sources (airline operations data, ETMS data, and weather data) in a unique and highly flexible manner to provide a more complete understanding of the nature and impact of traffic flow bottlenecks in the ATM system. The application of POET pinpoints flow problems and traffic delays attributable to the lack of timely and accurate information at key decision points in the traffic management system. Subsequent human factors analyses of POET generated data will precisely identify information critical to the successful implementation of collaborative decisionmaking among the operators and users of the ATC system. Researchers made POET available to a number of domestic air carriers where it will be used to enhance operational efficiency.

Flight Strip Reduction. Scientists from CAMI and the University of Oklahoma teamed with an ATC work

group to develop a plan to reduce the use of paper flight progress strips by controllers in ARTCC's. The work group developed a procedure that would reduce the requirement to mark flight strips and allow removal of flight strips from the strip bay after taking the handoff and establishing communications with the pilot, if no special aircraft handling is required. CAMI tested the procedure at three en route centers during FY 1998. Researchers ran baseline and experimental scenarios in the centers' DYSIM laboratories by individual controllers and controller teams working at high and low altitude sectors. This research prepares for the future NAS Concept of Operations where strips are expected to be replaced by some electronic representation of flight data.

Research on Auditory Alarms. Researchers conducted an auditory symbology study to review alerting and status sounds now used in NAS equipment. Researchers digitally recorded and analyzed over 80 alarms for their sound characteristics. Further research is underway to evaluate the urgency of the alarms, develop samples of new alarm sounds, and create human factors recommendations for the use of alarms in FAA systems.

Advanced Crew Resource Management. Researchers designed a guidebook, based on research with a regional carrier, which provides techniques and procedures to increase safety through improved pilot performance. This guidebook aids carriers in developing advanced crew resource management training tailored to their particular operations. The research behind the guidebook involved analyzing specific airline operations to target specific areas for developing human factors training, developing the training for pilots and instructor pilots, and redesigning all company manuals to incorporate human performance improvements. This training development system and the resulting pilot assessment system are incorporated into the guidebook for other airlines to follow.

Rapidly Reconfigurable Event-sets. Researchers completed the first phase of a system that will allow the air carrier industry to develop unique training scenarios. In the past, development of scenarios was complex, expensive, and time-consuming, limiting the number of scenarios used by any particular training organization. Because of the limited number of scenarios, researchers suspected the validity of the pilot assessment. The new system to allow for rapidly reconfiguring event sets into scenarios will remedy this situation. The FAA will approve each event set used by the carrier. The carrier will use the system to develop unique training scenarios. This system will also be used to specifically target a deficiency in a particular crew and allow for additional training in the specific area of weakness. All event sets are rated for difficulty and for specific content. This allows the carriers to assess pilots in a more standardized way.

Automated Performance Measuring System (APMS). Human factors researchers developed the capability to compare flight data and simulator training data so that air carriers will be able to determine if training standards are being actually transitioned to line operations. The system is designed to assess the extent to which line and simulator performance are consistent with analytically developed training standards. This systematic view of both segments of pilot performance can reveal training deficiencies requiring attention before a safety threat emerges.

Advanced Qualification Program (AQP) Model Improvements. The FAA developed software to help air carriers create an AQP program to improve flight-crew performance. It provides an analytical framework that guides carriers in integrating technical performance requirements and crew resource management into their pilot training programs. The original model, a training analysis system, has been distributed to the airlines and is in wide use. The FAA is developing advanced data collection and analysis systems for inclusion in the model. This entire system will allow air carriers and FAA oversight offices to monitor the effectiveness of the pilot training systems. When weaknesses are identified, subsequent training will be designed to areas of concern.

The completed model will be able to track a specific training requirement from task analysis through performance measurement and back to the curriculum. This will provide the feedback loop necessary to continuously monitor pilot performance and training effectiveness. The APMS is aligned with this project in identifying simulator parameters that reflect these AQP qualification standards. The two systems provide objective and subjective evaluations of pilot performance. Used together, they provide air carriers with an accurate assessment of pilot proficiency.

Debriefings in Flight Training. Much of the effectiveness of line-oriented flight training simulations depends on the debriefing that occurs

afterward. Discussion by the crew is necessary to determine what happened and to consolidate learning so that lessons transfer to line operations. To identify the most effective techniques, researchers examined airline debriefing data. They also determined the extent to which the debriefing techniques are consistent with FAA guidelines, evaluated the practicality of the guidelines, and pinpointed the difficulties in trying to teach to them. On the basis of these findings, new training guidelines have been written. The FAA has also developed specific debriefing tools for instructors and is evaluating these tools in the air carrier community. The tools are being evaluated for their effectiveness in improving the quality of the debrief session.

Safe Practices in General Aviation (GA). Following the successful introduction of a videotape for training GA pilots in the development of a personal checklist that incorporates personal minimums to reduce risk, the FAA produced a CD-ROM that provides training on this topic in a computer-based format. While the FAA primarily designed the videotape for use in a seminar setting, this new product will be made available to pilots who do not attend safety seminars, thus ensuring the maximum exposure of GA pilots to this important safety training.

Maintenance Resource Management (MRM). Human factors researchers developed and produced a handbook that provides guidelines on MRM, with a prototype curriculum for use by airline maintenance personnel and training organizations. The philosophy of the MRM curriculum is to integrate maintenance personnel technical skills with interpersonal skills and basic human factors knowledge to improve communication and safety in aircraft maintenance operations. In conjunction with the MRM handbook, human factors specialists developed a computer-based training (CBT) program which provides consistent, flexible training for individual maintenance personnel to improve communication and effectiveness in maintenance operations. CBT provides concentrated instruction on selected MRM concepts and skills such as human error, communication, teamwork, and performance management. The MRM handbook and CBT are available on CD-ROM and via the Internet.

Human Factors in Acquisition. The FAA promoted standardization and consistency of human factors approaches within integrated product teams and across different phases of acquisition. These efforts are demonstrated by enhanced use of and compliance with design conventions, direct support of programs (e.g., STARS), integration in NAS planning (e.g., NAS Architecture), human factors best practices, and human factors processes. Other activities include development of reference tools, job aids, rapid prototyping techniques, and training course presentations. Examples of human factors initiatives include:

Human Factors Design Guide. The FAA distributed over 1,000 copies of the CD-ROM version and released an updated version of the guide. This guide is a comprehensive compilation of design practices and principles integral to the procurement, design, development, and testing of FAA systems, facilities, and equipment. Although its primary focus is FAA Airway Facilities systems, it has general applicability.

Human Factors in the Design and Evaluation of Air Traffic Control Systems. This handbook is an extensive compendium of human factors reference information directly related to the design and evaluation of ATC systems. Developed by Volpe Transportation Systems Center, the handbook comes with an electronic checklist and is available in both book and CD-ROM format. It is currently being updated to incorporate new information developed under the FAA ATS Human Factors Research Program.

STARS Computer-Human Interface (CHI). A multidisciplinary team of air traffic controllers, airway facilities specialists, human factors scientists, and engineers participated in a number of activities to improve the STARS CHI. The various development teams worked directly with the user community to address concerns with the STARS early display configuration (EDC) air traffic terminal controller working position. Additional activities are underway to evaluate specific human factors issues in the tower environment and to select a display.

Reducing Acquisition Risk. Human factors researchers developed emulation prototypes of the next generation en route and terminal ATC systems. The prototype ATC systems will be linked to the micro-target generation facility (TGF) at the William J. Hughes Technical Center. The TGF provides realistic simulated air traffic that is dynamically manipulated by pseudo-pilots. An advanced battery of human-performance and workload measures will be collected in real time during simulations. These

emulation DSR and STARS platforms provide FAA program offices an early opportunity to examine human interface issues for future ATC functionality and other pre-planned product improvements.

Human Factors Training Courses. The Human Factors Program staff offered several 2-day human factors awareness courses for FAA personnel interested in learning more about the discipline of human factors. One hundred people attend the courses. The FAA also presents a course on the Fundamentals of the Acquisition Management System (FAMS). The purpose of this course is to introduce the concept, scope, and application of FAA acquisition principles. More than 300 people attended these courses in 1998.

SECURITY: Prevent Security Incidents in the Aviation System.

NEW SECURITY BASELINE

Airport Vulnerability Assessments. The FAA has contracted with several private sector firms to conduct several vulnerability assessments supported by onsite FAA agents, using various models and methodologies. In FY 1998, 8 contractors were assigned to assess 15 major airports, but one contract (2 airports) subsequently was cancelled. Teams have completed onsite data collection activities and final results briefings at all 13 airports. A panel of experts is evaluating the results and developing recommendations and guidelines for future airport vulnerability assessments, using the best methodologies and tools demonstrated in the FY 1998 assessments. Further recommendations from the panel will focus on automated tool suitability, readiness, and fielding considerations.

Computer-Assisted Passenger Screening (CAPS) and Passenger-Bag Match. In December 1997, the FAA announced that checked baggage security would be expanded for domestic flights, a recommendation of the White House Commission on Aviation Safety and Security. CAPS is the automated passenger screening system being used to select passengers whose checked baggage will be screened by explosives detection systems or bag-matched to make sure that the passengers are on aircraft with their bags. Five major air carriers fully implemented CAPS by the end of FY 1998, with two more scheduled to be online within a few months. In October 1997, the Department of Justice completed a review of CAPS and found that the automated profiling system did not violate individuals' civil liberties.

Team Deploys Advanced Technology. In October 1996, the FAA formed a Security Equipment Integrated Product Team (SEIPT) of acquisition and security experts representing the FAA, airport authorities, and air carriers. The team's objective is to plan, purchase, and install explosives detection devices and other advanced security equipment at many of the largest and busiest U.S. airports. In 1998, the team continued to deploy equipment purchased with $144 million provided by the Omnibus Consolidated Appropriations Act of 1997 and reprogrammed FY 1998 funds.

Explosives Detection Systems (EDS). The FAA, through the SEIPT, awarded a contract in December 1996 for an initial delivery of 54 FAA-certified explosives detection systems (EDS) to screen checked baggage. Another 15 EDS's were purchased with reprogrammed FY 1998 funds. In line with the Commission's recommendations, the SEIPT is supplementing the deployment of certified EDS's with deployment of 20 other explosives detection devices for checked baggage screening. A total of 65 EDS's and advanced technology devices were deployed by the end of FY 1998.

Bulk explosive detection devices for screening checked bags are being deployed at the Nation's busiest airports.

Explosives Trace Detectors (ETD). Throughout FY 1998, the SEIPT continued to deploy ETD's purchased with FY 1997 funding. This equipment is used for screening baggage and electronic items for traces of explosives. The SEIPT had deployed 324 trace explosives detection devices to 48 airports by September 1998.

PERFORMANCE AND PROCEDURES

Certification Standards for Screening Companies. The FAA has withdrawn an advanced notice of proposed rulemaking (ANPRM) on certification of screening companies that was published in March 1997. The delay will allow the FAA to gather enough data from automated testing with threat image projection to develop performance standards for screeners. The FAA expects to publish an NPRM that includes certification standards in FY 1999.

Aggressive Testing. Using the increased staffing provided by the Omnibus Consolidated Appropriations Act of 1997, the FAA continued to build its inspection and testing program. In addition to scheduled inspections of air carriers, indirect air carriers, and airports, the FAA conducts special emphasis assessments to address areas of potential concern. In FY 1998, civil aviation security special agents conducted about 8,000 unannounced screener evaluation tests as well as tests of other security measures for cargo, checked baggage, carry-on baggage, and people. The FAA also doubled its resources for assessments by anonymous teams of special agents. These assessments were conducted at over 25 international and domestic airports with a focus on the international operations of U.S. carriers and the use of advanced technology screening equipment.

Airport Screener Rule. The FAA published a final rulemaking in September 1998 extending background check regulations to screeners and their supervisors. The rule requires that these employees undergo an employment history investigation and, in some cases, fingerprint-based criminal records checks. Under the new rule, airport operators and air carriers must audit criminal history investigations.

Improvements in Air Cargo Security and Hazardous Materials Transportation Safety. FY 1998 was the first full year that the FAA's dangerous goods and cargo security oversight efforts were reorganized into a dedicated program within the Civil Aviation Security organization. All of the 118 agents authorized in FY 1997 were hired, and most have completed 5 weeks of specialized training. These new agents, together with the 12 newly hired dangerous goods attorneys and the 12 previously assigned dangerous goods agents, comprise the cadre of 142 full-time specialists dedicated to the program. In July 1998, the DOT Office of Inspector General completed an audit of the FAA's new Dangerous Goods and Cargo Security Program. The audit found that the FAA has made progress in developing and redefining policies, procedures, and controls for implementing the new program.

On May 26, 1998, the Secretary of Transportation submitted a report to Congress concerning air cargo security as required by the Federal Aviation Reauthorization Act of 1996. This report described the FAA's program to implement the White House Commission's recommendations on cargo security. The FAA continued to revise a security proposal to strengthen the cargo standards of the FAA's approved security programs for all passenger air carriers and indirect air carriers (air freight forwarders) issued during FY 1997. The FAA expects to issue the revised cargo standard security program in early FY 1999.

Computer-based training designed specifically for security screening personnel is now available at the Nation's busiest airports.

Technology for Improving Screener Performance. The Screener Proficiency Evaluation and Reporting System (SPEARS) is an automated system to improve human performance at the screening checkpoint through innovative methods of selection, training, and evaluation. SPEARS comprises three parts: screener selection for selecting job applicants with the aptitude to be successful

screeners, computer-based training (CBT) to train airport preboard screeners, and threat image projection (TIP) systems to increase screener vigilance and measure system detection performance. By the end of FY 1998, the FAA had deployed 36 CBT components and 37 TIP systems to the Nation's largest and busiest airports. The FAA plans to deploy almost 250 more TIP systems by the end of FY 1999.

PARTNERSHIPS TO STRENGTHEN AVIATION SECURITY

Airport Consortia. The FAA convened parties with responsibility for aviation security to form consortia at 41 major U.S. airports by October 1996. Forming additional consortia was delayed during much of 1997 to resolve some compliance and enforcement policy issues. The FAA's amended advisory circular, Voluntary Reporting Program, which encourages people to come forward, reveal problems, and fix them, became effective on May 4, 1998. The new policy cleared the way for expanding airport consortia. The FAA had formed 74 consortia by the end of FY 1998 and expects to invite voluntary security consortia to form at over 100 airports by the end of 1999.

National Academy of Sciences Panel. In response to a requirement in the Federal Aviation Reauthorization Act of 1996, an agreement to create a National Academy of Sciences Panel on Assessment of Technologies for Aviation Security was signed by the FAA and the Academy on May 19, 1997. The panel will assess the results of advanced security equipment tests and deployments and then recommend how to more effectively deploy explosives detection systems and hardened containers to improve security. The first panel meeting was held on January 29, 1998.

National Safe Skies Alliance. On January 30, 1998, the FAA and the National Safe Skies Alliance (NSSA) reached a cooperative research agreement providing NSSA with $1 million to assist the FAA in the development and testing of aviation security and safety technologies. NSSA included Oak Ridge National Laboratory, the Metropolitan Knoxville Airport Authority, the Metropolitan Airports Commission, the University of Tennessee, the Tennessee Air National Guard, the Honeywell Corporation, and a number of private companies, each with its own expertise in related technologies. This effort includes a national test bed at McGhee Tyson Airport for operational evaluation and testing of newly developed technologies for checkpoint screening and operation and other aviation security research and development projects.

SEMTEX-98 Seminars. The White House Commission recommended that the Bureau of Alcohol, Tobacco, and Firearms (BATF) provide explosives training to the aviation community. BATF and the FAA entered into a partnership to produce training videotapes and to present seminars on terrorism and explosives in three locations across the country. SEMTEX-98 seminars and exercises were held at Seattle, Washington; Dallas, Texas; and Atlanta, Georgia, in August and September 1998, with a total of 475 students from airports, air carriers, and law enforcement. The extremely positive response to the seminars from the attendees has prompted the FAA and BATF to plan three additional seminars at new locations for FY 1999.

SYSTEM EFFICIENCY: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

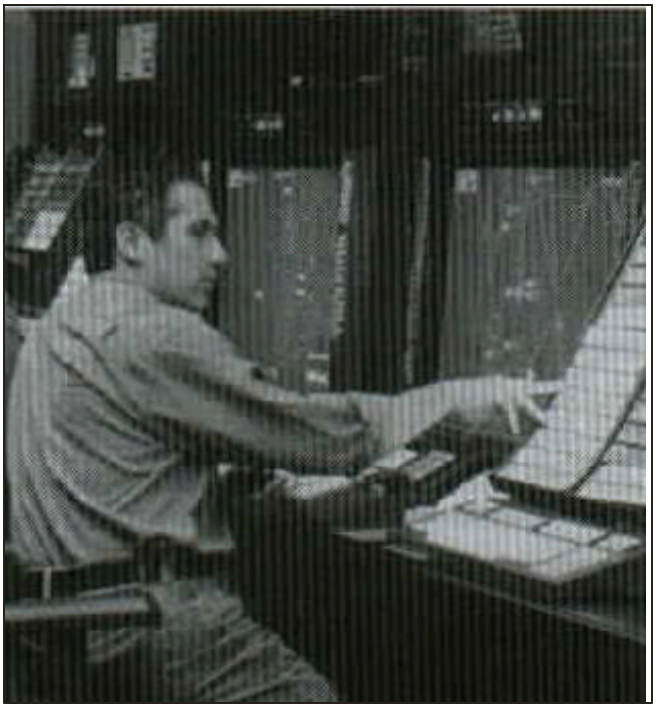
NAS MODERNIZATION

Standard Terminal Automation Replacement System (STARS). STARS is a joint FAA and Department of Defense (DoD) program to replace the existing terminal automation systems at 172 FAA TRACON's and up to 199 DoD facilities. This modern, commercially based, fully digital system will provide the platform and open architecture necessary to meet increasing air traffic demands, while maintaining safety and improving efficiency of the NAS.

Under a revised implementation plan, the FAA's first STARS will go into the Syracuse, New York, and El Paso, Texas, TRACON's. Initially, these facilities will receive the early display configuration (EDC) of STARS. In parallel, development will continue on the full STARS, which will include a new computer system. The revised STARS plan calls for the Syracuse and El Paso TRACON's to receive EDC equipment in late 1999 and early 2000, respectively. Once STARS has the capabilities to handle the need of higher-level facilities, it will be deployed throughout the country. In the meantime, the FAA will buy off-the-shelf color controller displays to respond to critical requirements for new displays at the New York and Reagan Washington National TRACON's. These stop-gap displays will be installed in the summer and fall of 2000. Schedules are being

developed to install color displays in the Dallas-Fort Worth and the new Northern California and North Georgia TRACON's.

Progress in Display System Replacement (DSR) Commissionings. DSR will replace the aging display equipment at each of the FAA's 21 ARTCC's. The first operational site, Seattle ARTCC, was commissioned on January 20,1999. Twelve operational sites have received their DSR equipment, and the FAA has accepted the first eight systems. DSR replaces the very old computer channel display (CDC), the display channel complex rehost (DCCR), and the plan view display (PVD) equipment. DSR will provide a display infrastructure that makes more information available to each air traffic control position, including improved weather data soon to be available. (See also: WARP and other weather-related articles.) Each site receiving DSR also will receive a full fidelity training system that allows dynamic simulation (DYSIM) problems for controller training and currency. Simultaneous with DSR installation and checkout, the contractor is installing the appropriate suite of voice switching and control system (VSCS) components and the VSCS training and backup switch (VTABS) which will provide emergency communications and nonoperational training links for communications at DYSIM positions.



Air traffic controllers in the Seattle ARTCC were the first in the Nation to begin using DSR.

DSR users at each site and the national teams used for operational testing and evaluation have worked to identify and document every discrepancy and operational shortcoming of DSR during the past few months. Many hardware revisions and software modifications have been completed since mid-year and are currently being delivered to each DSR site. Minor adjustments to DSR milestone dates were necessary at some DSR sites because of the critical nature of replacing Host computers at each ARTCC. (See also: HOCSR.) Operational training of the entire controller staff is now underway at the first few DSR sites. The final DSR site is expected to complete commissioning by May 2000.

Voice Switching & Control System (VSCS). VSCS has been operational in most ARTCC's for the past 2 years. Because the DSR is being installed in a new control room, each DSR console must be outfitted with the appropriate VSCS equipment. As DSR installation occurs, the VSCS equipment is integrated and tested once again. Every site where DSR has been installed this year, VSCS is close behind. At a few sites, VSCS is being slowly removed from the older M-1 consoles and most components are being reinstalled in later DSR sites. As DSR is commissioned, the old control room at each site will be decommissioned, and the remaining VSCS equipment will be removed.

VSCS Training and Backup Switch (VTABS). VTABS is being deployed at the same time as the DSR to satisfy the operational requirement for a backup communications system to VSCS. Nine VTABS were delivered in FY 1998, including one to the FAA Academy, which will serve as a training device. The commissioning schedule for VTABS matches exactly the DSR commissioning schedule. The first operational site was December 1998, and the final site is May 2000.

Host and Oceanic Computer System Replacement (HOCSR). The FAA created the HOCSR program to resolve serious support problems and year 2000 concerns for the aging processors and peripherals used for flight plan and radar processing in both the en route and oceanic domains. Investment analysis was completed in May 1998, and congressional reprogramming was accomplished to permit the agency to fund this effort outside the normal planning cycle. Eleven site deliveries have

been completed since June. The FAA has accepted four suites at operational sites: Oakland, Boston, New York, and Los Angeles ARTCC's; and two suites at nonoperational sites, FAA Academy and the WJHTC. The first HOCSR system was commissioned in February 1999, and the last ARTCC system is expected to be operational by September 29, 1999.

During FY 1998, the FAA opened the En Route Integration and Interoperability Facility (EI2F) located at the WJHTC. The EI2F represents an ARTCC equipped with both the HOCSR and the DSR. The centralized facility provides an en route system environment that can be used to perform experimentation, prototype evaluation, system-level integration, and verification without the risk of impacting live air traffic control operations or requiring site personnel to operate and/or maintain additional subsystems.

Controllers at ARTCC's guide airplanes en route from one city to another

Common Automated Radar Terminal System (ARTS) Deployment Begins. The agency began operational testing and deployment of the new common ARTS during FY 1998. Two versions of the system are being deployed: common ARTS IIIE for large TRACON's and common ARTS IIE for medium-sized facilities. The new common ARTS will provide improved air traffic control automation capabilities at five of the largest TRACON's and at over 135 medium-sized TRACON's until these systems are replaced by STARS. During FY 1998, the ARTS IIIE became operational at Denver, New York, Southern California, Chicago, and Dallas/Fort Worth TRACON's. Sixteen ARTS IIE began operations during the year. Deployment of the ARTS IIE will continue at a rate of approximately six per month.

GPS Approach Procedures Increase. In FY 1998, 531 GPS procedures were developed, 528 procedures successfully flight inspected, and 516 procedures were published for operational use, bringing the nationwide total to 1,484 published instrument approach procedures. This includes 266 approaches developed in 1998 to runways that never previously had instrument flight rule (IFR) capability. In the course of the program, 766 airports now have new IFR capability. The FAA has identified approximately 4,100 runway ends for which satellite-based approaches will be developed through a combination of GPS, wide area augmentation systems (WAAS), and local area augmentation systems (LAAS).

Emergency Medical Service (EMS) GPS Approaches Published. GPS procedures enable EMS helicopters to continue operating in IFR conditions. The FAA anticipates that approximately 2,000 EMS helicopter GPS approaches will be needed within the next 8 to 10 years. In order to meet this growing need, the FAA now accepts preliminary procedures packages submitted by outside sources. These packages are submitted to the FAA for development, review, and flight inspection. Twenty-seven procedures were published during FY 1998.

GPS Ground-Based Differential Augmentation Technology. A GPS LAAS Test Prototype (LTP) has been produced at the WJHTC and is being used for the validation of LAAS concepts and flight testing. The LTP has been utilized to evaluate the multipath limiting antenna developed by Ohio University. The LTP was taken to several airports to evaluate any peculiar siting requirements that the LAAS may require. Future research using the LTP will involve integration of pseudolites into the LAAS architecture, flight test of pseudolites, and validation of the LAAS ground station specification.

New GPS Routes Created with Industry Support in Northeast. Seven new GPS routes in the northeast are now available to GPS-equipped aircraft flying between Washington, New York, and Boston Air Route Traffic Control Centers. The new routes, developed in coordination with the Regional Airlines Association and member carrier Atlantic

Coast Airlines, support overlaying and redesigning the current airway system to provide direct flight paths on designated GPS advanced navigation routes, and eliminate "doglegs"— which occur when navigation facilities are not conveniently aligned along a desired route. Upgrading the Host computer with the capability to recognize aircraft equipage in the assignment of routes was critical to this activity. In addition, over 90 new routes have been designed and coordinated that will be implemented incrementally in 1999.

WAAS Completes Important Milestone. WAAS is a major component of the FAA's commitment to deliver to the aviation community a safer and more dependable air navigation system based on next generation navigation technology. Its function is to improve GPS accuracy, availability, and integrity for en route, nonprecision, and precision approaches. In June 1998, the FAA, in conjunction with the prime contractor, Raytheon Systems Corporation, completed the hardware and communications installations for WAAS. The installations include 25 wide area reference stations and 2 wide area master stations at 25 FAA facilities. The FAA and Raytheon also completed the installation of 4 ground uplink subsystems at COMSAT Mobile Communications facilities. In addition, the FAA completed the connection of the required terrestrial communications to support the WAAS network.

FAA Publishes MOPS for WAAS. In June, the FAA published minimum operational performance standards (MOPS) for airborne navigation equipment using GPS/WAAS (RTCA/DO-229A, Change 3). These standards are also applicable to other space-based augmentation system providers, such as the European Geostationary Navigation Overlay System (EGNOS) and Japan's Multifunctional Transport Satellite Space-based Augmentation System (MSAS). Eventually, a single piece of equipment in the cockpit will enable users to take full advantage of satellite navigation during all phases of flight.

The FAA also published two technical standard orders for WAAS. The first, TSO C-144, Airborne Global Positioning System Antenna, applies to antennae that will be used to receive and provide signals to a GPS (or WAAS) sensor or system that provides flightpath deviation commands to the pilot or autopilot. The second, TSO C-145, Airborne Navigation Sensors Using the Global Positioning System Augmented by WAAS, applies to equipment intended to provide position information to a navigation management unit that outputs deviation commands referenced to a desired flightpath.

WAAS Category C Standard Instrument Procedures Data Collection is Completed. The NAS Implementation Team successfully completed a major flight test effort that will lead to the design and publication of satellite-based precision instrument approach procedures. The FAA's Flight Procedures Standards Branch, in conjunction with the WJHTC Navigation Branch and the University of Oklahoma, completed preliminary Terminal Instrument Procedures (TERP) validation flight testing for the GPS/ WAAS on June 1, 1998.

Initial evaluation of the test data indicates that the current precision approach obstacle clearance areas and surfaces may be used when establishing GPS/WAAS precision instrument approach procedures. The completed analysis of the test data will lead to finalizing GPS/WAAS precision approach TERP's criteria.

WAAS Surveys Completed. Under an agreement with the National Geodetic Survey (NGS), the aeronautical survey program completed 479 area navigation approach (ANA) aeronautical surveys in FY 1998. The survey assists in accurately determining weather minimums for instrument approaches and provides obstacles clearance information for specific runways. These data are critical to the design of GPS-based instrument approach procedures. The first 78 WAAS obstacle clearance surveys were among the 479 surveys completed in FY 1998. These surveys will support the development of the first operational WAAS instrument procedures for public use.

Mode S Deployment Nears Completion. Mode S is an advanced secondary radar, which provides accurate surveillance and a built-in data link. Mode S is a cornerstone of the ICAO Future Air Navigation System (FANS) concept, and the United States is leading its full-scale deployment. In FY 1998, the FAA deployed 4 Mode S systems, bringing the total to 147 fielded from the procurement of 148 systems. Ninety systems have achieved full Mode S capability, while 39 systems are operating in the interim beacon interrogator mode.

Next Generation Air Ground Communications (NEXCOM). The NEXCOM program upgrades the

existing air-to-ground communications infrastructure that supports all phases of flight. These communications systems are used, for example, to ensure aircraft separation, transmit instructions and clearances, negotiate handoffs, provide weather services and pilot reports, contact automated flight service stations, coordinate movements on the ground at airports, and control arrivals and departures in the terminal areas. The first phase of NEXCOM replaces the current system without significantly changing NAS operations. Future enhancements, to be incrementally introduced, will permit direct data communication between aircraft, ground facilities, and airport surface vehicles.

Controller-Pilot Data Link Communications (CPDLC). This "airborne e-mail" will improve communications and information sharing between air traffic controllers and pilots. It will be implemented initially at an FAA en route center. The introduction of CPDLC will enhance safety by improving the effectiveness of both controllers and pilots in the performance of their jobs and increase overall system capacity and efficiency. In July 1998, recommendations were provided to the RTCA Select Committee on Free Flight on a "path" to incrementally provide CPDLC capability over a digital communications link at all ARTCC's. The Select Committee accepted the recommendations in September 1998.

Air Traffic Control Radar Beacon Interrogator Replacement (ATCBI-R) Contract is Awarded. The ATCBI provides aircraft position, altitude, and identification information to controllers. Following an extensive source selection, a contract for acquisition of ATCBI-6 was awarded to Raytheon Systems Corporation in August 1998. The program will replace aging ATCBI-4/5 equipment at 124 operational sites and leapfrog 25 Mode S radar to ASR-9 sites. Three additional ATCBI-6 radar will be purchased as support systems.

Flight Data Input/Output (FDIO) Thermal Printer Deployment is Completed. New thermal printers were delivered to five ARTCC's and two combined center radar approach controls (CERAP) during the year. These deliveries complete the thermal printer deployment and will increase the reliability and availability for FDIO at the en route facilities. The older FDIO printers removed from en route facilities will be used to replace worn-out printers at some terminal facilities. This will allow some parts salvage, which can extend the useful life of the older printers. Future FDIO upgrades are planned for the remote control units and keyboards.

Airport Surveillance Radar Commissionings. Air traffic control radar surveillance of aircraft by ground-based equipment will be required well into the next century. The FAA is upgrading its radar with the latest modern equipment and installing new systems where needed. The ASR-9, for example, lets air traffic controllers see weather and aircraft simultaneously, with better accuracy and less interference from other sources than with the existing radar systems. In FY 1998, ASR-9's were commissioned at Newark, New Jersey; Phoenix, Arizona; and Ronald Reagan Washington National Airport. Systems were also delivered to Martinsburg, West Virginia; Islip, New York; and White Plains, New York. All of the 134 ASR-9's ordered have been delivered and 127 have been commissioned. Also in FY 1998, ASR-8 systems were commissioned at Sioux Falls, South Dakota, and Palm Springs, California.

In FY 1999, the FAA expects to begin acquisition of the next generation of terminal radar, the ASR-11. The ASR-11 is a joint FAA and DOD acquisition program through which the FAA plans to purchase 112 systems. In addition to replacing the current ASR-7/8 systems, this solid state, digital radar will provide the necessary digital data for use with the STARS. The ASR-11 also includes an integrated monopulse secondary surveillance radar.

Long Range Radar Replacement Program. The FAA, in a joint program with the U.S. Air Force, is replacing older air route surveillance radar at 44 locations with ARSR-4. The new all solid-state system offers enhanced range, extended coverage, and vastly improved weather detection. Eleven ARSR-4's were commissioned in FY 1998, bringing the total number commissioned to 37. Of the 44 ARSR-4's being installed, one is a DoD only installation and one is a training facility.

Microprocessor En Route Automated Radar Tracking System (Micro-EARTS). This system replaces a 1970 mainframe-based radar data processing and display system. In FY 1998, additional Micro-EARTS were installed and made operational at Nellis Air Force Base and the San Juan CERAP.

FAA Telecommunications Satellite (FAATSAT) Program. FAATSAT provides communications in

geographically isolated areas where terrestrial alternatives are not available or satellite service is more cost effective. FAATSAT also can be used to achieve required overall service availability for selected unreliable circuits. The FAATSAT System is comprised of satellite ground equipment, referred to as earth stations (ES), of various sizes, and the necessary leased satellite transponder space. The FAATSAT Program Office has installed ES-hubs at ARTCC's and other major FAA facilities and ES-remotes at selected FAA facilities such as en route radar and remote air-to-ground radio sites. Transportable and portable earth stations are also provided for contingency applications. The FAATSAT vendor's Network Management Center provides the FAA with a system management terminal at designated locations to provide FAA personnel with real time operational and maintenance status of the FAATSAT system.

The FAATSAT contract, a requirements contract for leased telecommunications services, was awarded to MCI in June 1996 for a period of 5 years with five 1-year options.

Accomplishments in FY 1998 include:

- 130 site surveys completed.
- 20 hubs installed and operational.
- 57 remotes installed and operational.
- 90 circuits installed and operational.

ATC Facilities Modernization. Many of the FAA's air traffic control towers and terminal facilities are two to four decades old. As part of its capital investment plan to modernize the NAS, the agency is refurbishing, upgrading, or replacing these facilities to meet growing demands and maintain efficient service. In some cases, additional towers are needed. The following are examples of projects completed or undertaken during FY 1998:

Lambert-St. Louis International Airport, Missouri. Construction of the new St. Louis Airport Traffic Control Tower (ATCT) was completed during FY 1998. Electronic installations are in progress

Springfield, Missouri. FY 1998 saw the completion of the base building.

Klamath Falls, Oregon. Construction of a new ATCT began in July 1997. Electronics equipment installation began in September 1998. Commissioning is scheduled for August 1999.

Portland, Oregon. A new, taller ATCT is under construction with a planned commissioning date of January 2000. Total cost for the new tower is $21M. A terminal expansion project is underway which includes new interior roadways, an expanded parking structure, and an additional 60,000 square feet of terminal space. The PDX Runway 28L MLS was decommissioned in August 1998 to allow for the establishment of a new ILS approach to this runway. The ILS is scheduled for commissioning in November 1999.

Salt Lake City, Utah. Construction of the new ATCT was completed in January 1998. ATCT/TRACON electronics equipment installation is in progress. Commissioning of the ATCT/TRACON is anticipated in the summer of 1999.

Seattle-Tacoma, Washington. Design has begun for a new 265-foot-tall ATCT and 16,000-square-foot-base building at Seattle-Tacoma International Airport. A team including FAA, Port of Seattle, HNTB (design firm), and the City of Sea-Tac developed the ATCT initial concept design. URS Griener is performing the

Air traffic controllers at local airports direct airplanes that are taking off, landing, or flying within the visual range of their tower

final design for the ATCT. The new ATCT is the preferred site for the ASDE relocation as part of third runway project. Commissioning of the new ATCT is scheduled for May 2003. The estimated cost is $32 million for the ATCT.

Teterboro Airport Runway 19—Establish ILS. The FAA was directed by the Congress to install a localizer directional aid (LDA) at Teterboro Airport. The maximum benefit of this facility would be to support approaches from the north. After further study, it was determined that a straight-in ILS would provide the lowest possible minimums. The planned commissioning date for the ILS is April 1999.

Newark International Airport Runway 22R—Establish ILS. The FAA was directed by the Congress to install an ILS at Newark International Airport. The only remaining runways that do not already have an ILS are 29 and 22R. Because of obstructions in the approach, Runway 29 was not a feasible candidate for an ILS. Current plans call for the commissioning of an ILS on Runway 22 in April 1999.

Flight Service Stations (FSS) Upgrade. The FAA and the leased-service contractor, Harris Corporation, entered the solution and implementation phase of the operational and supportability implementation system (OASIS) acquisition. OASIS will replace the current, aging model 1 full capacity (M1FC), integrated graphic weather display system (IGWDS), and the legacy direct user access terminal (DUAT) system, which provide weather briefings, pre- and in-flight planning and emergency services to the general aviation community. This upgrade will affect approximately 1,500 workstations at the FAA's 61 automated FSS's, the WJHTC, and the Mike Monroney Aeronautical Center.

During FY 1998, three initial operating capability (IOC) systems were installed (two at the WJHTC and one at the key site, Seattle) and are supporting systems testing required to move into final operating capability (FOC) status.

AFSS at Chesterfield, Missouri. The Spirit of St. Louis Airport AFSS, which was destroyed in the 1993 flood, is being rebuilt at Chesterfield, Missouri. It should be ready for installation of the second fully operating capability OASIS site in of FY 1999.

FAA Prepares to Introduce Digital Transmissions for General Aviation. The FAA announced a new policy in June that paves the way for the introduction of Flight Information Services (FIS), a general aviation initiative that will provide digital information directly to the cockpit. FIS will provide pilots with weather graphics and text, special use airspace information, notices to airmen, and other particulars. Currently, these data are provided to pilots through voice radio communications by air traffic controllers and flight service station specialists. The new digital transmissions will be provided by digital radios via the NEXCOM program and allow pilots to anticipate, plan, and request changes to their flight plans. The new initiative was developed in collaboration with the general aviation community and the industry.

Dynamic Ocean Track System Enhanced (DOTS Plus). This multipurpose traffic management tool generates flexible aircraft route tracks based on wind and weather conditions. This enhanced DOTS – with off-the-shelf workstations, an improved processor, and up-to-date operating systems — was successfully commissioned at the ATCSCC and all three of the oceanic air traffic control facilities — Oakland, New York, and Anchorage.

Oceanic Controller Automation Support. Automation support to controllers was enhanced in several ways in FY 1998. First, automated controller tools on the interim situation displays (ISD) were developed, tested, and implemented. These aids include the highlighting of aircraft experiencing emergencies or needing controller action to preclude separation violations. Additional support implemented between the West Coast and Japan included the air traffic services interfacility data communications system (AIDC). This system provides digital, ground-to-ground satellite data communications for the exchange of information about flights flying in or out of FAA-controlled airspace. This enhancement replaces less positive voice communications over telephones. Additionally, the air-to-ground data link communications system, which has been operational in one Pacific sector, was the model for an expanded oceanic data link (ODL) system. This expanded ODL was successfully developed and tested in FY 1998. At year's end, it is undergoing shakedown at the Oakland oceanic facility.

New Routes in the Gulf of Mexico. The FAA is responsible for providing air traffic service to aircraft operating in the Gulf of Mexico within the Houston and Miami control areas. There are over 600 helicopters operating in this area, carrying 3.7 million passengers per year to over 2,000 offshore heliports. To support these operations, a new air traffic route structure was developed and implemented in October 1998. This new route structure, which is based on GPS navigation, will greatly ease delays. In addition, installation of eight joint-use (DOD/FAA) ARSR-4's along the Gulf of Mexico and the Mexican border was completed in FY 1998 with the commissioning of the final two systems.

FAA Staffing Standards Program. Staffing standards are mathematical tools used to compute the number of personnel required to perform a job or a set of tasks. They are used as a management aid to manage, plan, and forecast human resources; and to evaluate the impact of proposed program changes, new facility configurations, and new equipment. The Air Traffic Services, Civil Aviation Security, and Regulations and Certification lines of business each have very active staffing standards programs covering their workforces.

From the mid-1960's to 1998, primary FAA responsibility for the agencywide staffing standards program resided in a single organization, the last of which was the Office of Business Information and Consultation. In 1998, as a result of the FAA appropriations bill, this office was abolished and responsibility for the individual staffing standards programs devolved to the appropriate associate or assistant administrator. Of the seven employees in the agencywide program, five were assigned to the Associate Administrator for Air Traffic Services and two were reassigned to the Associate Administrator for Regulation and Certification.

Revised staffing standards for civil aviation security field personnel and the update of the ARTCC staffing standards were completed in 1997. The Flight Standards Service under the Associate Administrator for Regulation and Certification is continuing development of the flight standards holistic integrated staffing model that will reflect the flexible options available through personnel reform, Challenge 2000, and the priorities of the National Performance Review. Under the auspices of the Associate Administrator for Air Traffic Services, new staffing models for the air traffic control tower cabs are in the planning stages.

ISO-9002 Quality Certification. On August 12, 1998, the FAA Logistics Center achieved ISO-9002 quality certification, making it one of less than a dozen Federal organizations to achieve this status.

National Operations Control Facility for System Maintenance is Completed. The NAS Infrastructure Management System (NIMS) Premier Facility (NPF), located with the ATCSCC in Reston, Virginia, was completed on June 15, 1998. The NPF is one of several operations control facilities that the FAA is building to implement new maintenance concepts, centralize the monitoring of NAS equipment, and to act as dispatching hubs for maintenance specialists. The NPF will be used to evaluate human factors, validate various commercial-off-the-shelf (COTS) products and interfaces that comprise NIMS, develop and verify initial operational procedures, and refine Airway

Airway system specialists maintain and troubleshoot over 38,000 equipment items to ensure the safe and efficient operation of the NAS.

Facilities (AF) and Air Traffic (AT) concepts of operations.

In the evaluation of any new AF system, it will be important to quantify human-in-the-loop performance. Human factors researchers embarked on a project to define and validate a set of AF system performance measures. In consultation with subject matter experts, the FAA is developing a set of variables that could be used to evaluate the efficiency and safety of AF monitoring and control systems. These metrics will be validated in a simulated AF environment, similar to that proposed for NIMS.

National Airspace Redesign Underway. Airspace management functions historically have been widely dispersed. Action is necessary to ensure that airspace studies and proposed airspace changes that result from those studies have a national perspective. A comprehensive efficiency review of airspace within the United States has been initiated, based on requirements established by an FAA-industry task force. The task force will also participate in finding solutions to the technical challenges that will arise as the FAA redesigns airspace for efficiency. The FAA conducted a technical session in July 1998 to establish goals and milestones directed at defining airspace issues in airspace located primarily east of the Mississippi River. Regional Air Traffic Divisions also conducted follow-on sessions to begin defining inefficiency problems associated with operations within their assigned airspace. Additional sessions will be held for regions west of the Mississippi throughout the 1999 timeframe, to start addressing airspace efficiency issues for the remainder of the United States.

FREE FLIGHT

Free Flight Phase One (FFP1) Program Office is Established. The FAA, in partnership with the aviation community, is developing free flight: an air traffic management concept that will ultimately give pilots operating under instrument flight rules the freedom to select their path and speed in real time. In FY 1998, the RTCA Select Committee on Free Flight, which represents all sectors of aviation, endorsed a strategy that calls for the limited deployment of selected capabilities that will provide early benefits of free flight to users by the close of 2002. The strategy, known as Free Flight Phase 1 (FFP1), encompasses five core capabilities:

- User request evaluation tool (URET)
- Surface movement advisor (SMA)
- Passive final approach spacing tool (pFAST)
- Traffic management advisor (TMA), single center
- Collaborative decisionmaking (CDM)

The goal of FFPI is to deliver early benefits to users through the fielding of low-risk capabilities at specified locations throughout the NAS. The FFP1 Program Office serves as the single point of accountability within the FAA for FFPI issues.

User Request Evaluation Tool Core Capability Limited Deployment (URET CCLD). URET CCLD will provide four key capabilities in ARTCC's and sectors:

- Aircraft-to-aircraft conflict detection.
- Aircraft-to-airspace conflict detection.
- Evaluation of user or controller requests for flight plan amendments or route changes.
- Increased flight data management capability, including auto-coordination.

The conflict detection features of URET CCLD will provide controllers with a strategic lookahead to detect possible conflicts between aircraft (20 minutes) and between aircraft and airspace (40 minutes). Dynamically updated special use airspace (SUA) status information will be available to controllers, and URET CCLD will automatically check flight trajectories against that data to determine possible airspace conflicts.

A URET prototype was installed at Indianapolis Center in January 1996 for operational evaluation. Feedback obtained from controllers was used to incrementally incorporate new functionality and computer-human interface enhancements into the tool. A second prototype system was installed at Memphis Center in October 1997 to expand operational evaluation. In addition to Memphis and Indianapolis, URET CCLD will be installed at Kansas City, Chicago, Cleveland, Washington, and Atlanta Centers, with initial daily use scheduled to begin at the first site in November 2001 and at the final site in February 2002.

Surface Movement Advisor (SMA). SMA will provide aircraft arrival information to airlines to augment decisionmaking regarding the surface movement of aircraft. Aircraft arrival information

was made available to airlines at Detroit Metropolitan and Philadelphia Airports in December 1998. The research and development SMA prototype at Hartsfield Atlanta International Airport continues to be used daily.

Passive Final Approach Spacing Tool (pFAST). This tool maximizes takeoffs and landings by helping controllers schedule incoming aircraft and assign runways according to users' preferences and system constraints. The pFAST prototype at the FAA's Dallas/Fort Worth TRACON has demonstrated an increase in arrival throughput ranging from 4.2 percent to 13 percent during peak periods.

Traffic Management Advisor. TMA lets en route controllers and traffic management specialists develop arrival sequence plans for selected airports. Prototypes have been installed at the Denver, Miami, Los Angeles, Atlanta, and Fort Worth en route centers. Preliminary assessments show that TMA reduces delay by an estimated 1 to 2 minutes per aircraft during peak periods. TMA and pFAST are components of the Center/TRACON Automation System (CTAS) which provides automated decision support tools for planning and controlling arrival traffic within 200 nautical miles of a destination airport. Both tools provide controllers with aircraft advisories directly on their displays, assisting them in delivering aircraft to the TRACON's at efficient and accurate intervals.

This past summer, the agency established an ATM Software Evaluation and Demonstration Facility in Washington, D.C. This facility is using pre-recorded air traffic control and interfacility data to evaluate and demonstrate TMA and pFAST. The facility provides near real-time independent metric analysis of CTAS application software as it is developed, as well as evaluation of system performance, user documentation, and software development configuration management processes. The agency is now making the TMA and pFAST prototypes ready for national deployment on an accelerated basis as components of FFP1.

Collaborative Decisionmaking (CDM). This tool provides specific traffic flow management (TFM) functional enhancements that improve the accuracy of projected air traffic demand, allow for an exchange of operational data between the FAA and industry, increase the operational flexibility of both FAA and industry traffic managers, and allow for distributed decisionmaking. During 1998, the initial set of ground delay program enhancements was completed, tested, and made operationally available nationwide. Also, the architectural infrastructure for the collection and redistribution of NAS status information was established at both the TFM hub and the ATCSCC.

Traffic Flow Management (TFM) Incremental Improvements. The TFM system enables FAA traffic flow managers to monitor current and projected operational demand on the air traffic control system and provides the decision support tools they need to effectively and efficiently manage that demand. During FY 1998, the TFM Infrastructure was successfully converted to a UNIX-based open system hardware platform. It was also renovated and tested for year 2000 compliance. New systems were installed at Los Angeles, San Francisco, Kennedy, and Newark Towers and Portland TRACON. Future sites could include: Atlanta, Cleveland, Indianapolis, Louisville, Nashville, Northern California, and Dallas-Fort Worth TRACON's.

SYSTEMS INTEGRATION

FAA/NASA Partnerships. Now in its second full year of operation, the FAA/NASA Interagency Air Traffic Management Integrated Product Team (IAIPT) provides integration of research investment in air traffic management goals. The IAIPT, created under a joint FAA/NASA Memorandum of Understanding (MOU), integrates inputs from NASA stakeholders with guidance form the FAA's Research, Engineering, and Development Advisory Committee and NASA's Aeronautical Advisory Committee to establish programmatic and technical goals and working procedures for the strategic management of the interagency research program. The IAIPT strategically coordinates the transfer of air traffic management research technology from concept exploration and development to full-scale development. IAIPT efforts led to the successful transition of TMA and FAST to full-scale development and the successful completion of SMA concept demonstration and benefits assessment. All three capabilities are being implemented as part of FFP1. Also, the WJHTC and NASA Ames signed a Memorandum of Agreement (MOA) to collaborate on R&D and implementation of automation tools.

Air Force Range Integrated Product Team. The FAA actively participated in the Air Force Range Integrated Product Team (IPT) organized by the Air Force Space Command. The IPT includes

representatives of commercial launch providers and Air Force contractors as well as NASA and FAA. The objectives of the IPT are to streamline range operations at Cape Canaveral Air Station and Vandenberg Air Force Base, to enhance the cost-effectiveness of those operations, to reduce costs and personnel, and to increase capacity.

Hybrid Vehicles Integrated Product Team. The FAA established an IPT to evaluate new, reusable space launch vehicles whose designs are not uniquely spacecraft or aircraft but, rather, a combination. The IPT consists of representatives from the Associate Administrators for Commercial Space Transportation, Aviation Regulation and Certification, and the Chief Counsel. This IPT will provide a corporate approach to handling new space launch vehicles and assure that FAA evaluates these vehicles fairly and consistently.

Space and Air Traffic Management System (SATMS). The Associate Administrators for Air Traffic Services and Commercial Space Transportation have developed an initial concept of operations for an integrated space and air traffic management system (SATMS). The integrated system will deal with transportation to, from, and within space as well as transportation within airspace.

Integrating Airport Capacity Needs into the NAS. A number of steps were taken in FY 1998 to integrate airport capacity and operational issues into the NAS modernization process:

- The latest draft of the NAS Architecture addresses airport concerns, highlighting the need for coordination between FAA and airport operators.
- The new "Blueprint for NAS Modernization" emphasizes the interdependence of the NAS and airport system and the need for new runways, as well as improved air traffic procedures to add capacity to congested airports.
- The Associate Administrators for Airports and Research and Acquisitions chartered a Satellite Navigation (SATNAV) Airport Facility Enhancement Team to help airports realize the benefits of SATNAV technology. The team is reaching out to operators of thousands of airports, explaining how to obtain satellite-based instrument approaches. The team is also working within FAA to update and streamline procedures related to instrument approaches, such as obstruction surveys, airport layout plan approval, and instrument runway designations.
- The Airports organization has identified major new runway projects and maintains an up-to-date estimate of commissioning dates.

Working with other FAA lines of business, Airports will continue to quantify the capacity enhancements expected from new runways and NAS modernization, develop a strategy for meeting ILS requirements, and determine the ideal application of satellite navigation to smaller general aviation airports. Development of a full operating concept for airports, comparable to air traffic control concept of operations, is also being considered.

Austin-Bergstrom International Airport. The new Austin-Bergstrom International Airport is on schedule to open in May 1999. The new ATCT and TRACON facilities have been constructed, and equipment installation is underway. The airspace and air traffic control procedures for the terminal area have been completed, and the charting date was December 1998.

Dallas/Fort Worth International Airport. The Dallas/Fort Worth Metroplex Air Traffic System Plan, a major capacity enhancement program, was implemented on October 6, 1997. The increase in system capacity is exceeding the forecast projections. Phase III of the plan is on schedule with construction of the TRACON completed in September 1998. Electronic installation was begun in September 1998, and completion is scheduled for the second quarter of FY 1999.

JFK International Airport Light Rail System People Mover. The FAA approved the use of a passenger facility charge to fund the construction of a light rail system to provide an automated rail alternative for passenger circulation between the terminals, to Howard Beach subway station, and Jamaica Long Island Railroad transportation center. The project will balance passenger access capacity with terminal and airside capacity.

Monitoring Compliance with Grant Obligations. Federally assisted airports must comply with certain grant obligations or assurances, including the requirement for airport-generated revenue to be used for airport and airport-related purposes. Commercial service airports are required

to submit financial reports detailing annual payments of airport revenues to state and local governments. A number of steps were taken by the Airports organization in FY 1998 to help make airports more aware of these restrictions and to improve the FAA's monitoring of airport revenue use:

- The FAA issued two advisory circulars: one addresses annual airport financial reports filed by commercial service airports; the other addresses special review and opinions on the use of airport revenue required as part of an airport operator's audit.
- New procedures were developed for FAA Regional Airports Divisions to improve the on-time filing rate for airport financial reports. These and other actions contributed to an increase from 83 percent to 98 percent in the filing rate of airport financial reports.
- During the fiscal year, decisions were issued or otherwise completed on 41 formal airport compliance proceedings. These included 21 Determinations of the Director, Office of Airport Safety and Standards, under Title 14, Part 16, of the Code of Federal Regulations (CFR); one decision of the Associate Administrator on appeal from a Determination of the Director; and 15 final agency decisions under Title 14, Part 13, CFR. Three investigations under Title 14, Part 13, CFR, were closed following judicial review of the final agency decisions. In addition, two investigations were initiated under Title 14, Part 16, CFR.

Resolution of Disability Complaints. FAA informally resolved or closed 23 of 45 complaints filed under the Americans with Disabilities Act or Rehabilitation Act. Three complaints filed under Title VI of the Civil Rights Act of 1964 were closed. Each instance of noncompliance discovered by the agency led to a settlement agreement requiring the airport operator to take appropriate corrective actions. No formal enforcement procedures were required.

Disadvantaged Business Enterprises (DBE) Participation. During FY 1998, DBE's received over $346 million in AIP prime and subcontract awards, equal to 20.6 percent of the total awarded. This is the eleventh consecutive year that the DBE participation in AIP projects has exceeded the goal set by legislation of "at least 10 percent." DBE concessionaires at primary airports earned over $1 billion in gross receipts, equal to 9.7 percent of the total gross receipts by all concessionaires, approximating the statutory 10 percent goal. Actual dollars earned by DBE's increased by $121 million.

1998 FAA Commercial Aviation Forecast Conference. The 23rd Annual FAA Commercial Aviation Forecast Conference, co-sponsored by the Airports Council International-North America, was held in Washington, DC, on March 12-13, 1998. The day-and-a-half conference, attended by a record 527 participants from both Government and industry, provided a forum for the exchange of information regarding current issues impacting the future direction of commercial aviation. Featured speakers included Senator Wendell Ford, Secretary of Transportation Rodney Slater, Administrator Jane Garvey, and Richard Branson, Chairman of Virgin Atlantic Airways.

1998 FAA General Aviation Forecast Conference. The 8th Annual FAA General Aviation Forecast Conference, co-sponsored by the National Business Aviation Association (NBAA), was held in Houston, Texas, on March 24-25, 1998. The day-and-a-half conference, attended by 230 participants from both Government and industry, provided a forum for the exchange of information concerning current and future actions and/or programs designed to stimulate and revitalize the general aviation industry. Thirty-four speakers discussed a wide variety of topics centering on the conference theme "Opportunities and Challenges for the 21st Century." Featured speakers included Guy Gardner, FAA Associate Administrator for Regulation and Certification; John Alcott, President, NBAA; Ed Bolen, President, General Aviation Manufacturers Association; Phil Boyer, President, Aircraft Owners and Pilots Association; and Jeremiah Creedon, Director, NASA Langley Research Center.

2002 Winter Olympic Games. The FAA produced and distributed a program master plan to guide preparations for the 2002 Winter Olympic Games, which will be held in Salt Lake City, Utah. The FAA has ongoing representation on many customer-based Olympic Committees working to make the Olympics a safe and enjoyable experience. FAA teams are working hard to prepare the many temporary and permanent facilities which will be required to support the additional air traffic generated by the Olympics.

These facilities include temporary ATCT's, airport surveillance radar, and communication facilities.

Airport Pavement Test Facility Nears Completion. The airport pavement test facility at the WJHTC is nearly complete. The facility will be capable of testing airport pavements with simulated full-scale aircraft loads of over 1 million pounds. Test pavements are being constructed inside a building that is nearly ¼ mile long, 100 feet wide, and 40 feet high. Simulated aircraft loads will be applied to nine different test pavements over a 900-feet by 60-feet area. Scientists and engineers from the United States and other countries will use this unique facility to explore and validate new pavement design, construction methods, and paving materials. The facility is being developed in collaboration with the Boeing Company and will be placed in service during FY 1999.

Military Airfield Joint-Use and Conversions. The FAA is pursuing a series of initiatives with the DOD, states, and local governments for joint civil and military use of existing military airfields and the conversion of military airfields being closed by DOD. There are about 50 military airfields closing as a result of the DOD's Base Realignment and Closure (BRAC) programs. FAA anticipates that up to 36 of these airfields will be converted to civil airport use. Each airfield represents a Federal investment of about $1 billion – or a total infrastructure investment of $36 billion. A number of large parcels of surplus military property, adjacent to existing civil airports, are also under consideration for transfer to civil airports for expansion projects. As these military airfields are determined to have a civil aeronautical demand, they are being placed in the FAA's National Plan of Integrated Airport Systems (NPIAS). This makes them eligible to receive capital development funding from the AIP.

National Airport System Potential Capacity Gains. To date, 20 of 36 airfields have been converted to civil airports and conveyed to civil airport sponsors through the use of long-term leases. joint-use agreements, or deeds. Six are now operating as primary commercial service airports, 8 as reliever airports, and 6 as general aviation airports. Roughly one-third of the 36 converting airfields have the potential to become commercial service airports, one-third to become reliever airports; and a number of the remaining one-third airfields could become general aviation airports. It is estimated that the 36 closing military airfields will provide about 50 runways for civil use with the potential to add over 6.5 million aircraft operations to the national airport system. These airfields provide runways lengths ranging from 3,000 to 13,000 feet, and the majority can handle large civil aircraft operating on long-haul routes.

Metropolitan Areas Potential Airport Capacity Gains. Nineteen of the closing military airfields are located in or near congested commercial service airports that experience aircraft delays of 20,000 hours or more. Nine airfields, located in six congested metropolitan areas, have already been converted to civil use. These nine airfields have the potential to add over two million aircraft operations to these metropolitan airport systems. In some metropolitan and rural areas, the closed military airfields are being used to replace the existing civil airports serving the area. The most significant example is the former Bergstrom AFB, Texas, which is replacing Austin-Muller Municipal Airport as the primary airport in the metropolitan area.

Funding of Current, Former, and Converting Military Airfields. FAA has issued AIP grants to about 30 states and local airport sponsors to evaluate civil aeronautical feasibility and airport master planning at former and closing military airport locations. Through FY 1998, the FAA has issued AIP capital development grants for almost $320 million for these closing military installations. Over $237 million was made available from the Military Airports Program (MAP) funding category of the AIP for safety, conversion-related, and capacity-related projects.

1998 Program. The 1998 MAP provides a grant funding set-aside of $26 million for capital development of eligible current (joint-use) and former military airfields under AIP. This compares to $18.5 million in FY 1997. Twelve military airfields received grants under the MAP in FY 1998. The participating airfields and their civil counterparts are:

- Norton AFB, California/San Bernardino International
- Bergstrom AFB, Texas/Austin-Bergstrom International
- Homestead AFB, Florida/Homestead Regional Airport
- Memphis NAS, Tennessee/Millington Municipal
- Williams AFB, Arizona/Williams Gateway Airport
- England AFB, Louisiana/Alexandria International

- Rickenbacker AFB, Ohio/Rickenbacker International
- Sawyer AFB, Michigan /Sawyer Airport
- George AFB, California/Southern California International
- Kincheloe AFB, Michigan/Chippewa County International
- Pease AFB, New Hampshire/Pease International Tradeport
- Myrtle Beach AFB, South Carolina/Myrtle Beach International

Low Visibility Taxiway Lighting Systems. Two AC's were revised and a new AC was issued in FY 1998 to establish specifications for the use of newly developed, improved low visibility taxiway lighting systems. The new lighting systems operate automatically and lead pilots to and from runways during periods of low visibility. The AC's specify the lighting fixtures, lighting configurations, and control systems for the new lights.

New Procedures Reduce Vertical Separation. Air traffic operations over the oceans differ from those in the domestic airspace in several respects. For example, a key difference is that the oceanic environment has no radar coverage and navigation is accomplished using aircraft onboard systems. To compensate, aircraft traveling oceanic routes are required to maintain wide separation and to follow designated tracks. In FY 1998, the FAA completed testing, deployment, and release of upgraded flight data processing software that allowed the vertical separation requirement to be reduced from 2,000 to 1,000 feet in North Atlantic oceanic airspace. The use of this reduced standard allows increased air traffic capacity without compromising safety.

FAA/National Association of State Aviation Officials (NASAO) Partnership. The FAA and NASAO have entered into a long-term partnership to advance and encourage the development of aviation within their respective areas of responsibility. In 1998, four additional initiatives were added to the FAA-NASAO Partnership Agreement. These initiatives covered Use of State Construction Standards for Airfield AIP Projects at Small Airports, Cooperative Partnership to Ensure Compatible Land Use Near Airports, Cooperative Partnership to Help Resolve Aircraft Noise Problems, and Coordination of Airway F&E Navigational Aid Project Proposals. Accomplishments in 1998 included coordination of airport training requirements with block grant states and the completion of a FSDO-State model safety program agreement.

People: The Foundation of Accomplishment.

ENABLING GOALS AND STRATEGIES

THE MODEL WORK ENVIRONMENT

FAA Continues and Creates Model Work Environment Initiatives. Every line of business within the FAA now has in place initiatives to promote the key objectives of the Model Work Environment ideal — an organizationwide culture that welcomes diversity in all its aspects, recognizes and rewards achievement, encourages individual career development, values family life, aggressively roots out acts of sexual harassment, and prevents violence. Throughout the agency, every work group this year surveyed and interviewed employees to pinpoint difficulties and concerns, conducted extensive training courses at all levels of the organization, and conducted recruitment outreach to women and minorities. *(See also*: *Employee Attitude Survey, page 107.)* Among the most important achievements for the year have been innovative approaches for handling sexual harassment complaints and arbitrating disputes.

Alternative Dispute Resolution. In FY 1998, the FAA increased its use of alternative dispute resolution (ADR) techniques as a tool in resolving internal and external conflicts. In recent years, the use of ADR has been strongly encouraged by the White House and the Congress. ADR is defined as a range of problem-solving processes for resolving conflict in lieu of traditional adversarial methods, such as litigation. ADR processes foster open communication, creative interest-based solutions, flexibility and partnering, while limiting the negative impact of discord upon ongoing relationships.

The Administrator and the Chief Counsel created the position of Associate Chief Counsel for ADR and began staffing the Office of Administrative and Alternative Dispute Resolution that reports to that position. This office is responsible for overall ADR policy and training within the FAA. The office works with the various elements of the FAA, other Government agencies, and private organizations to promote and foster the effective use of ADR.

In April 1998, the Office of Civil Rights implemented a headquarters mediation program. The goal of this

program is to use third-party neutrals to assist in the resolution of Equal Employment Opportunity (EEO) allegations while they are still in the pre-complaint process. In its first 6 months of operation, the headquarters EEO mediation program mediated 10 cases, of which 8 were resolved successfully. Also, in April 1998, the Associate Administrator for Research and Acquisitions inaugurated an early resolution system (ERS). The ERS uses neutrals to help nonbargaining unit employees resolve workplace disputes, of any kind, at an early stage – before they escalate towards more serious complaints and inhibit positive performance. The Associate Administrator for Civil Aviation Security is currently considering an ERS also. Under all of these programs, employees still have access to the agency's EEO and other legal processes. In addition, many of the FAA's regions and centers have implemented or enhanced their own ADR initiatives.

Another accomplishment in this area was the development of a prototype course in mediation techniques for conflict resolution. This course was designed by the FAA Center for Management Development (CMD) in collaboration with the Associate Chief Counsel for ADR and the Office of Civil Rights. The class exposes supervisors and managers to mediation techniques such as effective listening and interest-based facilitation. The goal is not to create mediators, but to give managers additional skills to assist them in avoiding or resolving disputes.

During the year, the Associate Chief Counsel for ADR also assisted external stakeholders, such as airports, in their dispute resolution efforts. Moreover, the FAA is working with DOT on current and future ADR initiatives and is actively involved with the interagency ADR working group established by the President and chaired by the Attorney General. *(See also: Acquisition Reform, page 108.)*

Inclusion of Sexual Orientation as a Basis for Discrimination Complaints. The signing of Executive Order 13087 on May 28, 1998, extended the EEO compliant process for Executive Branch employees to include sexual orientation. FAA trained its counselors in how to handle discrimination complaints based on sexual orientation and how this extension would impact the complaint process, their duties, and protect employees from discrimination and harassment. DOT had issued a departmental policy for processing complaints of discrimination based on sexual orientation on November 7, 1997. The White House had encouraged Federal departments to issue their own policy. The 1998 Executive Order created a uniform Federal policy.

INTELLECTUAL CAPITAL

Intellectual Capital Investment Plan. Intellectual capital represents the knowledge assets of an organization in terms of data, information, and wisdom, as well as the tools that augment the use of this information/knowledge. Just as physical assets require maintenance and investment in order to be fully productive, the FAA provides education and training to develop and maintain its intellectual capital. In FY 1998, the Office of the Associate Administrator for Research and Acquisitions (ARA) published an initial ARA Intellectual Capital Investment Plan (ARA ICIP). The plan recognizes that the FAA's new Acquisition Management System requires significant changes in the acquisition workforce. These changes involve a wide spectrum of competencies essential to the efficient management of complex systems, software, facility, and service acquisitions, as well as thousands of small procurements. The ARA ICIP, which will be updated annually, guides the implementation of a comprehensive education, training, and development program for the ARA workforce. It also established a high-level ARA ICIP Council to focus on workforce issues.

College Accreditation. The FAA Academy received college credit recommendations for 60 courses from the American Council on Education. In addition, the North Central Association of Colleges and Schools (NCA) accredited The Academy for the current school year. The Academy was found to meet or exceed all NCA standards for educational excellence.

Air Traffic Selection and Training (AT-SAT). In collaboration with the Civil Aeromedical Institute, the Air Traffic Division in the FAA Academy set in motion a series of programs that will affect the way future air traffic controllers are hired and trained. A new, computerized selection test was developed and validated and will become operational in FY 1999.

The FAA Academy also developed an Air Traffic Basics course that will be taught in residence and by colleges that are members of the College Training Initiative, permitting significant savings in training costs. New technical training courses that follow the

Air Traffic Basics course incorporate the latest teaching techniques and technology to simulate the real work environment.

Curriculum Modernization System (CMS). CMS is a systematic process to identify and prioritize training needs. Using standardized criteria, the CMS identifies new and existing resident training that meets the criteria for conversion, in part or in whole, to distance learning media. In FY 1998, five Airway Facilities courses were approved for development, and five existing courses were approved for revision. Total cost for the development and revision is $1,005,706 compared to $1,500,000 if the courses are conducted in residence. The estimated payback time is 7 years after the courses are fielded.

Interactive Video Teletraining (IVT). The IVT Program completed 28 IVT training broadcasts to over 1,650 FAA students in FY 1998. Additional expansion in FY 1999 will give the FAA a total of 60 IVT receive sites, covering over 70 percent of the FAA workforce.

Technical Training for ATOS. The FAA's new air carrier oversight program, ATOS, uses risk analysis tools and a dynamic, comprehensive surveillance planning process to target surveillance system elements. FAA Academy instructors began training for all aviation safety inspectors, in the field, on September 15, 1998. The training will continue as a resident course after the initial cadre of 800-900 inspectors is trained. The FAA Academy has also assigned instructors and supervisors to observe and assist in the development and implementation of national policies and procedures used in the process.

New landing system training building at the Mike Monroney Aeronautical Center

New Training Facilities at the FAA Academy. Construction of the Landing Systems Training Complex (14,650 square feet) and the Mark 20 Training Facility (4,200 square feet) was completed at the Mike Monroney Aeronautical Center. These facilities will provide training for Airway Facilities technicians in the maintenance and repair of various Category I/II/III navigational landing systems and Category II/III Mark 20 ILS's.

Aeronautical Center In-Service Symposium. In September 1998, eleven FAA/DOT organizations joined forces to conduct the first Aeronautical Center in-service symposium. The 2-day event, delivered by employees for employees, offered 26 2- and 4-hour training sessions ranging from stress management to cost analysis. The symposium filled over 750 seats. Due to the high demand for some of the courses offered and the quality of instruction, the symposium will become a recurring event.

MANAGING THE DIVERSE WORKFORCE

Accountability Board Oversees Handling of Sexual Harassment Complaints. In July 1998, the Sexual Harassment Accountability Board began its duties. Established by Administrator Garvey, its purpose is to take "a hard look and hard line" on the issue of sexual harassment and other forms of discrimination in the agency. It is the Board's responsibility to provide timely responses to complaints while making senior officials accountable for their workplace environments. Once management has received a report of harassment, it must notify the board within 2 days. Within 50 days, the allegations must be addressed. The Board, chaired by the Regional Administrator of the Southern Region, follows procedural guidelines developed by a 16-member working group earlier in the year. The Associate Administrator for Civil Aviation Security is represented on the Board to ensure that ACS investigators are available to look into complaints, if needed.

Garrett A. Morgan Initiative. The Garrett A. Morgan Technology and Transportation Futures Program was established in 1997 to honor the African-American inventor of the traffic signal. The purpose of the program is to promote an interest in transportation among the Nation's youth. More than 100 students from the Washington metropolitan area spent a day at Dulles International Airport and at the Smithsonian facility that houses the Space Shuttle

Enterprise. The event, hosted by Secretary of Transportation Rodney E. Slater and FAA officials, featured talks by shuttle astronauts Frederick Hauck and Rick Hieb and presentations by commercial space and aviation industries. In the New England Region, over 3,000 Boston-area students attended the fifth annual transportation/aviation career exposition on May 6, 1998, at Logan International Airport. The day-long program was sponsored by the FAA in partnership with United Airlines, Massport, and the Massachusetts Pre-engineering Program. The program featured an essay contest inviting students to write about their ideas for improving transportation through technological innovation. Throughout FY 1998, Garrett Morgan events, promoted through an agencywide aviation outreach program, attracted thousands of school-age young people across the country.

Summer Internships Attract Minority College Students. Thirty-five African-American, Hispanic, and Native American/Alaskan students participated in a 10-week summer internship program. The Hispanic Association of Colleges and Universities, American Indian Science and Engineering Society, and the Historically Black Colleges and Universities were responsible for placing the students in positions related to their majors. While most worked at Washington headquarters, nine found positions at CAMI, gaining experience in such specialties as aeromedical certification and education, human factors research, and occupational health. The FAA accepts the third highest number of interns in the Federal Government and actively recruits from this group.

Welfare-to-Work Program. The FAA has committed to assist 162 individuals in making the transition from welfare to work by the end of FY 2000. As of June 30, 1999, the FAA had hired 120 former recipients and plans to hire another 42. With the cooperation of state and local employment agencies, the FAA has conducted workshops to help candidates complete application forms and prepare for job interviews. In addition to hiring for targeted vacancies, applicants are also referred for general open vacancies. Several have now secured permanent positions and received awards, training, and promotions. Most workers have been assigned a mentor and several have received formal and on-the-job training. One region has partnered with other federal agencies to present a seminar for new hires, their supervisors, and mentors. A focus group drawn from new employees hired through the Welfare-to-Work program was established to help ensure that the seminar met the needs of the new hires.

QUALITY OF WORK LIFE

Employee Attitude Survey. Results from the employee attitude survey (administered to more than 48,000 FAA employees in October and November 1997) were analyzed and more than 800 specialized reports describing the survey outcomes were prepared and distributed to senior managers. While areas in need of improvement were identified as action items, employees are largely satisfied with the work they do, and, overall, they expressed high levels of satisfaction with their supervisors and their pay and benefits. FAA managers will use the outcomes to develop action plans as a means of furthering progress toward a model work environment within the FAA.

Telecommuting. The FAA actively supports and promotes the use of telecommuting throughout the FAA. Employees are eligible to telecommute as long as their duties and responsibilities are suitable for performance away from the normal office environment. Currently, 310 employees telecommute. Positions dedicated to safety and security or those that require the use of specialized systems and equipment are not considered appropriate for telecommuting. Such positions are typically found at ATC facilities, including air traffic controllers, airway facilities engineers, and certain specialists.

Quality Child Care. Since the late 1980's, the FAA has established childcare centers at 21 work sites nationwide. Seven of the centers have been accredited by the National Association for the Education of Young Children, a distinction accorded to about 5 percent of the country's early childhood programs that meet high standards of excellence. Another ten FAA childcare centers have begun the accreditation process and the remaining four will be eligible to apply during FY 1999.

Improving the Work Environment for People with Disabilities. The Central Region installed text telephone devices in workstations and HRM offices as an aid to hearing-impaired employees. The region also publishes ACCESS, a newsletter to reporting ideas, issues, and trends on employees with disabilities.

Reform: The Framework for Accomplishment

ACQUISITION REFORM

Acquisition Reform Scores Well in Evaluation. In 1996, legislation freed the FAA from restrictive regulations that once hampered the agency in acquiring new technology in a timely, efficient manner. The second annual evaluation of the FAA's Acquisition Management System (AMS) found strong evidence that the reform is moving in the right direction. The study concluded that:

- cross-functional, multidisciplinary teams were working well together;
- major procurements were more timely;
- FAA Investment Analysis Teams were beginning to function;
- The Joint Resources Council (JRC) was keeping better records of its decisionmaking;
- the percentage of F&E-funded programs which had JRC-approved baseline documentation increased from 13 percent in the first year to 54 percent in the second year;
- the FAA is making progress in achieving socioeconomic goals, after an initial decline immediately following the implementation of AMS;
- the FAA had increased the percentage of major procurements awarded through competition.
- The second year evaluation also found areas in need of improvement, including:
- the overall planning of funding needs;
- the establishing, compilation, and tracking of baseline information;
- giving full consideration to lifecycle funding (in F&E and Operations and Maintenance);
- strengthening the implementation of the Integrated Product Development System (IPDS).

An internal evaluation is currently underway to assess the third year under acquisition reform. In addition, an evaluation of the AMS will be conducted externally and results reported to the Congress in July 1999.

Prompt, Efficient Dispute Resolution Process is Established. During FY 1998, the Office of Dispute Resolution for Acquisitions (ODRA) became fully funded and staffed, and offices were established in the DOT headquarters building. These steps were taken in direct response to recommendations developed in earlier reviews of the AMS. Major accomplishments during the fiscal year included: (1) hiring staff attorneys/dispute resolution officers; (2) eliminating a backlog of older unresolved disputes and protests; (3) implementing procedures for prompt resolution of new disputes and protests; (4) developing an ODRA website; and (5) publishing a Notice of Proposed Rulemaking of Procedures.

- ODRA established offices at the DOT headquarters building in December 1997, and a permanent director was appointed. Two staff attorneys/dispute resolution officers with extensive procurement experience in the private and public sectors were hired the first quarter of 1998. In addition, an adjunct staff attorney/dispute resolution officer at the WJHTC continued working for the ODRA during 1998. The combined procurement experience of the ODRA Director and staff totals approximately 80 years.
- The office published an NPRM in the Federal Register on August 25, 1998, which proposed detailed procedures for resolution of bid protests and disputes arising under the AMS. The NPRM embodies the procedures employed by the ODRA during FY 1998 to promptly resolve disputes.
- The procedures implemented by the ODRA place a strong emphasis on the use of ADR techniques in resolving disputes. ADR techniques such as early neutral evaluation, mediation, and arbitration were the chief means employed by the ODRA to resolve disputes during FY 1998. Streamlined adjudication procedures also are used to provide sufficient due process to ensure fair consideration of contract disputes and protests.
- The default adjudication process at the ODRA is used if the parties are unable to fully resolve their differences via ADR. Under that process, the director or staff attorneys serve as dispute resolution officers and make formal Findings of Fact and Recommendations to the Administrator of the FAA. The Administrator makes the final agency decision in such cases. Qualified applicants who prevail in adjudication under the

default process may seek to recover attorneys' fees pursuant to the Equal Access to Justice Act.

- During FY 1998, more than half of all cases filed with the ODRA were resolved through some form of ADR. The average duration of bid protest cases settled through ADR has been 34 calendar days from filing to completion. Those bid protests resolved through the default adjudication process averaged 57 calendar days. These resolution timeframes compare favorably with those of similar cases filed in traditional procurement forums, such as the General Accounting Office and Boards of Contract Appeals.
- In order to supplement the ODRA procedures and the NPRM, Administrator Garvey formally delegated to the Director of the ODRA specific administrative authority over cases. The delegation included, among other things, authority to dismiss protests or disputes that have been settled or withdrawn and issue procedural orders relating to case management, scheduling, and discovery.
- Another recommendation that was implemented in FY 1998 concerned publicizing ODRA procedures and decisions. In that regard, the ODRA developed and made available a website that can be reached through the FAA Homepage at www.faa.gov. The website provides easy access to ODRA case decisions and a user-friendly guide to the ODRA disputes resolution process.

New Acquisition Management System Benefits Small or Disadvantaged Businesses. The FAA has awarded 14 information technology contracts worth up to $1.25 billion to small or disadvantaged businesses. The contracts, awarded under the FAA's Acquisition Management System, represent the largest such outreach effort by the agency.

The contracts, which cover a wide array of computer services ranging from help desk operations to investment analysis support, were awarded less than 3 months after the May 22, 1998, solicitation date. Without the Acquisition Management System, which was launched in April 1996, the contract process could have lasted 15 months. The initial value of each contract is $25 million to $50 million. Each contract has the potential to double, based on performance.

Improved Vendor Selection Process. In FY 1998, a list of qualified vendors was created for electrical construction projects, which allows for very quick contract awards at competitive prices for quality contractors. A new process was also developed for evaluating architect/engineer firms to determine which firm offers the best combination of expertise and price.

PERSONNEL REFORM

Historic Labor Agreement for New Partnership. In June 1998, the FAA and the National Air Traffic Controllers Association (NATCA) completed negotiations on an important labor agreement for air traffic controllers employed by the FAA. A key feature of the 5-year pact is the reclassification of ATC facilities to ensure that compensation better reflects the different degrees of complexity in controlling airplanes at vastly different airports throughout the country. The existing five classes of facilities will be replaced by a 12-category system. The agreement also baselined the number of controllers at 15,000 through the year 2001 and then permits increases of two percent annually in the fourth and fifth years of the contract. Controller productivity will be increased by allowing them to perform additional duties, such as training and quality assurance, when not controlling traffic. Incentives and rewards will be offered for increasing the productivity and efficiency of FAA operations. The ratio of controllers to supervisors will be gradually adjusted to 10-to-1 from its current 7-to-1 level. The agreement is the first reached under landmark FAA personnel reform legislation that became effective in April 1996.

FAA Tests Innovative Compensation Plan. On June 17, 1998, the FAA unveiled a major step forward in its congressionally authorized personnel reform efforts — a test of an innovative compensation plan for about 1,200 agency employees.

The new plan will replace the traditional grade-and-step base pay method with a simplified structure of pay bands whose value is determined by comparison with similar jobs in Government and private industry. The test directly links compensation with the performance of employees and the success of the organization as a whole. It also provides flexible employment and promotion guidelines. Employees' current base pay will not be reduced when they convert to the new system.

Nonbargaining unit employees in the FAA's Office of Research and Acquisitions are the first group to operate under the compensation pilot, which is expected to run for 18 months. During that time, the agency will evaluate how well the new system supports employees in achieving the agency's organizational goals as well as their own individual goals and will make any changes necessary to ensure the plan's success.

As part of the test, senior executives in the Office of Research and Acquisitions also will work under a new total compensation approach linked to the achievement of agency goals. The new approach will include base salary, short- and long-term incentives and supplemental benefits, of which only base salary and short-term incentives will be included in the test.

The FAA's new compensation system combines the best practices of compensation programs in the Federal Government with those in the public and private sector to create a system that supports the agency's unique needs. The new system is designed to provide more flexibility in hiring, pay ,and placement; recognize employee contributions, increase productivity, and enhance the organization's intellectual capital while ensuring fairness to employees.

Job-Based Questionnaires. Written knowledge, skills, and abilities historically used to evaluate applicant job experience have been replaced by job-based questionnaires for a number of job titles. Fifty-two different job-based questionnaires are available for use reflecting different series, pay levels, and selective placement factors within jobs.

Online Job Applications. An automated rating, ranking, and referral system which streamlines the application and hiring process for FAA was developed and is being used for external and internal hiring for technical and systems specialists responsible for maintaining equipment in the NAS. The system allows applicants to complete scannable questionnaires that are available through the Internet.

Automation Support of Compensation Reform. The Aeronautical Center developed and implemented the necessary system enhancements needed for the compensation reform pilot initiated in July for the Associate Administrator for Research and Acquisitions. The Consolidated Uniform Payroll System (CUPS), the Integrated Personnel and Payroll System (IPPS), and the Consolidated Personnel Management Information System (CPMIS) were modified to support the project.

FINANCIAL REFORM

Air Traffic Services Improvement Act of 1998. In April 1998, the Clinton Administration forwarded draft legislation to the Congress, built upon the work done by the National Civil Aviation Review Commission. Established by Congress and comprised of experts from both the aviation and financial communities, this commission was tasked to prepare recommendations on aviation funding and aviation safety. The draft legislation included five key elements. All five are keyed from, and support, the Commission's recommendations:

1. The FAA's budget treatment must change. Under the proposed legislation, the FAA's funding and financing system would receive a Federal budget treatment that ensures that fees from aviation users and spending on aviation services are directly linked. This is accomplished by exempting air traffic services from discretionary caps and by creating a third budget category that links user fees and spending. This was recognized by the Commission as the foundation for all the remaining recommendations.

2. FAA management must become performance based. The Commission wanted the FAA to operate its air traffic services in a more business-like manner. Therefore, it recommended a performance-based organization. Under the Administration's proposal, daily operational air traffic services activities would be centralized in a performance-based organization (PBO) supervised by a chief operating officer. This is also in keeping with National Performance Review objectives and creates a performance-based entity that is responsive to the needs of the air carrier, private aircraft, and public aircraft users.

3. FAA's revenue stream must become more cost based. Under the draft legislation, new user fees would only be used in support of the air traffic services PBO. Air carriers would pay cost-based user charges to be initiated by May 15, 2000. General aviation would continue to pay fuel taxes with taxes transferred to the PBO. In addition, excise taxes will continue at reduced rates to fund non-PBO aviation costs, covering safety, security, and airport improvement. The Aviation Trust Fund will also cover any additional costs imposed on the aviation

system by public use aircraft, including military and general aviation.

4. The FAA must control its operating costs and increase capital investments. The FAA is already addressing this by putting into place a comprehensive cost-accounting system. Phased implementation of this effort began on October 1, 1998. Coupled with the new budget treatment, we should be able to better manage our operating costs while increasing our capital investments.

5. Airport capital financing needs must be met. As the FAA handles more operations and passengers in the air, capacity must be available, on the ground, to handle increased traffic. The FAA called for a strong investment in the Nation's airports at a level of $1.7 billion a year.

The Administration also transmitted reauthorization legislation to extend the FAA's broad range of aviation safety, security, and efficiency programs for fiscal years 1999 – 2002.

The proposal called for funding FAA operations to increase by 5.5 percent to $5.6 billion in FY 1999. Consistent with the President's budget, this will allow the agency to hire 185 more air traffic controllers and 150 additional aviation inspectors, as well as to keep pace with modernization efforts. In order to provide opportunities for increased infrastructure investment, the FAA also proposed permitting an increase in the cap on passenger facility charges, or PFC's, from $3 to $4. Together, the changes proposed in the Airport Improvement Program and in higher PFC's will ensure increased investments at airports of all sizes.

The Logistics Center Reinvention Laboratory. The FAA Logistics Center is designated as one of the National Partnership for Reinventing Government's "Reinvention Laboratories." Reinvention labs are Federal Government organizations and activities across the United States that have volunteered and been recognized to lead the transformation of Government into the next century. In FY 1998, the FAA Logistics Center operated with 20 percent less funding yet increased its performance and its service to customers. Over the past year, the average unit cost to repair an airway system component has declined approximately $25 per item.

Lease Savings. The Mike Monroney Aeronautical Center has dramatically cut lease costs in FY 1998 and beyond. Working with the Oklahoma City Airport Trust, the Center was able to create a reduction of the lease payment for bond principal and interest. First-year savings are estimated at $287,000 with projected savings of $9.8 million through 2010.

The Environment: Our Responsibility

Understanding Aerospace Environmental Impacts. In FY 1998, with the contribution and participation of FAA, NASA continued research activities under the Atmospheric Effects of Aviation Project (AEAP). Results indicate that aviation emission's present influence on climate and the ozone layer is small compared to that of all human activities, although its role may increase in the future due to traffic growth. During FY 1998, there has been a steady improvement in characterizing the potential impacts of aviation emissions on the upper atmosphere. The areas of continued uncertainty include the influence of aircraft emissions on contrail formation and increased cloudiness, the role of oxides of nitrogen emissions in affecting the chemistry of the upper troposphere and lower stratosphere, and the dynamical processes controlling transport of emissions in the upper troposphere/lower stratosphere. Better observations of key atmospheric constituents and better modeling of atmospheric dynamics and chemistry in the region of aircraft flight corridors will be crucial for an improved understanding and better quantification of aircraft effects on ozone and climate change.

Progress made under the AEAP has been factored into a special report on "Aviation and the Global Atmosphere" being prepared by the Intergovernmental Panel on Climate Change (IPCC). Progress made under the AEAP was also taken into account by the FAA during the development of the U. S. position on the subject of engine exhaust emissions standards, which was debated at the fourth meeting of the Committee on Aviation Environmental Protection (CAEP), under the International Civil Aviation Organization. The research results indirectly influenced the main outcome of the CAEP meeting related to increasing the stringency of the international standard for nitric oxide (NOx) emissions and provided information upon which to build a future work program for CAEP.

Reducing Aerospace Environmental Impacts. In FY 1998, NASA, with FAA support, continued research activities under the Advanced Subsonic Technology (AST) program to develop combustor technology to reduce aircraft engine exhaust emissions. Critical low-emission combustion technologies are being developed, and flame tube and sector tests both at NASA and by contractors are showing promise of achieving the AST NOx low emission combustion goals. The completed low pressure sector combustor tests indicate that more than the 50 percent NOx reduction goal may be achieved. Additional full annular combustor and engine system tests, which will occur in 1999 and 2000, are still required to develop viable combustors with the 50 percent NOx reductions. Progress made under the AST program was taken into account, by the FAA, during the development of the U. S. position for the fourth meeting of the Committee on Aviation Environmental Protection (CAEP), under the International Civil Aviation Organization. The research results and plan provided information upon which to build a future work program for CAEP.

Aircraft Noise Reduction Research. FAA and NASA will submit the annual joint report to Congress on the progress of the FAA-NASA subsonic noise reduction technology program. In February 1992, FAA and NASA initiated a cosponsored, multiyear program focused on achieving significant noise reduction technology advances. Recent accomplishments have included the confirmation of the achievement of near-term program objective, which is to identify technology that will reduce uninstalled engine noise levels by three decibels. Several ongoing projects continue to verify the effectiveness of active and passive noise control for engine noise reduction, along with the development of the first integrated fan noise source and propagation prediction code to be used to identify, analyze, and optimize engine noise reduction technology concepts.

Airline Noise Levels Continue to Drop. The level of noise at the Nation's airports and surrounding areas continues to decline as airlines take older, noisier airplanes out of service and replace them with newer, quieter ones or retrofit the older aircraft with "hush kits" or new engines. In the Report to Congress released in September 1998, the FAA documented that the number of noisier aircraft had declined from 2,048 in 1995 to 1,453 by the end of 1997. During 1997, the proportion of quieter airplanes used by U.S. airlines increased from 75.5 percent to 79.8 percent. The number of airplanes with reduced noise levels rose from 5,165 to 5,719 during the year. The improvement reflects compliance by the airlines with legislation passed in 1990 requiring that older, noisier (Stage 2) airplanes be replaced by quieter (Stage 3) airplanes by the year 2000.

Airport Noise Compatibility Planning Program (14 CFR Part 150). The Part 150 program assists airport operators in developing individual comprehensive noise compatibility programs (NCP) to reduce noise and help achieve compatible land uses in the areas surrounding their airports. As of September 30, 1998, 194 airports have FAA-approved NCP's in place. Last year, the FAA approved nine NCP's including six revisions/updates of existing programs. It is expected that, over the next several years, a major area of Part 150 activity will continue to be the revision and updating of previously approved NCP's to reflect the compatibility gains from the phasing out of large Stage 2 airplanes.

To assist in this effort, the FAA has entered into an MOU with the National Association of State Aviation Officials (NASAO) to promote land use compatibility around airports and to reduce the effect of noise on areas surrounding airports. Joint FAA/NASAO teams are developing a number of products to meet the challenges of these two areas.

Environmental Compliance. FAA continued to progress in its environmental compliance assessment. At the regional level, compliance orders were developed, such as Northwest Mountain Region's Facilities Environmental Compliance Order, and the Eastern Region's Safety, Health and Environmental Compliance Order. The Office of Environment and Energy held regulatory compliance training to provide personnel with an overall understanding of Federal environmental liabilities and requirements.

The National Airspace System (NAS) Transition and Integration Program, in conjunction with the regions, developed a model Environmental Compliance Implementation Plan covering 19 program areas. This plan will support the development of a systematic technical approach for implementing regional environmental compliance programs. In addition, the NAS Transition and Implementation Office (ANS) and its regional counterparts manage implementation of the environmental compliance program at FAA facilities. This includes managing outages at these facilities related to hazardous

materials. On average, approximately 15 to 25 such outages occur each month.

Commercial Space Launches and the Environment. The FAA's Commercial Space Transportation Office has licensed the first commercial launch site, not located within the boundaries of a Federal installation. The license was issued on September 24, 1998, to the Alaska Aerospace Development Corporation for the Kodiak Launch Complex (KLC). A critical component of the licensing of the Kodiak site was the lengthy and complex environmental evaluation that required intense coordination and cooperation among various Federal and state offices. As part of the FAA's environmental finding, a biological baseline improvement plan and a biological monitoring plan was developed to address several identified species of threatened or endangered fauna. The environmental staff of the Commercial Space Transportation Office participated in the monitoring activities during the first launch from KLC. With the first successful launch at KLC, the FAA has reached a major milestone in its commercial space regulatory mission while continuing to pursue its environmental protection responsibilities.

Airports and the Environment. Airports, though essential to local economic growth, can create environmental problems. This year saw two potential problems move toward resolution. The FAA worked with the U.S. Fish and Wildlife Service to proceed with the approval of a new runway at Minneapolis-St. Paul International Airport with the assurance of adequate mitigation of noise on a nearby wildlife refuge. FAA also worked with the Department of the Interior to address the concern that an expanded airport on Maui might lead to the introduction of alien species of plants and animals into the island's highly sensitive ecosystem. For the first time, the FAA, other Federal agencies, and the State of Hawaii entered into an MOU to take necessary protective measures.

Reducing Wildlife Aircraft Strikes. Over 3,300 wildlife strikes were reported to the FAA in 1997. FAA estimates that wildlife strikes annually cost the U.S. civil aviation industry over $237 million in direct damage, over $77 million in associated cost, and in excess of 500,000 hours of aircraft down time. Through its national certification program, FAA's Airport Safety and Operations Division provides guidance and on-site assessments to help both domestic and foreign airports identify and resolve wildlife hazards. During FY 1998, the FAA, working closely with the U.S. Department of Agriculture Wildlife Services, conducted on-site evaluations and provided technical assistance at over 200 airports. Similar assistance was also provided to the Mexican Government. A wildlife hazard assessment was conducted at the Mexico City International Airport. Evaluations were also made at proposed locations for Mexico City's new international airport.

The FAA also co-sponsored the 8th annual meeting of the Bird Strike Committee, USA, at Cleveland's Burke Lake Front Airport. Over 330 airport managers, aircraft operators, and wildlife specialists attended. In addition, the FAA is chairing an interagency work group to develop an MOU addressing habitat attractive to certain wildlife species that are hazards to aviation. The MOU is intended to ensure that actions taken by the FAA or agencies responsible for protecting wildlife do not create or exacerbate habitats near airports that attract hazardous wildlife.

Environmental Management Reviews. The Airway Facilities Management Consulting Staff conducted a comprehensive management process oriented review of the FAA's environmental and occupational safety and health programs. The review focused on program performance and resource utilization. The Office of Environment and Energy completed a Programmatic Environmental Evaluation and Review (PEER) of the PCB and NEPA programs in FAA headquarters and two selected regions. These projects are consultative and technically focused reviews to provide reasonable assurance that the facility environmental programs sustain regulatory compliance. They include policies, guidance, resources, recordkeeping, and reporting systems. ANS conducted indepth reviews of the Fuel Storage Tank Program (for compliance with 40 CFR, Part 280) at each region. In addition, ANS conducted an indepth program review of the Superfund Program at the William J. Hughes Technical Center.

Hazardous Materials and Toxic Substance Release Reduction. FAA directs and promotes pollution prevention and the elimination of releases of toxic substances. The Great Lakes Region's *Hazardous Materials and Pollution Prevention Guide* and FAA headquarters' *Spill Prevention, Control and Countermeasure (SPCC) Plan Guidance* are but two examples of FAA's commitment to this effort. FAA's Environmental Substitution Guide was developed to

identify manufacturer information on environmentally preferred products. In addition, the Eastern Region created a database to track chemical inventories and environmental compliance. In addition, ANS continues to incorporate environmental compliance requirements into the FAA's acquisition system to reduce hazardous materials usage and/or possible releases in future FAA equipment and systems to be deployed.

Environmental Justice. The agency has established environmental justice contacts in environmental and Civil Rights offices in each region, center, and service. During FY 1998, FAA has been incorporating the provisions of the DOT order on environmental justice into its procedures and training to assure compliance under the National Environmental Policy Act. This requires consideration of the environmental effects of FAA actions on the human environment, Title VI of the Civil Rights Act, prohibiting discrimination by recipients of Federal financial assistance and various statutes and Executive Orders governing Federal facilities environmental management. The agency has also drafted a Native American policy that includes provisions for Government-to-Government consultation.

Global Leadership: Commitment to Worldwide Improvements

INTERNATIONAL SAFETY OVERSIGHT

FAA International Aviation Safety Assessment (IASA) Program. FAA continued to conduct the IASA program to determine if civil aviation authorities of air carriers who conduct, or propose to conduct, operations to the United States are providing safety oversight in accordance with applicable ICAO Annexes. As of July 2, 1998, the results of 92 countries have been released to the public. Feedback to FAA indicates the IASA program continues to facilitate worldwide improvements in aviation safety oversight.

ICAO Safety Oversight Program (SOP). The FAA focused on strengthening the SOP to make it more assertive and effective. This goal was significantly advanced at a November 1997 ICAO worldwide conference on safety oversight. Subsequently, during the 32nd ICAO Assembly in September 1998, general agreement was reached to make the SOP a universal, mandatory audit program with more detailed and meaningful results to be made available in a timely manner.

Global Safety Action Plan. The United States and Canada presented a resolution at the 32nd session of the ICAO Assembly, proposing that the Assembly adopt the primary objectives of the ICAO Global Aviation Safety Plan. The goals of the plan are to:

- Achieve a significant decrease in the worldwide accident rate;
- Enhance the identification of shortcomings and deficiencies in the air navigation field and to achieve a significant degree of improvement,
- Increase and improve ICAO's own capability to compile, assess, and disseminate safety-related information.
- The FAA gave strong backing to several significant measures intended to raise the level of safety standards worldwide:
- *Implementation of Airborne Collision Avoidance Systems (ACAS).* The Minimum Operational Performance Standards for the latest version (Version 7) of the traffic alert and collision avoidance system II (TCAS II) were completed. Version 7 fully complies with the ICAO Standards and Recommended Practices for the Airborne Collision Avoidance System II (ACAS II). In addition to providing improved collision avoidance protection, TCAS II, Version 7 will: correct known shortcomings in the present TCAS II; minimize the number of unnecessary alerts to flightcrews; and provide positive guidance to flightcrews to minimize system impacts on the air traffic control system. *(See also: Terrain Awareness and Warning System (TWAS), page 78.*
- *Increased Use of Standard Air Traffic Control Phraseology*. FAA participated in the Multi-Agency ATS Procedures Coordination Group (MAPCOG), which also includes permanent members from EUROCONTROL and NAV CANADA. MAPCOG's goal is to globally harmonize procedures, radiotelephony phraseology, and flight planning. Plans are to submit a new phraseology document to ICAO in the fall of 1999.
- *ICAO Workshop on Cross-Cultural Human Factors Issues in Aviation Safety.* FAA participated in this international workshop to

discuss development of an ideal safety process. Focus was on "best practices" in terms of training, operations, and design; how compatible "best practices" are with existing industry practices; and strategies to enable compatibility. Findings and conclusions were provided to all participating organizations for appropriate action.

- *Joint Transport Canada, United Kingdom Civil Aviation Authority (CAA), FAA Symposium*. Through a formal working agreement with Transport Canada and the CAA, FAA participated in a joint symposium addressing human factors issues in aircraft maintenance, and inspection. This forum allowed all three nations to share the results of their latest human factors research in the area of maintenance, and to identify possible solutions and "best practices" which could improve safety in this important area. The conference also elicited additional research needs from industry.
- *FAA Cooperation with General Administration of Civil Aviation of China (CAAC).* FAA continued work with the CAAC focusing on air operator recertification and CAAC inspector training. During the past year, the CAAC, with support from FAA, completed operational certification validations (OCV) of its three major airlines that serve the United States. FAA also provided FAA Academy courseware as a basis for CAAC development of its own introductory inspector courses and subsequent on-the-job training (OJT) in FAA field offices.
- *FAA Cooperation with the Federal Aviation Authority of Russia (FAAR).* FAA has installed a direct digital satellite communication circuit for air traffic control between Alaska and Petropavlovsk-Kamchatsky in the Russian Far East (RFE). A similar project is nearly complete for Anadyr, Russia. These circuits provide for safer, more reliable communications and will enable increases in traffic along the more fuel-efficient RFE routes, which provide airlines significant savings in time and cost. FAA continued to work through the Russian/American Coordinating Group for Air Traffic Control (RACGAT) to develop and implement additional cost saving RFE and Polar routes through Chinese, Japanese, Korean, Mongolian, and Russian airspace. The RACGAT forum also continued work to enhance monitoring of volcanic eruptions impacting these routes. FAA conducted and participated in several joint U.S./Russian aviation safety, general aviation, and airport management seminars. These seminars served to enhance safety oversight, stimulate the development of a general aviation sector in Russia, and assist Russian airports in transitioning to a market economy.

GLOBAL CNS/ATM DEVELOPMENT AND IMPLEMENTATION

Global Air Traffic Management. The FAA planned and organized a Global Air Traffic Flow Management (ATFM) Seminar, which convened in November 1998. The purpose of the seminar was to share ideas and philosophies on ATFM and to promote the concepts of global air traffic services and the development of international air traffic flow management. Participants at the seminar included Australia, Brazil, Canada, EUROCONTROL, Japan, Mexico, Russia, South Africa, and the United States. The goal of the seminar was to harmonize ATFM philosophies and begin the work of creating a seamless global ATFM environment for the near future.

Flight Demonstrations of GPS Technology. The FAA continued its international efforts to inform and educate countries on the benefits of GPS and transitioning to satellite-based technology. In conjunction with Icelandic and Chilean civil aviation authorities, WAAS flight tests/demonstrations were conducted in Keflavik and Santiago airports, respectively. In direct cooperation with the FAA, Chile has begun to establish a functional test-bed for internal flight trials and performance analyses of ionospheric disturbances. The flight trials and subsequent analyses will lay the groundwork for a potential additional augmentation located in South America with the potential for cost sharing of communication satellite signal broadcasts.

In December 1998, the FAA and the Republic of Chile's Director General of Civil Aeronautics (DGAC) successfully completed the first test flights in Chile demonstrating the capabilities and benefits of WAAS. The test flights were conducted at the Arturo Merino Benitez International Airport in Santiago, Chile, on December 9, 1998. For this demonstration, an FAA Boeing 727 aircraft conducted a series of Category I precision approaches (down to approximately 200 feet) using a navigation signal generated and

broadcast by the National Satellite Test Bed master station in Atlantic City, New Jersey.

The WAAS demonstration showcased the flexibility of satellite navigation technology for tailored or unique precision approaches in situations where current ground-based precision approach technologies are limited. The Arturo Merino Benitez International Airport is surrounded by the Andes Mountain range and requires very flexible and precise navigation systems.

Cooperative Agreement with Canada. The FAA finalized the WAAS/CWAAS (Canadian WAAS) concept of operations and maintenance document to incorporate CWAAS into the WAAS National Airspace System in 2001. Under this agreement, the FAA will provide differential calculations in exchange for reference station data from Canadian sites along the U.S./Canadian border, which will save U.S. ground procurements and operational costs. The broadcast of a correction message over the U.S. and Canadian airspace will provide the first seamless application of augmented GPS signals.

Cooperative Agreement with Iceland. The FAA and the Director General of the Icelandic Civil Aviation Administration established agreements for the development of global navigation satellite system technologies. The agreements also provide for continuing cooperation and testing and evaluation of the WAAS performance at remote sites and at northern latitudes. Iceland has also stated that it will participate in the U.S. WAAS network with one or two reference stations. This will provide increased integrity for transatlantic flights of all air carriers.

Cooperation with Japan. On September 22, 1998, President Clinton and Japanese Prime Minister Obuchi issued a joint statement regarding cooperation in the use of the Global Positioning System (GPS). This joint statement culminates 2 years of discussions between the Governments of the United States and Japan on issues related to expanding civil use of GPS. This effort is a key portion of a broader U.S. diplomatic effort to promote international acceptance of GPS as a global standard for satellite-based navigation, to ensure adequate radio frequency spectrum allocations for GPS and to prevent misuse of GPS timing, navigation, and positioning signals. The FAA and the Japanese Civil Aeronautics Board (JCAB) also continued to work closely on augmentation system interoperability issues through the development of the MSAS (Multifunctional Transport Satellite-based Augmentation System) and the WAAS.

INTERNATIONAL REGULATORY HARMONIZATION

FAA-JAA Harmonization. The FAA-JAA Harmonization Work Program continued into its 15th year in 1998, focusing on harmonizing to the maximum extent possible U.S. and European aviation safety regulations. In the aircraft certification area, the FAA and JAA have harmonized about 80 percent of their regulations, including small aircraft, engines, and helicopters. Maintenance requirements are largely harmonized, and operations and related licensing standards received increased attention. FAA and JAA have agreed to broaden the scope of the initiative to include human factors research and development cooperation as well as cooperative bridges between the FAA and JAA's safety improvement efforts with industry.

ICAO Regional Projects – Latin America and South Asia. The FAA continued its work with ICAO regional safety oversight and harmonization projects in Latin America and South Asia. The purpose of these projects is to build a sound aviation infrastructure in the participating States that will enable these States to carry out their safety regulatory obligations under the Chicago Convention and ICAO Annexes. These projects are designed to systematically address basic aviation laws, regulations and guidance materials, civil aviation authority organization, and training of safety personnel. Additionally, regulations will be harmonized, to the maximum extent possible, among the participating States. In Latin America, FAA completed its fourth year of participation in this regional project and provided financial assistance and inspectors to teach flight operations, aircraft maintenance, and flightcrew licensing courses to inspectors within the region. In South Asia, FAA has provided planning guidance, financial assistance, and office equipment donations to enable the project to get underway this year.

Model Law/Regulations and Related TRAINAIR Course Development. The FAA continued its efforts to develop a set of model aviation documents that include an aviation law and regulations as well as implementing standards for flight operations and continuing airworthiness of aircraft. FAA intends to provide these model aviation documents to ICAO for

use in its regional safety oversight and harmonization initiatives. Work has progressed to the point where FAA could begin work on development of aviation safety inspector indoctrination courses based on the model aviation regulations. This course material is being developed for the ICAO Trainair Program and, once completed, will be available for teaching at any ICAO Trainair facility.

Bilateral Aviation Safety Agreements (BASA). BASA's will allow the FAA to cooperate closely with other competent aviation authorities to assure aviation safety even if relevant regulations are harmonized. BASA's permit the FAA to meet its statutory safety mandate and to work efficiently across national boundaries by facilitating data exchange from competent aviation authorities on which the FAA may base its safety findings. Entering 1998, the U.S. Government had concluded eight BASA's and two technical implementation procedures. In 1998, the United States signed BASA's with Sweden and Russia, the latter a significant achievement capping several years of work with Russian airworthiness authorities. The FAA also signed a set of simulator implementation procedures with the United Kingdom, providing for reciprocal acceptance of data for simulator qualifications.

Translation of Federal Aviation Regulations and Inspector Handbooks. The FAA's Flight Standards Service is coordinating the translation of U.S. aviation regulations into Russian for use in the ongoing development of safety regulations in the Russian Federation. Also, copies of FAA orders and inspector handbooks are being translated for adoption and use by Russian FAAR aviation safety inspectors.

FREQUENTLY USED ACRONYMS

A

AATF	Airport and Airway Trust Fund (*also Trust Fund*)
AC	advisory circular
ACSI	Airport Certification Safety Inspector
AD	advisory directive
ADR	alternative dispute resolution
AEAP	Atmospheric Effects of Aviation Project
AF	airway facilities
AGARS	advanced general aviation research simulator
AIP	Airport Improvement Program
AMASS	airport movement area safety system
AMS	acquisition management system
ANPRM	Advanced Notice of Proposed Rulemaking
ANS	FAA NAS Transition and Implementation Office
APMS	automated performance measuring system
AQP	advanced qualification program
ARAC	Aviation Rulemaking Advisory Committee
ARFF	aircraft rescue and firefighting
ARSR	air route surveillance radar
ARTCC	air route traffic control center
ARTS	automated radar terminal system
ASCEP	Aircraft Certification Systems Evaluation Program
ASDE	airport surface detection equipment
ASI	aviation safety inspector
ASOS	automated surface observing system
ASR	airport surveillance radar
AT	air traffic
ATA	Air Transport Association
ATC	air traffic control
ATCBI	air traffic control radar beacon interrogator
ATCSCC	Air Traffic Control Systems Command Center
ATCT	airport traffic control tower
ATFM	air traffic flow management
ATOS	Air Transportation Oversight System
ATS	Air Traffic Services
AVN	Aviation System Standards

C

CAEP	Committee on Aviation Environmental Protection
CAMI	Civil Aeromedical Institute
CAPS	computer-assisted passenger screening
CAS	cost accounting system
CBT	computer-based training
CCLD	core capability limited deployment
CDC	computer display channel
CDM	collaborative decision making
CERAP	center radar approach control
CFO	Chief Financial Officer
CHI	computer-human interface
CIP	Aviation System Capital Investment Plan
CMD	FAA Center for Management Development
CMS	curriculum modernization system
COTS	commercial off-the-shelf

CPDLC	controller-pilot data link communications
CRS	child restraint system
CSRS	Civil Service Retirement System
CTAS	center/TRACON automation system

D

DAFIS	Departmental Accounting and financial Information System
DBE	disadvantaged business enterprise
DCCR	display chananel complex rehost
DOD	Department of Defense
DOL	Department of Labor
DOT	Department of Transportation
DOTS	dynamic ocean track system
DSR	display system replacement
DYSIM	dynamic simulation

E

EAA	Experimental Aircraft Association
EDS	explosives detection system
EEO	equal employment opportunity
EMS	emergency medical service
ERS	early resolution system
ETD	explosives trace detector

F

F&E	facilities & equipment
FAA	Federal Aviation Administration
FAATSAT	FAA telecommunications satellite
FANS	Future Air Navigation System
FASAB	Federal Accounting Standards Advisory Board
FDIO	flight data input/output
FECA	Federal Employees' Compensation Act
FERS	Federal Employees' Retirement System
FFP1	Free Flight Phase 1
FLIR	forward-looking infrared
FOQA	flight operations quality assurance
FQIS	fuel quantity indication system
FSS	flight service station
FY	fiscal year

G

GA	general aviation
GAIN	global analysis and information network
GAO	General Accounting Office
GLS	global positioning landing system
GPS	global positioning system
GSA	General Services Administration

H

HOCSR	host and oceanic computer system replacement

I

IAIPT	FAA/NASA Interagency Air Traffic Management Integrated Product Team
IASA	International Aviation Safety Assessment
ICAO	International Civil Aviation Organization
IFR	instrument flight rules
ILS	instrument landing system
IPT	integrated product team
IRS	Internal Revenue Service
ITWS	integrated terminal weather system

IVT	interactive video teletraining

J

JRC	FAA Joint Resource Council

L

LAAS	local area augmentation system
LLWAS	low level windshear alert system
LOB	lines of business
LOI	letter of intent
LTP	LAAS test prototype

M

MAP	Military Airports Program
MCC	maintenance control center
MLS	microwave landing system
MMAC	Mike Monroney Aeronautical Center
MOA	memorandum of agreement
MOPS	minimum operational performance standards
MOU	memorandum of understanding
MRM	maintenance resource management

N

NAS	national airspace system
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NATCA	National Air Traffic Controller Association
NEXCOM	next generation air ground communications
NEXRAD	next generation weather radar
NIMS	NAS Infrastructure Management System
NMCC	National Maintenance Control Center
NPIAS	National Plan of Integrated Airport Systems
NPRM	Notice of Proposed Rulemaking
NSSA	National Safe Skies Alliance
NTSB	National Transportation Safety Board

O

OASIS	operational and supportability implementation system
OCC	Office of Chief Counsel
ODL	oceanic data link
ODRA	Office of Dispute Resolution for Acquisitions
OIG	Office of the Inspector General
OMB	Office of Management and Budget
OST	Office of the Secretary of Transportation
OTA	Office of Tax Analysis

P

PFAST	passive final approach spacing tool
PFC	passenger facility charge
POET	post operations flight evaluation tool
PP&E	property, plant and equipment
PVD	plan view display

R

R,E&D	research, engineering & development
RAPID	repair assessment procedure and integrated design
RFE	Russian Far East

ROC	regional operations center

S

SATMS	space and air traffic management system
SATNAV	satellite navigation
SATORI	systematic air traffic operations research initiative
SEIPT	Security Equipment Integrated Product Team
SFFAS	Statement of Federal Financial Accounting Standards
SIAPS	standard instrument approach procedures
SMA	surface movement advisor
SOP	Safety Oversight Program
SPAS	safety performance analysis system
SPEARS	Screener Proficiency Evaluation and Reporting System
STARS	standard terminal automation replacement system

T

TAWS	terrain awareness and warning system
TDWR	terminal Doppler weather radar
TERP	terminal instrument procedures
TFM	traffic flow management
TGF	target generation facility
TIP	threat image projection
TMA	traffic management advisor
TMU	traffic management unit
TRACON	terminal radar control

U

URET	user request evaluation tool
USAF	United States Air Force
USCG	United States Coast Guard

V

VLTA	very large transport aircraft
VSCS	voice switching and control system
VTABS	VSCS training and backup switch

W

WAAS	wide area augmentation system
WARP	weather and radar processor
WJHTC	William J. Hughes Technical Center
WOC	Washington Operations Center
WSP	weather systems processor

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