final descent until relatively close to their destination airport and climbing them out as rapidly as possible after takeoff. Where aircraft performance capabilities and considerations of passenger safety and comfort permitted, FAA required turbojet aircraft to be kept at 10,000 feet or higher until within 30 miles of the airport.

By Jul 1, 1971, the program had been implemented at 387 airports, nearly all those airports serving scheduled air carrier and turbojet aircraft. (See Dec 4, 1967, and Aug 1, 1972.)

Feb 4, 1971: FAA permanently established a **terminal control area (TCA) for Washington, D.C.** (the Washington National/Andrews Air Force Base complex). A TCA had been established earlier for this location, on Aug 20, 1970, but rescinded the following day because of operational problems. The agency established a revised version on Oct 1, 1970, but adherence was purely voluntary until made mandatory by the Feb 4, 1971, rule. The Washington TCA was the third to be established. **Two more TCAs were established on Sep 16, 1971**, one for Los Angeles and one for the New York City airport complex. (See Jun 25, 1970 and Jan 1, 1974).

Feb 23, 1971: The Secretary of Transportation established a **Transportation Safety Institute (TSI)** at FAA's Aeronautical Center, Oklahoma City. Although initially operated by FAA, this school provided training in the investigation of accidents and incidents in all modes of transportation, and in related regulatory matters. In 1977, TSI became part of the new Research and Special Programs Administration (see Sep 23, 1977.)

The establishment of TSI followed the **dissolution of the National Aircraft Accident Investigation School (NAAIS)**, which had been originally operated as a joint venture at the FAA Academy (see Sep 30, 1963) by FAA and the Civil Aeronautics Board. The National Transportation Safety Board (NTSB) assumed CAB's share of responsibility for the school when NTSB took over CAB's aircraft accident investigation functions on Apr 1, 1967. Subsequently, however, FAA decided to include enforcement-oriented training as part of the curriculum at NAAIS. As this added training would not be consistent with NTSB's mission, FAA and NTSB agreed to dissolve NAIS as of Jan 31, 1971. (On Mar 4, **NTSB established its own National Aircraft Accident Investigation School** at Dulles International Airport.)

Mar 2, 1971: The Civil Aeronautics Board approved the **merger of Trans Caribbean Airways into American Airlines**, effective this date. Trans Caribbean had begun as a charter carrier in Dec 1945, and had begun scheduled service between New York and Puerto Rico in Mar 1958.

Mar 5, 1971: **DOT released the report of its investigation of air charter and leasing companies** undertaken following an accident on Oct 2, 1970 (see that date). The investigating task force determined the key problem was the difficulty of enforcing the distinction in the safety regulations between large-airplane operators in private carriage for compensation or hire and other large-airplane operations in private carriage. Among the group's recommendations were: distributing to universities and other organizations flyers explaining the differences between leasing an aircraft and hiring a charter; incorporating a truth-in-leasing clause in leases; and requiring that all large and complex airplanes be operated and maintained at a safety level comparable to that of air carriers. FAA immediately carried out the recommendation on the distribution of flyers, and later took action on the truth-in-leasing issue (see Jan 3, 1973). On Oct 7, 1971, however, FAA withdrew a proposed rule that would have placed certain new certification requirements on operators of large aircraft in private carriage. FAA took this action on the ground that the proposal would impose unnecessary administrative burdens on corporate or business aircraft operators, but the agency continued to consider ways to upgrade the safety of large general aviation aircraft. (See Oct 23, 1972.)

Mar 13, 1971: AN FAA rule **upgraded airworthiness standards for small airplanes seating 10 or more passengers** (excluding crew). The new rule required all such aircraft, regardless of weight, to be certificated in the air transport category. The rule reflected a trend toward increased numbers and types of small aircraft designed with relatively large passenger capacity, and it affected segments of aviation that included the growing air taxi industry. (See Sep 7, 1964, and Dec 1, 1978.)

Mar 15, 1971: FAA adopted a **marking and lighting standard for identifying transmission lines** and their support structures that could constitute a potential hazard to air navigation. The standard called for three sequentially flashing white lights of high intensity to be installed on transmission line support structures. Each light would flash 60 times per minute. These lights replaced unlighted spherical markers on transmission lines, which provided little or no help to pilots at night or in bad weather.

Mar 24, 1971: **The Senate in effect terminated the U.S. civil supersonic transport (SST) program** when it voted against the appropriation of $289 million to continue SST prototype development. The House of Representatives had voted down the SST appropriation on Mar 18, 1971. Later, in May 1971, pro-SST forces in the House seeking to revive the program succeeded by a vote of 201-197 in amending a Department of Transportation supplemental appropriations bill to include $85.3 million for SST development; however, the Senate struck out the amendment by a vote of 58-37. (See Dec 3, 1970, and Oct 12, 1971.)

Mar 25, 1971: A U.S.-Icelandic agreement provided that the United States would reimburse Iceland for **flight inspection of U.S.-owned military air navigation aids within Iceland**. The inspections had previously been performed by FAA, which since 1966 had been helping Iceland to establish a flight inspection unit.

Mar 29, 1971: The FAA Administrator delegated to the Federal Air Surgeon the **authority to grant or deny airman petitions for a medical exemption** under a rule effective this date. Previously, the Administrator granted or denied such petitions after receiving the recommendation of an advisory panel of medical specialists. Under the new rule, the services of this panel were no longer required; however, the Federal Air Surgeon consulted with medical specialists where appropriate. Petitions involving a policy determination were referred, with the Federal Air Surgeon's recommendations, to the Administrator for final action.

Mar 31, 1971: The **first grant under the Airport Planning Grant Program** went to the Massachusetts Aeronautics Commission for the development of a statewide comprehensive airport system plan. (See May 21, 1970.)

Apr 2, 1971: FAA **realigned its regional field structure** in the contiguous 48 States to conform generally with the President's plan for a common pattern of Federal regional boundaries and regional headquarters. In March 1969, the President had announced a plan calling for 10 standard Federal regions encompassing all 50 States to facilitate service to the public in matters cutting across departmental or agency lines. Conformance with this plan required FAA to establish **four new regions**--New England, Great Lakes, Rocky Mountain, and Northwest--and to realign the boundaries of four of its five preexisting regions in the contiguous 48 States. The resulting nine regions in the contiguous states, their regional headquarters, and the states each encompassed, were:

* New England (Boston): Maine, New Hampshire, Rhode Island, Massachusetts, Connecticut, and Vermont.
* Eastern (New York City): New York, Pennsylvania, Virginia, Maryland, West Virginia, Delaware, New Jersey,
  and the District of Columbia.
* Southern (Atlanta): North Carolina, South Carolina, Georgia, Florida, Mississippi, Alabama, Tennessee, and Kentucky.
* Great Lakes (Chicago): Illinois, Indiana, Minnesota, Michigan, Ohio, and Wisconsin.
* Central (Kansas City): Missouri, Iowa, Kansas, and Nebraska.
* Southwest (Fort Worth): Texas, Arkansas, Louisiana, Oklahoma, and New Mexico.
* Rocky Mountain (Denver): Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.
* Northwest (Seattle): Washington, Idaho, and Oregon.
* Western (Los Angeles): California, Arizona, and Nevada.

FAA was authorized certain deviations from the President's plan: (1) the agency did not establish a region headquartered at Philadelphia, but instead combined the states that the plan allocated to that region with those allocated to New York; (2) FAA's Alaskan Region was not combined with the region headquartered at Seattle; (3) and Hawaii continued as the main part of FAA's Pacific Region, headquartered at Los Angeles, rather than becoming part of a region headquartered at San Francisco. Thus, FAA had 11 regions for the 50 States. (See Jun 12, 1981.)

At the same time that FAA's regional realignment went into force, **FAA abolished its area offices in the contiguous 48 States** (see Nov 22, 1968), and the responsibilities of the area managers were transferred to the appropriate regional directors. Area coordinators without line authority were stationed at seven locations formerly having area offices (Albuquerque, Houston, Memphis, Miami, Salt Lake City, San Francisco, and Washington, D.C.). In addition, Cleveland and Minneapolis each had a local coordinator with responsibility limited to the city's metropolitan jurisdiction. These coordinators served as a point of contact for the public on issues involving more than one program area, represented the regional director

with the community on nonprogram matters, and advised and assisted program elements of FAA on activities that crossed program lines. **In Alaska, FAA also closed the Fairbanks, Juneau, Nome, and King Salmon Area Offices** (see May 22, 1969), and area coordinators assumed services formerly performed by those offices.

Apr 2, 1971: The Administrator gave air traffic control facilities **increased flexibility in granting pilot routing and altitude requests** for all types of aircraft. Conditions permitting, controllers were empowered to: relax the requirements for preferential routings; assign the most economical altitudes; discontinue standard instrument departures; and honor requests for direct radar vectors. These relaxed procedures were made possible by a temporary **decline in air traffic during fiscal 1971** (the first such decline since fiscal 1961), which coincided with a general slowdown in the U.S. economy.

Apr 6, 1971: **FAA required pilot familiarization with all available information concerning the runway lengths** at airports of intended use, as well as with takeoff and landing distances appropriate to the aircraft being used. This mandatory preflight action replaced various general operating practices.

Apr 19, 1971: FAA issued its first type certificate for a West German helicopter, the **Messerschmitt-Bolkow-Blohm BO-105A**.

Apr 19, 1971: The Soviet Union launched **Salyut 1, the first of a series of orbiting space stations**. Soviet cosmonauts used Soyuz spacecraft to reach these stations for increasingly long missions, including a stay of over 200 days aboard Salyut 7 in 1982. (See May 14, 1973.)

Apr 26, 1971: Intercom noted that Ruth M. Dennis would become the **first woman to serve as chief of a Flight Service Station** when she reported to the San Diego FSS during the week. Dennis had joined the Civil Aeronautics Authority in 1944.

Apr 29, 1971: FAA established **four transcontinental high-altitude area navigation routes** between New York City and Los Angeles and Oakland, Calif. (See Oct 1, 1969, and Mar 6, 1972.)

Apr 29, 1971: FAA established a **V/STOL (vertical/short takeoff and landing) Special Projects Office** under the Associate Administrator for Engineering and Development to stimulate and encourage the private development of economically viable V/STOL systems and provide a focal point for all of FAA's V/STOL development activities. The new office would formulate and maintain a comprehensive agency V/STOL development plan. (See Sep 23, 1968, Sep 17, 1971, and Jul 26, 1972.)

May 3, 1971: FAA's **Management Training School at Cameron College, Lawton, Okla., admitted its first class**. The school's establishment had been recommended by the Corson Committee (see Jan 29, 1970). FAA required all supervisors and middle managers to attend an appropriate three-week course, and refresher courses were offered. Some 50,000 FAA personnel attended the school before it closed on Jul 3, 1987. (See Jul 1, 1972 and Mar 14, 1986.)

May 14, 1971: In United States v. Lopez, the United States District Court for the Eastern District of New York declared FAA's **antihijacking profile system constitutional** (see Jul 17, 1970). The court found that the system had provided the "reasonable suspicion" required to justify a personal search. On another key point, that of the characteristics contained in the profile for identifying potential hijackers, the Court said that careful adherence to the absolute objectivity and neutrality of the system as designed would avoid discrimination on the basis of religion, origin, race, or political views.

The case arose when two men preparing to board a New York-San Juan flight were arrested and charged with concealing a packet of narcotics. Charges against one of the men were dropped. The other man--the defendant in this case--was acquitted on a motion to suppress the evidence, which the court found had been gathered outside the government's system to deter and apprehend hijackers.

May 16, 1971: Gene D. Sims became the **first woman to serve as chief of an FAA airport traffic control tower**, taking over supervision of the Cuyahoga County (Ohio) Airport tower upon its commissioning. Sims, who had joined FAA in 1956,had served as a crew chief at the Akron-Canton (Ohio) Airport tower since 1962.

May 21, 1971: FAA established the **Office of General Aviation**, at the same time abolishing the Office of General Aviation Affairs, which formed the nucleus of the new office. (See Aug 31, 1962 and Sep 10, 1978.)

Jun 4, 1971: FAA issued the first supplemental type certificate approving installation of a **nitrogen fuel-tank inerting system** in a civil aircraft to protect against accidental ignition of fuel vapors. The agency installed the inerting system, developed under an FAA contract by Parker Hannifin Corporation, in a DC-9 aircraft. The type certificate applied to this specific aircraft only.

Jun 8, 1971: FAA established a **Behavioral Sciences Division** in the Office of Aviation Medicine. The new division, to which the agency transferred the functions of the Psychology Staff and the Psychiatric Assistant, provided advice on psychiatric and psychological matters in support of employee and occupational health programs, the air traffic control specialist health program, manpower management programs, and FAA's effort to combat aircraft piracy and sabotage, including the selection and training of air marshals.

Jun 8, 1971: FAA established the **quality assurance systems analysis review (QASAR) program** to improve surveillance activities of the quality control systems used by aviation-product manufacturers and their parts suppliers. This program provided for a systems analysis evaluation of the aeronautical manufacturer's total organization through in-depth and independent evaluations of the manufacturer conducted by the Flight Standards Service's QASAR teams, and continuing evaluations by Engineering and Manufacturing District Offices as part of their day-to-day certificate management responsibilities. On Oct 15, 1971, FAA established an Aeronautical Quality Assurance Field Office in the regions to carry out the responsibilities of the QASAR program as well as the functional responsibilities of the Systemsworthiness Analysis Program. (See Jun 1966.)

Jun 12, 1971: The **first passenger death in a domestic hijacking** incident occurred on a TWA aircraft bound from Albuquerque to New York. The hijacker had forced his way aboard the Boeing 727 aircraft during a scheduled stop at Chicago's O'Hare International Airport, seized a stewardess, and demanded to be flown to Vietnam. The passenger was killed attempting to aid the stewardess. When the medium-range aircraft landed at New York's Kennedy International Airport for substitution of a long-range aircraft, the hijacker was wounded and arrested. (See Mar 17, 1970.)

Jun 15, 1971: FAA moved its **Southeast Asian International Field Office** (IFO) from Manila, Republic of the Philippines, to Agana, Territory of Guam. (The Manila office was officially closed Jun 30, 1971.) This IFO provided aviation services to Burma, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, South Vietnam, Thailand, Nauru, the Trust Territory of the Pacific Islands, and Guam.

Jun 18, 1971: FAA announced a joint program with the military services designed to **minimize the number of military aircraft flying under visual flight rules (VFR)**. The purpose of the program was to enhance the efficiency of the common civil-military airspace system and reduce the midair-collision hazard by bringing military flights under the direct control of FAA's air traffic control facilities. To the maximum extent practicable, military flights in fixed-wing aircraft would be conducted in accordance under instrument flight rules (IFR). The danger of mixing of high-speed IFR and VFR traffic had been tragically illustrated by a **midair collision on June 6, 1971**, near Duarte, Calif., of a DC-9 airliner and a U.S. Marine Corps F-4B. All 49 occupants of the DC-9 and one of the two occupants of the F-4B were killed. The airliner was under IFR control; the military plane was flying VFR.

Jul 1, 1971: The production model of the **Cessna Citation first flew**. In February 1972, FAA type-certificated this 8-seat, pressurized, executive turbofan aircraft.

Jul 1, 1971: FAA's **first modular airport traffic control tower** went into operation, at the Owensboro-Davies County (Ky.) Airport. The prefabricated tower, designed primarily for low traffic activity airports, was erected at the airport in a matter of weeks. The tower was equipped with solid state communications equipment.

Jul 8, 1971: FAA put into operation a **jet-propelled boat to conduct search and rescue operations** in the event of a crash landing in the Potomac River near Washington National Airport. The 22-foot watercraft could accommodate all occupants of the largest airliner serving the airport.

Jul 27, 1971: FAA put into operation two **mobile lounges that could be raised and lowered to accommodate varying aircraft floor heights** at Dulles International Airport. The new lounges, which carried up to 150 passengers were designed to mate with the Boeing 747, Lockheed L-1011, and McDonnell Douglas DC-10, and other commercial aircraft. The older model mobile lounges had been fitted with a portable stairway to bridge the space between the lounge ramp and the newer and higher aircraft; however, this attachment did not protect passengers from adverse weather. (See Apr 2, 1959.)

Jul 1971: The Departments of Defense and Transportation and the National Aeronautics and Space Administration issued a national plan for **developing a microwave landing system (MLS)** for civil-military common use. The plan, designed to meet all civil and military needs for instrument landing systems at domestic and foreign airports during this century, outlined two complementary development efforts: an industry program to produce prototype equipment at the earliest possible date; and a series of government programs concerned with such issues as validation, the investigation of subsystem concepts and techniques, and the application of MLS to civil-military aircraft operations.

MLS was intended to replace the instrument landing system (ILS), a unidirectional system employing VHF and UHF radio frequencies. The ILS, which had remained essentially unchanged since its introduction in the 1940s, suffered from limitations that included dependence on a fairly smooth airport surface to transmit an acceptable signal. Consequently, the system could not be installed in some areas without expensive reconfiguring of the terrain. The construction of a new hangar or even the accumulation of snow could adversely affect the system. MLS would provide precision, high-integrity guidance that would be relatively insensitive to the effects of terrain, structures, other aircraft, and weather. It could operate at airports where the conventional ILS could not operate because of terrain irregularities. Moreover, the new system would make more flight paths available because it would employ a wide-angle scanning beam, as opposed to the unidirectional beam of the old system.

On Jul 26, 1972, the responsibility for developing the new system was entrusted to a newly formed Microwave Landing System Branch within FAA's Systems Research and Development Service. (See Jun 19, 1970, and Jan 27, 1972.)

Aug 4, 1971: Recognizing that noise was a major source of environmental pollution, the Department of Housing and Urban Development (HUD) issued **guidelines for housing construction near high-noise areas**, including airports. HUD hoped to discourage the construction of new dwelling units on sites that had, or were projected to have, an unacceptable noise exposure by withholding financial assistance for their development. For existing buildings located in a noisy environment, the Department encouraged sound-proofing, provided a structure's life was not substantially increased.

Aug 10, 1971: FAA abolished the Bureau of National Capital Airports as a bureau, renamed it **National Capital Airports**, and attached it to the Airports Service, which assumed responsibility for operating Washington National and Dulles International Airports. (See Dec 5, 1966 and Jun 11, 1974.)

Aug 11, 1971: FAA expanded requirements for an **anticollision system of flashing aviation-red or aviation-white lights** for night operations. The agency mandated that the system be installed on all powered U.S. civil aircraft with a standard airworthiness certificate by Aug 12, 1972. (Aircraft with experimental, restricted, or provisional type certificates were exempted.) Previously, FAA had required the anticollision light system only on large aircraft and on certain small aircraft as specified in their airworthiness certificates. The agency required this system in addition to the position-light system carried by all aircraft on their tails and wingtips.

Aug 30, 1971: Effective this date, **FAA required the fastening of safety belts by each occupant on U.S.-registered civil aircraft during takeoff and landing**. The rule excepted occupants of airships and also children under two years if held by an adult. Previously, the only passengers that FAA had required to fasten their belts during takeoff and landing were those transported by scheduled air carriers and commercial operators of large aircraft. The new rule required the pilot in command to ensure that all persons aboard had been notified to fasten their safety belts prior to takeoff or landing.

Sep 4, 1971: An **Alaska Airlines 727 struck a mountain slope** while attempting a nonprecision instrument landing approach to Juneau airport, killing all 111 persons aboard. The National Transportation Safety Board determined the probable cause to be a display of misleading navigational information concerning the flight's progress along the localizer course, which resulted in premature descent.

Sep 14, 1971: FAA signed an agreement with NASA for joint participation in **flight simulation research and development** projects. Under the agreement, FAA provided technical personnel to coordinate the agency's R & D projects with NASA officials at the NASA Ames Research Center at Moffet Field, Calif. Included among the research projects were aircraft handling qualities and the development of certification criteria for new aircraft, such as short takeoff and landing (STOL) aircraft.

Sep 14, 1971: FAA transferred the **air marking and skyway programs** to the Office of General Aviation from the Facility Installation Service.

Sep 15, 1971: The Department of Transportation issued an in-depth **study of general aviation safety**, excluding "for hire" operations. The study was conducted by members of the staff of the Assistant Secretary of Transportation for Safety and Consumer Affairs, FAA officials, and general aviation consultants. Areas of concern identified were: inadequate pilot and flight instructor certification requirements; the lack of periodic pilot proficiency checks; the inability of flight service stations to meet the flight operation requirements of the general aviation community, especially its need for accurate and current weather data; and the lack of standard traffic patterns for uncontrolled airports.

The study's recommendations included: conducting a biennial proficiency flight review of every pilot by a certificated flight instructor; placing increased emphasis on the general aviation accident prevention program; increasing the skill, knowledge, and experience requirements of flight instructors; implementing flight service station modernization and reconfiguration; improving the reporting of weather information to the general aviation pilot; strengthening general aviation's position in FAA's headquarters; publishing the Federal Aviation Regulations in separate parts, rather than the 11-volume format used at the time; and adopting the standard traffic-pattern rule at all uncontrolled airports.

Sep 16, 1971: The National Transportation Safety Board ruled that **pilots who had suffered a stroke could not be automatically denied a first-class medical certificate**. The Board stated that each pilot's case must be treated separately rather than on the basis of general stroke statistics and predections. The ruling reversed FAA's denial of a first-class medical certificate to a pilot who had suffered a "pure motor stroke" in 1964. The Board noted that the pilot had met the pertinent rules and standards since the stroke, and hence his general medical condition allowed him to safely exercise the privileges of the certificate.

Sep 17, 1971: The **first grant related to vertical/short takeoff and landing facilities** under the airport planning grant program went to the New Jersey Department of Transportation to study the development of a special facility to accommodate V/STOL aircraft. (See Apr 29 and Oct 17, 1971.)

Sep 23, 1971: The United States and 29 other nations signed the Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation (known as the **Sabotage or Montreal Convention**) at a conference held under the auspices of the International Civil Aviation Organization (see Sep 11, 1970). This agreement was directed against offenders who commit acts of violence against persons aboard civil aircraft in flight, or who destroy or endanger such aircraft through means that include sabotage, interference with air navigation facilities, and communication of false information It placed an obligation on contracting states to extradite such offenders or submit their cases to prosecutorial authorities. The convention would go into force 30 days following deposit of instruments of ratification by 10 of the original signatory states. The U.S. deposited its instruments of ratification on Nov 1, 1972, and the treaty went into force on Jan 26, 1973.

Oct 1, 1971: FAA established the **Airway Facilities Service**, combining the Systems Maintenance and Facility Installation Services. This action brought the Washington headquarters in line with the regional organization. (See May 16, 1962 and Jan 19, 1970.)

Oct 4, 1971: FAA commissioned the **first operational Automated Radar Terminal System (ARTS) III**, at Chicago's terminal radar control facility at O'Hare International Airport. The basic ARTS III, when added to existing airport surveillance radars, permitted the display of such flight information as aircraft identity and altitude directly on the radarscopes for aircraft equipped with transponders. (See Feb 13, 1973.)

Oct 12, 1971: **FAA abolished the Office of Supersonic Transport Development and established the Supersonic Transport Office** under the Associate Administrator for Engineering and Development to continue SST engineering and research activities. The agency also established a SST Contracts Branch in

the Logistics Service to perform the contracting and procurement functions for the negotiation, administration, and termination of SST contracts. (See Mar 24, 1971.)

Oct 14, 1971: FAA completed **lowering the base of area positive control from 24,000 to 18,000 feet over the entire contiguous 48 States** with the lowering of the base over the southeastern United States. The base had previously been lowered over the northeastern and north central United States on Nov 9, 1967; the northwestern and northern tier states on May 27, 1971; the west central states on Jul 22, 1971; and the central and southwestern states on Aug 19, 1971.

The action meant that all aircraft flying between 18,000 and 60,000 feet over the contiguous United States would receive separation services under direct FAA air traffic control. The agency had considered the measure for a number of years, since the increasing closure speeds of aircraft reduced the time available for pilots operating under Visual Flight Rules to detect potential collisions and take evasive action. (See Nov 9, 1967.)

Oct 17, 1971: Opening of the **first officially designated STOLport solely for short takeoff and landing aircraft** took place at Disney World, near Orlando, Fla. (The term "STOLport" had previously been applied to that portion of an airport reserved for STOL aircraft, and not to the entire facility.) The facility was the first such site in a projected intrastate STOL transportation system. (See Aug 5, 1968, and Jul 26, 1972.)

Nov 18, 1971: Public Law 92-159 **prohibited airborne hunting of birds, fish, and other animals**. The act prescribed criminal penalties for shooting, attempted shooting, or harassing of wildlife from an aircraft.

Nov 23, 1971: A Federal arbitrator approved a **two-man cockpit crew for Aloha's 737 flights**, basing his decision on the low-density, fair-weather conditions under which Aloha operated. On May 8, 1973, however, a federal arbitrator's ruling in another dispute approved a **three-man crew for the 737 flights of Wien Air Alaska**. (See Jul 21, 1969 and Nov 18-27, 1974.)

Nov 24, 1971: The **first in a series of hijackings involving extortion** occurred when a passenger on a flight from Portland to Seattle successfully demanded $200,000 and four parachutes, then parachuted from the rear stairway of the Boeing 727. The hijacker--who used the name Dan Cooper, but became known as D.B. Cooper in the press--was never found. (In Feb 1980, however, tattered bills from his loot were discovered along the Columbia River in Washington.) Another incident involving a demand for ransom and parachutes occurred on Dec 24, 1971, and 17 more extortion attempts on U.S. air carriers were made during the next 6 months. (See Mar 7-9, 1972.)

Nov 27, 1971: An **amendment to the Airport and Airway Development Act** of 1970 (see May 21, 1970), Congress specified that:

* No trust fund money could be appropriated to carry out any program or activity under the Federal Aviation Act other than "acquiring, establishing, and improving air navigation facilities. . ."
* Any excess of trust fund receipts over airport-airway capital investments could be applied toward the cost of administering the airport and airway development programs.
* Funds equal to the minimum amounts authorized for each fiscal year for airport and airway development must remain available in the trust fund until appropriated for airport-airway development.

Congress passed this amendment when the Nixon administration submitted a budget request for fiscal year 1972 that proposed to obligate less than the minimum annual levels specified in the Airport-Airway Act for airport-airway capital investments. The Department of Transportation, in a move dictated by the newly formed Office of Management and Budget, proposed to use the difference between the revenues generated by user charges and the amounts requested for airport-airway development to help meet the operational needs of air navigation and air traffic control. This proposed use of the trust fund for noncapital expenditures was substantial. For example, the submission proposed to pay the salaries of all but 6,253 of FAA's 54,550 employees with trust fund money generated by user taxes. Such use of trust fund money would have been in line with Congress's intent only if the administration had requested funds for airport and airways development at the minimum levels authorized by the act. The administration's requesting less than the minimum was seen by Congress as an attempt to raid the trust fund for operational expenses.

In addition, the amendment **extended the deadline for submission to Congress of the report of the Aviation Advisory Commission** for one year (see Jan 3, 1973), and also **extended the**

deadline for certificating airports serving air carriers for one year (to May 21, 1973: see that date). (See Jun 18, 1973.)

Dec 2, 1971: FAA established a program to expedite departures of general aviation aircraft at certain airports when local weather conditions precluded VFR operations. Known as **"card-a-clearance,"** this program used preprinted cards containing three standard departure clearances. By referring to these cards, pilots avoided long and repetitious clearances on congested frequencies and also reduced the possibility of misunderstanding of air traffic control instructions. The program was of special value at airports with a heavy volume of general aviation traffic and recurrent smog or fog problems. Prior to implementation of this program, FAA conducted a successful year-long test of the procedures at three general aviation airports in the Los Angeles Basin.

Dec 31, 1971: FAA terminated its four-year-old policy of granting **immunity from enforcement action to airmen reporting near midair collisions**. FAA had adopted this policy on Jan 1, 1968, to encourage full reporting of near midair collisions, and thus gather adequate data for developing midair collision prevention programs. In 1969, FAA published a midair collision report based on data collected during 1968; data collected in subsequent years substantiated the findings of the 1969 report. FAA saw no need, therefore, to continue its immunity policy. (See Jul 15, 1969, and Apr 8, 1975.)

***1972**

Jan 3, 1972: Under a policy change effective this date, certain **privately owned public-use airports became eligible for FAA facilities** such as control towers, airport surveillance radars, terminal navigation aids, instrument landing systems, visual approach aids, and related equipment and services. Previously, only publicly owned airports were eligible for this assistance. The agency described the new policy as a response to a shortage of facilities serving the growing civil air fleet and to mounting opposition to development of new airports.

Jan 5, 1972: Betty C. Dillon, a career civil servant, became the **first woman to be sworn in as Minister of the U.S. Government to the International Civil Aviation Organization (ICAO)**.

Jan 21, 1972: FAA commissioned the **first operational Category IIIa instrument landing system** at Dulles International Airport. The system, a British-made STAN 37/38, allowed qualified crews flying properly equipped aircraft to land with a runway visibility range (horizontal visibility) of 700 feet and a decision height (vertical visibility) of zero. Previously, the lowest landing minimums had been a 100-foot decision height and a 1,200-foot RVR, the Category II criteria (see Nov 3, 1967). FAA outlined criteria that had to be met before Category IIIa minimums could be approved--airport and ground facilities, airborne systems, pilot training and proficiency requirement, operations procedures, and maintenance standards--in an advisory circular published on Dec 14, 1971. (The Lockheed L-1011 became the first newly certificated aircraft to be equipped with flight guidance equipment that met the Category IIIa criteria.) (See Sep 1972.)

Jan 26, 1972: FAA began a series of briefings for manufacturers as part of a **new program to promote the export of U.S. aeronautical goods and services**. The action was a response to requests by aeronautical manufacturers for the government to develop mechanisms to help them deal with stiffening foreign competition in world markets. The program involved: providing information on export opportunities through reports on the implementation of regional air navigation plans of the International Civil Aviation Organization; and formulating plans for eventual revision of bilateral airworthiness agreements as a way of facilitating U.S. exports and promoting worldwide commonality in airworthiness standards. (See Calendar year 1974.)

Jan 27, 1972: The Secretary of Transportation signed an agreement transferring certain **emergency preparedness functions** from the Civil Aeronautics Board (CAB) to FAA. The agreement applied to the air transportation activities and services provided by U.S. scheduled and supplemental air carriers operating under the economic regulatory authority of CAB and assigned to the War Air Service Program. It excluded air carrier services provided to the Department of Defense under the Civil Reserve Air Fleet Program. Under the agreement, FAA had responsibility for: assessing enemy-inflicted damage relating to air carriers; assisting air carriers in submitting claims for and restoring materials and services needed to resume air service deemed essential by CAB.

Jan 27, 1972: Secretary of Transportation John Volpe announced that FAA had awarded contracts to six companies for the initial phase of a planned five-year **development program for a microwave landing system (MLS)** for use by civil and military aircraft. (See Jul 1971 and Mar 14, 1973.)

Jan 1972: FAA announced the **Executive Development Program** to identify and develop individuals in supervisory and managerial positions (GS-14 and -15) who had potential for occupying the agency's executive positions. On Sep 17, an initial group of eight candidates began their training.

Feb 2, 1972: FAA published a rule requiring scheduled air carriers and certain commercial operators of large aircraft to implement a **passenger and baggage screening** system acceptable to the Administrator before Feb 6, 1972 (see Jul 17, 1970, and Mar 7-9, 1972). The agency stated its opinion that the "simple and inexpensive" system used by some carriers would have prevented the majority of recent hijackings if used to the fullest extent possible (see Jan 1969).

On the same day, at FAA request, the Federal Communications Commission issued a notice which informed broadcasters and FCC licensees that the Communications Act of 1934 **prohibited unauthorized broadcast of FAA air-to-ground communications**. This action followed instances in which FAA's communications were monitored and rebroadcast, seriously hampering FAA's efforts to control acrial piracy.

Feb 7, 1972: FAA announced that **air traffic controllers** fired for their activist roles in the 1970 strike could apply for re-employment. Of the 52 controllers dismissed, 46 applied and were rehired. (See Jan 29, 1971, and Oct 20, 1972.)

Feb 10, 1972: FAA consolidated the **National Airspace System Program Office (NASPO)** with the Systems Research and Development Service. On Jul 26 FAA abolished NASPO, established in 1966 (see Apr 25, 1966). As the installation of **NAS En Route Stage A** at FAA's ARTCCs was proceeding satisfactorily, there was no further need for a separate office to manage this program. Also, effective Jul 26, FAA transferred NASPO's facilities systems and ARTCC building program functions to the Airway Facilities Service.

Feb 29, 1972: Following a nationwide election, the **National Association of Air Traffic Specialists (NAATS)** received Department of Labor certification as the national exclusive representative for all Flight Service Station specialists, some 3,000 employees. On Jun 1, 1972, FAA and NAATS concluded an agencywide collective bargaining agreement, the first such contract between FAA and a national labor organization and the first in a series of FAA/NAATS contracts.

Mar 6, 1972: FAA announced the establishment of an FAA-**Industry Area Navigation Task Force** to advise and assist the agency in the further application of its area navigation system. The action followed a Jan 24-25, FAA-sponsored international symposium on area navigation that pointed up a need to review FAA's program. In subsequent months the task force conducted in-depth studies and tests to assess the system's value and to determine how area navigation could most effectively be implemented. The test results generally confirmed the advantages previously supposed (see Oct 1, 1969) -- that area navigation provided cost benefits by allowing an aircraft en route to stay higher longer and thus conserve fuel, and to arrive at the descent point at precisely the correct time for a letdown without delays. In addition, by extensively analyzing terminal area operations, the tests confirmed that area navigation equipment could be used to move traffic at the same level of efficiency as radar vectors while reducing controller workload by restoring greater responsibility to the cockpit. **By the end of fiscal 1973, a nationwide system of high-altitude area navigation routes had been established** consisting of approximately 156 route segments.

Mar 7-9, 1972: Sabotage incidents prompted **new security measures**. On Mar 7, a bomb planted as part of an extortion plot against Trans World Airlines was discovered and defused aboard an airliner at New York's Kennedy Airport. On Mar 9, another bomb damaged a TWA airliner parked at Las Vegas, and a third was found aboard a United Air Lines jet at Seattle. That same day, President Nixon ordered into immediate effect an FAA rule published on Mar 7 that had required scheduled air carriers and certain commercial operators of large aircraft to submit written security programs no later than Jun 5, 1972. The President's directive required the airlines to implement their programs immediately, and to submit them for formal approval by May 8. The programs were to prevent or deter unauthorized persons, baggage, or cargo from entering the carrier's aircraft, and were to include the procedures the carrier intended to use in the

mandatory passenger screening system (see Feb 2, 1972). The rule also specified certain procedures to be followed in the event of a bomb or air piracy threat.

On Mar 9, the President also ordered that new security rules for airport operators be expedited. On Mar 18, 1972, FAA published a rule applicable to operators of airports regularly served by air carriers using large aircraft. Such operators were required to take prescribed actions to prevent or deter unauthorized access to designated air operations areas, and to submit written security programs for FAA approval by Jun 16, 1972. (See Jan 3, 1989.)

On Mar 15, a cabinet-level task force formed by President Nixon and chaired by Transportation Secretary Volpe approved the following steps:

* Increased personnel for FAA's Security Task Force.
* Deployment of sky marshals from airborne duty to posts at major airports.
* Increased research and development funding for weapons and explosives detection systems.
* Use of trained dogs for detection of explosives at major airports and the training of additional dogs.
* Expedited prosecution of extortion and hijacking suspects.

(See Dec 5, 1972.)

Apr 7, 1972: The Washington Metropolitan Transit Authority Board gave final approval to a plan for **elevated tracks and a station on the rapid rail transit line to run through Washington National Airport**. FAA had preferred an underground station feeding directly into the airport's terminal, arguing that such an arrangement would be more convenient, aesthetically preferable, and would allow greater flexibility in future development. The Board countered that an underground station would cost $30 million more than the elevated route and would prevent completion of the system in time for the 1976 Bicentennial celebration.

Because work could not begin without right-of-way permission from FAA, which operated the airport, the dispute threatened a costly delay in Metro's construction. The White House broke the impasse by approving the elevated plan, basing its decision on a recommendation by the Office of Management and Budget that emphasized budgetary considerations. The first stage of Washington's rapid rail system opened to the public on Jul 1, 1976, but the airport station did not open until after the close of the Bicentennial year.

Apr 11, 1972: FAA established the **General Aviation Accident Prevention Industry Advisory Committee**, implementing a recommendation of a 1971 DOT report on general aviation safety (see Sep 15, 1971) and providing an advisory body for FAA's General Aviation Accident Prevention Program (see Nov 30, 1970). The 16-member FAA-Industry panel was slated to function for two years, but was renewed for another term and was not officially terminated until Aug 30, 1976.

Apr 17, 1972: FAA placed the **Office of International Aviation Affairs** under the direction of the Associate Administrator for Plans, a change made to reduce the number of people reporting directly to the Administrator. In July 1973, however, FAA placed the office under an assistant administrator reporting directly to the Administrator, thus restoring the previous arrangement.

May 1, 1972: New **crashworthiness and passenger evacuation standards** for transport category aircraft became effective this date. The action upgraded requirements in areas that included: seats, berths, safety belts, and harnesses; stowage compartments; items in the passenger or crew compartments that might cause injury in turbulence or interfere with evacuation; cabin interior fire protection; emergency evacuation procedures; emergency exits (their arrangement, marking, lighting, and access); emergency lighting; briefing passengers before takeoff; and structural design to minimize fire hazard due to fuel spillage in the event of partial or complete failure of the landing gear. (See Sep 20, 1967, and Jun 26, 1978.)

May 16, 1972: President Nixon signed into law the **Air Traffic Controllers Career Program Act** (Public Law 92-297). The act, an outgrowth of a Corson Committee recommendation (see Jan 29, 1970), authorized controllers to retire after 25 years of active duty, or at age 50 if they had 20 years of active service. The new law also established a mandatory age for retirement at 56, with exemptions at the discretion of the Secretary of Transportation up to age 61. (Normal voluntary retirement for Federal employees came at age 55 after 30 years service, or at age 60 after 20 years; mandatory retirement came at age 70.) The act also provided for a "second career program" of up to two years of training at government expense for controllers who had to leave traffic control work because of medical or proficiency disqualification. The act became effective on Aug 14 and was implemented by FAA on Sep 8.

May 27, 1972: **Transpo 72**, a mammoth display of modern transportation technology, with more than 400 exhibits and demonstrations spread many acres, opened at Dulles International Airport. The Department of Transportation staged the public exposition to provide a marketing showcase for advanced transportation systems, equipment, and concepts, and to increase public awareness of the importance of the transportation industry. The show remained open until Jun 4.

Jun 15, 1972: Effective this date, **FAA lowered the numbers of flight attendants required on airliners** with certain seating capacities. One flight attendant was now required for planes with 10-50 passenger seats, while on larger aircraft the ratio would be one attendant for every 50 passenger seats or additional fraction of 50 seats. The previous rule had established a standard that began with one attendant for planes with 10-44 passenger seats (see Jun 7, 1965). FAA stated that the change was made possible by upgraded safety requirements for transport category aircraft adopted in recent years (see May 1, 1972).

Jun 19, 1972: A **24-hour worldwide stoppage of airline traffic** declared by the International Federation of Air Line Pilots Associations took place. This action, intended to dramatize the need for sterner measures against hijackers, brought to a standstill domestic and international airline operations in more than 30 countries. The strike officially began at 2:00 a.m. (EST) and was supported by more than 40 of the Federation's 64 units in 62 countries; in the United States, however, following a Federal restraining order on Jun 18, only 10 percent of the Air Line Pilots Association's members joined in the job action. In addition, pilots in Australia, Japan, the Philippines, and most Arab and Communist countries refused to participate in the protest.

Jun 24, 1972: Responsibility for the civil **administration of Wake Island was transferred from FAA to the Air Force** (see Sep 4, 1962). This action followed a review of FAA's role on this island, once an important fueling stop for civil and military aircraft crossing the Pacific. With the advent of long-range jet aircraft, civil use of the island's facilities decreased and the Air Force became the principal user. In addition to its civil administration responsibilities on Wake, FAA had maintained the airport, airport traffic control tower, the international flight service station, and various air navigational aids. (After the transfer FAA continued to maintain the air navigation facilities on Wake and provide air traffic control services, until Jun 30, 1973.)

Jun 1972 **Hurricane Agnes** caused river flooding and massive property damage in Virginia, Maryland, Pennsylvania, and New York. FAAers throughout the country contributed to a fund to assist their colleagues affected by the storm, and air traffic controllers and other personnel organized an air lift to provide supplies. The Civil Air Patrol, airlines, and the military contributed to the air lift, which expanded from a mission to assist FAA people to include help for thousands of others in the flooded areas.

Jul 1, 1972: FAA transferred responsibility for its **Management Training School** from the Office of Training to the Aeronautical Center. (See May 3, 1971.)

Jul 1, 1972: New Federal Aviation Regulations (Part 152) prescribing policies and procedures for **administering FAA's Airport Development Aid Program (ADAP) and Planning Grant Program (PGP)** went into effect. The new rule included provisions concerning the economic, social, and environmental effects of airport expansion or site selection, as required by the legislation that had established the two programs (see May 21, 1970). FAA required coordination with state, local, and regional agencies on proposed airport construction projects, as well as public hearings on each project.

Jul 20, 1972: FAA **redesignated the Pacific Region the Pacific-Asia Region**. At the same time, the agency transferred the responsibility for the geographic area of the People's Republic of China to this region from the Europe, Africa, and Middle East Region. (See Apr 2, 1971.)

Jul 26, 1972: FAA retitled the V/STOL (vertical/short takeoff and landing) Special Projects Office the **Quiet Short-Haul Air Transportation System Office**. The new title better described the broadened functions of the office, which was charged with fostering a short-haul air transportation system acceptable to the public. (See Apr 29, 1971, and Jun 11, 1974.)

Aug 1, 1972: FAA implemented a new standard **"Get-'Em-High Earlier" departure procedure** to reduce jet aircraft noise over airport communities nationwide. The new departure procedure, developed jointly with the Air Transport Association, was to be used by 23 U.S. airlines while operating out of most

of the nation's air carrier airports. The pilots would climb at full power to 1,500 feet, instead of 1,000 feet under the old system. Noise relief due to the higher alititude would be most noticeable from three to six miles from lift-off. The new "Get-'Em-High" procedure supplemented the existing "Keep-'Em-High" program. (See Feb 4, 1971, Dec 23, 1976, and Jan 19, 1979.)

Aug 1, 1972: FAA inaugurated the **En Route Weather Advisory Service (EWAS)** program at four Flight Service Stations: Seattle, Portland, Oakland, and Los Angeles. This service, designed to reduce weather-related general aviation aircraft accidents, provided en route pilots with currrent weather information along their intended route. Flight Service Station specialists trained in the collection and dissemination of aviation weather data manned the EWAS units. Each unit, in addition to obtaining weather information through normal teletype and facsimile channels, was linked by direct telephone line with the nearest National Weather Service forecast office. **FAA completed the program in the summer of 1978, under the name En Route Flight Advisory Service (EFAS)**, when it commissioned the service at the last of 44 designated Flight Service Stations.

Aug 1, 1972: **Northeast Airlines merged into Delta Air Lines**. Northeast began as Boston-Maine Airways, which started operations on Aug 1, 1931, suspended flights in 1932, and resumed on Aug 11, 1933. The airline had adopted the name Northeast on Nov 19, 1940.

Aug 21, 1972: FAA placed its **Office of Appraisal** under the executive direction of the Associate Administrator for Administration. Previously, this office reported directly to the Administrator. The Administrator had announced on Jun 16 his intention to make this organizational change as part of a continuing effort to reduce the number of offices reporting directly to him. (See Apr 17, 1972, and Jun 11, 1974.)

Sep 15, 1972: A **17-nation anti-hijacking conference** sponsored by the Legal Subcommittee of the International Civil Aviation Organization was concluded. The conference, convened in response to the persisting high incidence of aircraft hijackings during 1972, had attempted to draw up a treaty imposing economic sanctions against those nations that provided havens to aircraft hijackers and saboteurs. The failure to agree on a draft resolution cosponsored by the U.S. and Canada, however, brought the meeting to an end.

Sep 17, 1972: Effective this date, **CAB replaced the 12,500 gross weight limit for air taxi aircraft with a 30-seat, 7,500 payload limit**. This change in CAB's system of economic regulation was intended to help the development of service by those scheduled air taxis now designated commuter airlines (see Jul 1, 1969). CAB also hoped to encourage the development of a short takeoff and landing (STOL) transportation system in high density areas.

Sep 1972: Trans World Airlines received FAA's **first authorization to operate at Category IIIa weather minimums**. Under the new landing minimums, TWA could operate their Lockheed L-1011 aircraft at Dulles International Airport down to a minimum visibility of 1,000 feet runway visual range (RVR), and after gaining operational experience at this altitude, apply for minimums as low as 700 feet RVR. (See Jan 21, 1972.)

Oct 20, 1972: The **Federal Labor Relations Council certified PATCO as the sole bargaining unit for air traffic controllers**. (See Feb 7, 1972, and Mar 17, 1973.)

Oct 23, 1972: Effective this date, **FAA tightened the safety operating standards for large airplanes, and for turbine-powered airplanes with more than one engine, in private carriage**. The new requirements included: survival and radio equipment for extended overwater operations; provisions regarding minimum altitudes; passenger briefings; a fuel reserve of 30 minutes for Visual Flight Rules operations; icing equipment; a flight engineer and a second-in-command pilot on certain airplanes; a flight attendant on an airplane with over 19 passengers on board; and an aircraft inspection program. The new rule was part of a series of actions following an accident on Oct 2, 1970 (see that date and Jan 3, 1973.)

Oct 27, 1972: Enactment of Public Law 92-574, the **Noise Control Act of 1972**, defined the respective responsibilities of FAA and the Environmental Protection Agency (EPA) in the control of aircraft noise. EPA's role under the act was to recommend noise standards to FAA based on considerations of public health and welfare. FAA, in turn, considered the recommendations, and determined whether the standards

proposed by EPA were consistent with safety, economically reasonable, and technologically practicable, and subsequently take appropriate action to implement and enforce them. (See Jul 21, 1968.)

Oct 29, 1972: Four fugitives killed a ticket agent and **hijacked an Eastern Air Lines Boeing 727** at Houston, Tex., and forced it to fly to Cuba. This was followed by an even more sensational incident on Nov 10-12 when three wanted criminals hijacked a Southern Airways DC-9 at Birmingham, Ala. During the following 29 hours, they flew to: Jackson, Miss.; Cleveland, Ohio; Toronto, Ont.; Lexington, Ky.; Chattanooga, Tenn.; Havana, Cuba; Key West, Fla.; and Orlando, Fla. In a desperate attempt to keep the DC-9 on the ground at Orlando, FBI agents shot out its tires. The hijackers responded by seriously wounding the copilot and ordering a takeoff. The pilot succeeded in clearing the runway and making a second and final landing in Havana. The four hijackers were initially imprisoned in Cuba, but were released. U.S. officials subsequently arrested all four, the last being sentenced in 1994. This incident contributed directly to issuance of an anti-hijacking rule (see Dec 5, 1972), and to negotiation of a hijacking agreement between the Nixon Administration and Cuba (see Feb 15, 1973).

Oct 31, 1972: FAA and the Office of Minority Business Enterprise signed an agreement to promote **greater participation by the minority business community** in the operation of concessions at the nation's public airports. Under the agreement, FAA would require airports receiving Airport Development Aid Program funds to inform OMBE of all pending contracts and potential new contracts and to cooperate with OMBE in affirmative action.

Nov 22, 1972: President Nixon lifted a 22-year-old restriction on travel of **U.S. airliners to the People's Republic of China** as part of a general rapprochement between the two countries. Such flights had been banned since 1950 by an Excutive Order issued by President Truman during the Korean War.

Dec 5, 1972: A **landmark FAA antihijacking emergency rule** issued this date required U.S. air carriers, beginning on Jan 5, 1973, to inspect all carry-on baggage for weapons or other dangerous objects and scan each passenger with a metal detector (magnetometer) before boarding or, if a detector was not available, conduct a physical search, or pat down. (See Aug 5, 1974.) If a passenger refused to consent to a search, he or she would not be permitted to board. The rule further required, beginning on Feb 5, 1973, that the nation's 531 air carrier airports have a law enforcement officer in the boarding area during the screening and boarding process. The critical difference between this rule and previous antihijacking measures was the universality of the new regulation. Previously, FAA had required air carriers to conduct a weapons scan of only those passengers who fitted a hijacker profile--about one percent of the 500,000 passengers boarding airliners daily. (See Oct 29, 1972.)

Dec 17, 1972: FAA Administrator John H. **Shaffer received the Wright Brothers Memorial Trophy**, presented by the National Aeronautic Association for outstanding contributions to aviation. Shaffer was the first FAA chief to win the prestigious award while holding office.

Dec 18, 1972: FAA commissioned the **first of 64 standardized, prefabricated airport towers,** ordered in April, at the Chino, Calif., airport. FAA planned to complete installation of all 64 towers at low and medium activity airports within 15 months.

Dec 26, 1972: A National Transportation Safety Board study group investigating the **safety of air taxi and commuter aircraft operations** released its findings and recommendations to the public. The study group was formed after a series of air taxis accidents in late Oct 1971 claimed 39 lives. The panel recommended more stringent safety requirements for the industry, including higher qualifications for air taxi and commuter pilots, more thorough training for maintenance personnel, and improved oversight by FAA. (See Dec 1, 1978.)

Dec 29, 1972: An **Eastern Air Lines Lockheed L-1011 crashed in the Everglades** northwest of Miami, killing 99 of the 176 persons aboard. Two survivors died later as a result of their injuries in this first fatal crash of a wide-body airliner. The National Transportation Safety Board cited the probable cause as the flight crew's failure to monitor flight instruments. Preoccupied with a malfunction of the landing gear position indicator, they allowed the aircraft to descend unnoticed.

Dec 31, 1972: The **crash of a DC-7 on takeoff from San Juan, Puerto Rico**, killed baseball star Roberto Clemente and four other persons on a relief mission to Nicaragua. Relatives and representatives of passengers killed sued the Federal government, alleging that FAA employees negligently failed to warn

that the aircraft was overweight and lacked proper flight crew. The plaintiffs cited an order by the director of FAA's southern region concerning inspection of large turbine-powered aircraft. A U.S. district court found the government liable. On Dec 16, 1977, however, an appeals court reversed the decision, ruling that the regional director's order did not give rise to legal obligation sufficient to support the plaintiff's claim. While recognizing FAA's safety mission, the court ruled that Congress could not have intended to authorize such FAA officials to create a legal duty of care between the Federal government and a particular class of passengers. The Court drew a distinction between an aircraft inspector and an air traffic controller, who "owes a duty to those dependent on the quality of his performance."

***1973**

Jan 3, 1973: FAA issued a **truth-in-leasing clause requirement** for leases and conditional sales contracts involving large civil aircraft so that all concerned parties would know who had responsibility for the operation and maintenance of the aircraft and for complying with applicable Federal Aviation Regulations. (See Oct 2, 1970.) Later, a **rule published on Nov 3, 1977, required the lessee or conditional buyer of a large civil aircraft to give notification 48 hours before its first flight** to enable FAA to conduct the necessary surveillance or inspection.

Jan 3, 1973: Chairman Crocker Snow submitted to Congress the **report of the Aviation Advisory Commission**, which had been established by the Airport and Airway Development Act of 1970. Sworn in on Dec 17, 1970, the commission members had spent two years developing their report on the long range needs of U.S. aviation. Their recommendations included establishment of an Under Secretary of Transportation for Aviation with responsibility for a National Aviation Plan.

Jan 6, 1973: The Federal Aviation Administration announced that it had awarded a **contract for an electronic voice switching (EVS) system**, which would increase communications efficiency at air route traffic control centers and would eventually replace all existing FAA radio control and signaling equipment at the center and remote sites. In Aug 1974, however, FAA Administrator Alexander Butterfield cancelled the contract because of increasing cost estimates and schedule delays.

Jan 1973: Frontier Airlines hired Emily Howell (later Emily Warner) as the **first woman member of a flight deck crew on a trunk or regional air carrier** since Helen Richey's brief career with Central Airlines in 1934-35.

Feb 2, 1973: **Claude S. Brinegar became Secretary of Transportation**. He succeeded John A. Volpe, who left the Department effective this date to become Ambassador to Italy. President Nixon had announced his intention to nominate Brinegar, an executive of a California oil company, on Dec 7, 1972. The Senate confirmed the appointment on Jan 18. (See Dec 18, 1974.)

Feb 5, 1973: FAA Administrator John H. Shaffer established the **Executive Committee (EXCOM)** to review and establish agency policies. A year later, in a move intended to increase accountability among managers, Administrator Butterfield suspended the EXCOM, as well as the **Agency Review Board and the Regulatory Council**. Citing the three committees' usefulness in promoting communication and orderly decision making, Acting Administrator James E. Dow reinstated them in April 1975. On Aug 31, 1977, however, Administrator Langhorne Bond abolished the EXCOM, and on Dec 9, 1977 abolished the Agency Review Board. Bond also discontinued the Regulatory Council. (See Jan 24, 1989.)

Feb 13, 1973: Ceremonies at the Memphis Air Traffic Control Center celebrated the center's switch over to **computer processing of flight-plan data**, **completing Phase One of the NAS En Route Stage A**, FAA's decade-long program to automate and computerize the nation's en route air traffic control system (see Sep 26, 1964). With the new computer installation at Memphis, all twenty ARTCCs in the contiguous 48 states gained an automatic capability to collect and distribute information about each aircraft's course and altitude to all the sector controllers along its flight path. Pilots still had to file flight plans at flight service stations and military operations offices, but now computers would handle the centers' "bookkeeping functions" of assigning and printing out controller flight strips. The new computers also had the ability to record and distribute any changes registered in aircraft flight plans en route. The system eventually tied in with the Automated Radar Terminal System (ARTS III) units then being installed at major airports (see Oct 4, 1971 and Feb 15, 1973). Phase Two of the en route automation program was still under way; it would

provide controllers at the twenty centers with new radar displays that would show such vital flight information as altitude and speed directly on the screen. (See Feb 18, 1970 and Jun 14, 1973.)

Feb 15, 1973: The United States and Cuba signed an **anti-hijacking agreement** calling for the two nations to extradite or punish any person "who seizes, removes, appropriates or diverts from its normal route or activities an aircraft or vessel" of one country and takes it to the other. The pact was to run for five years, but Cuba abrogated it on Oct 15, 1976, on grounds of alleged American involvement in the explosion of a Cuban airliner. (See Oct 29, 1972.)

Feb 15, 1973: FAA announced that **production had been completed on all 64 of the new computerized automated radar terminal systems (ARTS III)**, marking an important milestone in the agency's air traffic control automation program. (See Feb 13, 1973 and Aug 13, 1975.) The ARTS III system electronically tagged radar blips on the controller's scope with luminous letters and numbers called alphanumerics that provided the target aircraft's identiry and altitude.

Mar 14, 1973: The Department of Transportation announced that four companies had been selected to continue **development of a common civil-military microwave landing systems (MLS)**. Under this Phase II of the MLS developmental program, each contractor had to demonstrate the feasibility of its proposed system design to meet the full range of civil and military requirements. (See Jan 27, 1972, and Jun 7, 1973.)

Mar 14, 1973: **Alexander P. Butterfield became the fifth FAA Administrator**, succeeding John H. Shaffer (see Mar 24, 1969), whose resignation was one of many accepted by President Nixon in a reorganization of the Executive Branch. Butterfield's selection had been announced on Dec 19, 1972, and his nomination submitted to the Senate on Jan 4, 1973. Questions were raised about his eligibility, however, since he was a retired Air Force colonel and the FAA Administrator was prohibited by law from having a military affiliation. When congressional exemption from this statute appeared unlikely, Butterfield resigned his Air Force commission. His nomination was resubmitted to the Senate on Feb 26 and confirmed on Mar 12.

Born in Florida in 1926, Butterfield spent much of his youth in California and attended UCLA for two years before receiving his B.S. degree from the University of Maryland. (He later earned an M.S. degree in international affairs from George Washington University and graduated from the National War College.) During 20 years with the Air Force, Butterfield had flown as a command pilot and member of a jet aerobatic team. His decorations included the Legion of Merit and Distinguished Flying Cross. Butterfield had commanded the USAF's low and medium level air reconnaissance operations in Southeast Asia. His staff positions included duty as senior aide to the Commander in Chief Pacific Air Forces, and Military Assistant to the Special Assistant to the Secretary of Defense. He was serving as the senior U.S. military representative to Australia when he retired from the Air Force in 1969 to become Deputy Assistant to President Nixon. Butterfield moved from this post to FAA, serving as Administrator for just over two years (see Mar 25, 1975).

Mar 17, 1973: Negotiators signed the **first labor contract** between FAA and the Professional Air Traffic Controllers Organization (PATCO). Approved and effective on Apr 4, the one-year agreement contained 56 articles that included provisions on a variety of issues including payroll deduction of union dues and "familiarization flights" by controllers in airline cockpits. (See Oct 20, 1972, and May 7, 1975.)

Apr 27, 1973: AN FAA rule imposing a virtual **ban on civilian supersonic flights** over the United States went into effect. The rule, first proposed on Apr 10, 1970, prohibited any operator of a civil aircraft from exceeding the speed of sound (Mach 1) when flying over the land mass or territorial waters of the United States, except when such operations would not cause a "measurable sonic boom overpressure to reach the surface." This wording left room for certain authorized operations at the lower end of the supersonic speed range. The rule was not seen as a bar to planned operations of the Anglo-French supersonic transport Concorde, which was expected to fly subsonic over U.S. territorial waters and mainland. (See Feb 4, 1976.)

Apr 1973: FAA World reported that the **last airway light beacon**, on Whitewater Hill near Palm Beach, Calif., had been decommissioned. This type of beacon had reached its peak in 1946, when 2,112 were in service. Their number declined during the 1950s, but a few had remained to mark obstructions or passes. (See Dec 7, 1926.)

April, 1973: **Federal Express began flight operations** from its base at Memphis, Tenn., offering door-to-door package delivery by air express, a popular service that soon inspired immitators. The company expanded rapidly as airline deregulation began in the late 1970s, and it grew even more when it **acquired the Flying Tiger Line on Jan 31, 1989**.

May 10, 1973: The Civil Aeronautics Board published the first **rule regulating smoking on aircraft** for reasons of consumer comfort and protection. The Board required airlines to provide separate sections for smokers and nonsmokers. Subsequent modifications to the rule included a 1981 requirement that airlines guarantee a seat in the nonsmoking section to every nonsmoker who met the check-in deadline. (See Mar 19, 1970, and Jun 20, 1984.)

May 14, 1973: **In Burbank v. Lockheed Air Terminal, the U.S. Supreme Court prohibited states and muncipalities from using their police powers to impose curfews on jet aircraft operations**. The City of Burbank, Calif., had passed an ordinance banning turbojet takeoffs and landings between 11 p.m. and 7 a.m. at the Hollywood-Burbank Airport, a privately owned and operated facility. Pointing to the Noise Control Act of 1972 (see Oct 27, 1972), the Supreme Court concluded that the noise-regulatory powers granted by Congress to FAA and the Environmental Protection Agency (EPA) were so pervasive that the Federal government had preempted state and local authority. The Court also noted that upholding the ordinance could lead to "fractionalized control" of takeoffs and landings that would severely limit FAA's flexibility in controlling air traffic. Under the Federal Aviation Act, air traffic control had been preempted by FAA. Thus, the Court concluded, it was "not at liberty to diffuse the powers given by Congress to FAA and EPA . . . . If that change is to be made, Congress alone must do it." In what came to be known as the **"Burbank exception,"** however, the Court stated that the Burbank decision applied to the exercise of police power, and did not pertain to "what limits, if any, apply to a municipality as a proprietor." (See Mar 5, 1962, and Oct 17, 1977.)

May 14, 1973: The National Aeronautics and Space Administration's **Project Skylab orbited the first U.S. space station**, designated the Orbital Workshop (see Apr 19, 1971). The Workshop was damaged during the launch, but astronauts were able to make repairs during the first of three flights to the station during 1973. The station later disintegrated when it entered the atmosphere on Jul 11, 1979, scattering debris along a path from the Indian Ocean to western Australia.

May 21, 1973: By this date, **U.S. airports serving scheduled air carriers that held CAB certificates of public convenience and necessity were required to have FAA operating certificates**. The regulation (which implemented provisions of the Airport and Airway Development Act of 1970, as amended Nov 27, 1971) set standards for: the marking and lighting of areas used for operations; firefighting and rescue equipment and services; the handling and storing of hazardous materials; the identification of obstructions; and safety inspection and reporting procedures. It also required airport operators to have an FAA-approved operations manual. FAA awarded the first operating certificate to Boston Logan airport on Sep 1, 1972, and had certificated nearly 500 airports by the May 21, 1973, deadline. (See Aug 21, 1974, and Oct 18, 1977.)

Jun 3, 1973: The **crash of a Tupolev TU-144** during a demonstration flight at the Paris Air Show dealt a serious blow to the Soviet supersonic transport program. (See Dec 31, 1968, and Dec 26, 1975.)

Jun 4, 1973: FAA published a **rule requiring aircraft in designated airspace to carry an improved radar beacon transponder** with Mode C automatic altitude reporting capability, as well as the ability to transmit identity codes (see Jun 25, 1970). The implementation schedule was: in Group I terminal control areas (TCAs), Jul 1, 1974; in Group II TCAs, Jan 1, 1975 (see Apr 14, 1975); and above 12,500 ft MSL, Jul 1, 1975. (See Nov 1, 1985.) Due to equipment supply problems, FAA later granted a 6-month extension of the deadlines concerning TCAs. (See Jan 1, 1974.)

Jun 7, 1973: A rule published this date and effective July 6 required air carriers and air taxi operators to establish **training programs for personnel having responsibilities for the safe carriage and handling of hazardous cargo**. After Dec 6, only personnel who had completed this training would be allowed to perform such duties. The regulation also required that the pilot in command be notified in writing by the operator of the presence of hazardous cargo aboard an aircraft. FAA issued the rule against a background of growing public and congressional concern about transport of hazardous materials by air. The **dangerous potential of "hazmat" was confirmed when a Pan American 707 freighter crashed on Nov 3** at Boston

with the loss of all three persons aboard. Smoke, probably caused by leaking acid, had almost blinded the crew and prevented them from coordinating their actions during the landing. (See Jan 3, 1975.)

Jun 7, 1973: To fulfill a near term requirement for an approach guidance system for airports, FAA announced that it had decided to proceed with the selection of an **interim standard microwave landing system (ISMLS)**, pending completion and implementation of the MLS development program. On Aug 28, 1974, FAA announced that it had selected the ISMLS designed by Tull Aviation Corp. (See Mar 14, 1973, and Feb 27, 1975.)

Jun 14, 1973: The Los Angeles ARTCC became the **first center to achieve initial operational capability with computer-driven radar displays** capable of showing identity and three-dimensional position information on aircraft targets. Radar data processing began Phase Two of the ARTCC automation program. (See Feb 13, 1973 and Aug 26, 1975.)

Jun 18, 1973: President Nixon signed into law the **Airport Development Acceleration Act of 1973** (Public Law 93-44), which further amended the basic Airport and Airway Development Act of 1970 (see May 21, 1970). It was the second time the act had been amended in its three-year existence (see Nov 27, 1971). The 1973 amendment: increased the annual funding level of the Airport Development Aid Program (ADAP) from $280 million to $310 million; raised the Federal share for ADAP development of general aviation airports, reliever airports, and the smaller air carrier airports (identified as those that enplaned less than 1 percent of the passengers enplaned by all the air carriers certificated by the CAB) from 50 percent to 75 percent; and obligated the Federal government to pay 82 percent of the costs of safety equipment required for airport certification, as compared to the 50 percent for which it had previously taken responsibility. The amendment also prohibited states and localities from levying a "head tax" on passengers. (See Jun 30, 1975.)

Jun 19, 1973: The **U.S. and U.S.S.R. signed an agreement on joint cooperation in the field of transportation** calling for exchanges of information in areas that included the safety and efficiency of civil aviation. As a result of the pact, FAA officials and their Soviet counterparts held meetings on a variety of technical subjects. The agreement was one of a series signed by officials during a summit meeting between President Nixon and Soviet leader Leonid Brezhnev. The last of these agreements, signed on Jun 23, provided for an **expansion of direct airline flights** between the two countries. Previously, Pan American and Aeroflot had each been allowed two round-trip flights per week between New York and Moscow. The two airlines were now permitted up to three flights per week, and Pan Am received authorization to land at Leningrad, and Aeroflot at Washington. **During 1978, however, Pan American discontinued operations in the U.S.S.R.** as part of a cutback on its European flights. **Under President Carter, Aeroflot service was reduced to two flights per week, effective Jan 13, 1980**, as part of a response to Soviet military actions in Afghanistan. (See Jun 15, 1968, and Dec 29, 1981)

Jun 29, 1973: FAA discontinued the position of **Associate Administrator for Manpower** (see Mar 4, 1970) following the retirement of the incumbent on this date; however, the agency did not officially abolish the post until Dec 4, 1974. The Associate Administrator for Administration assumed most of the functions of the position.

Jul 6, 1973: The Environmental Protection Agency issued **air pollution standards for aircraft engines** and a timetable for their implementation. Formulated in consultation with FAA, the new standards applied to nearly all civil subsonic aircraft, and limited emission of smoke, carbon monoxide, hydrocarbons, and nitrogen oxides. EPA specified a timetable for compliance that was less stringent than that outlined in its original proposal. To begin implementation of the standards, FAA published a rule on Dec 28, 1973, with an effective date of Feb 1, 1974. The rule required improved combustors to reduce smoke from the JT8D engines used on DC-9 and Boeing 727 and 737 aircraft, and also prohibited fuel venting from turbine engines with thrust of 8,000 lb. or greater. This regulation was followed by several others implementing the EPA standards. (See Dec 31, 1970, and Jan 7, 1980.)

Jul 8, 1973: FAA commissioned the **Flight Inspection National Field Office (FINFO)** at Oklahoma City. Established to oversee the operation of the entire flight inspection program within the contiguous 48 States, as well as the Caribbean and North Atlantic areas, FINFO reported directly to the Director, Flight Standards Service. Previously, flight inspection of terminal and air route navigation facilities and communications equipment had been carried out by 17 flight inspection district offices under the jurisdiction of five FAA regions. These district offices were consolidated into a smaller number of Flight

Inspection Field Offices (FIFOs) under the new arrangement, which was expected to save $8 million annually.

(In 1975, FINFO became part of the Flight Standards National Field Office. Subsequently, the flight inspection program was placed under the Office of Flight Operations in 1979, then in 1982 transferred to the Aviation Standards National Field Office, which was renamed the Office of Aviation System Standards in 1992. The FIFOs were renamed Flight Inspection Area Offices in 1993.)

In addition to establishing FINFO, **FAA updated its flight inspection fleet** by replacing 47 DC-3s and Convair T-29s with light twin-engine jets: 5 Jet Commanders (delivery starting in Jun 1974) and 15 Saberliner 80s (delivery starting in Apr 1975). Faster and capable of flying longer distances, the new jets were expected to save many flight hours annually. Unlike a group of 5 Saberliner 40 jets that FAA had begun receiving in 1968, these new aircraft were to be equipped with the newly developed **Automated Flight Inspection System (AFIS)**. The AFIS system greatly expanded productivity when the first of the new aircraft began operations in Nov 1974. In addition to Saberliners and Jet Commanders, FAA's worldwide flight inspection fleet by the early 1980s included 3 Convairs (upgraded to the 580 configuration), one Boeing 727, one Fairchild C-123, and a single remaining DC-3 in occasional use. (See Jan 1962 and Oct 23, 1986.)

Jul 11, 1973: An **in-flight cabin fire** originating in a lavatory area killed 123 persons aboard a Boeing 707 operated by the Brazilian airline Varig as the aircraft neared Paris. In partial response to NTSB recommendations following the tragedy, FAA ordered periodic inspections of lavatory trash receptacles to ensure fire containment capability, as well as preflight briefings and other steps aimed at preventing passengers from smoking in lavatories. (See Jun 2, 1983, and Jun 19, 1984)

Jul 16, 1973: In public testimony before the Senate Select Committee on Presidential Campaign Activities, FAA Administrator Alexander P. **Butterfield disclosed the existence of a White House audio taping system**, a revelation that became instrumental in implicating President Nixon in the Watergate coverup.

Jul 23, 1973: An **Ozark Airlines Fairchild-Hiller 227B crashed** 2.3 miles from St. Louis airport, killing 38 of the 44 persons aboard. The National Transportation Safety Board cited the probable cause as **encounter with a downdraft** following the captain's decision to conduct an instrument approach during a thunderstorm. This decision was probably influenced by lack of a timely severe weather warning from the National Weather Service and the improper assessment of weather conditions by flightcrew and flight dispatcher. The Board's recommendations included a system to improve the dissemination of severe weather information. (See May 19, 1977.)

Jul 27, 1973: FAA issued a rule requiring air carriers, air travel clubs, and air taxi operators to have electronic **public address systems and interphone systems in all aircraft with more than 19 passenger seats**. The rule was intended to help keep crew and passengers informed during emergencies. The deadline for compliance was Sep 8, 1975. (See Oct 20, 1989.)

Sep 7, 1973: On this date, FAA issued the **first National Airport System Plan** (NASP). The plan forecasted that 700 new airports would be needed in the United States over the next 10 years to keep pace with the projected growth of air traffic. FAA estimated that the overall cost of building the new airports and upgrading existing facilities at $6.3 billion. The Airport and Airway Development Act of 1970 required FAA to prepare the NASP as a guide for future airport development (see May 21, 1970). The NASP replaced the former National Airport Plan (NAP), last published in 1967. (See Aug 2, 1985.)

Sep 10, 1973: FAA gave its Office of Public Affairs new functions and redesignated it as the **Office of Information Services**, effective this date, as part of an effort to introduce greater economy and efficiency into the agency (see Jun 19, 1969). The new office consolidated public and employee information activities that had been dispersed over six office elements. It assumed (l) the agency's public affairs functions, (2) the employee communication functions of the Associate Administrator for Manpower, (3) the women's aviation activities of the Office of General Aviation, (4) the audiovisual and public inquiry functions of the Office of Headquarters Operations, (5) the congressional liaison functions of the Deputy Administrator, and (6) the history functions of the Office of Management Systems. (See Jul 12, 1976.)

Sep 13, 1973: FAA **abolished the Office of Headquarters Operations**, effective this date, assigning its functions and responsibilities to other offices and services: (l) accounting to a new Office of Accounting and Audit; (2) personnel to the Office of Personnel; (3) security to the Office of Air Transportation

Security; (4) data processing to the Office of Management Systems; (5) property management to the Logistics Service; (6) information functions to the new Office of Information Services. (See Jul 1, 1963.)

Sep 26, 1973: As mandated by Airport and Airway Development and Revenue Acts of 1970, DOT submitted to Congress a **Cost Allocation Study** on how the Federal costs of the airport and airway system should be shared among the various users. The report concluded that proportion should be about 50 percent for air carriers, 30 percent for general aviation, and 20 percent for the public sector. It also concluded that present taxes failed to recover more than 55 percent of the total costs, with the general aviation sector accounting for the largest short-fall. The study recommended that at least a high percentage of the short-fall be recovered through user fees. A follow-up Part II report was planned but not issued.

Oct 6, 1973: War broke out between Israel and its Arab neighbors, leading to an **Arab oil embargo** against the U.S. and other nations deemed to support Israel. The embargo worsened a spreading fuel shortage. On Nov 7, President Nixon asked Congress for new conservation legislation and called for a Project Independence to give the nation the potential to be energy self-sufficient by 1980. (See Nov 20, 1973.)

Oct 26, 1973: FAA published a **rule requiring newly produced aircraft of older type designs, such as the DC-9 or Boeing 727, to meet noise standards** for turbojet and transport aircraft. The standards had previously applied only to newly type-certificated aircraft, under a rule effective Dec 1, 1969 (see that date). The new rule became effective in three phases between Dec 1, 1973, and Dec 31, 1974. (See Jan 6, 1975.)

Nov 16, 1973: Friendship International Airport was renamed **Baltimore Washington International**. The airport had originally opened on Jun 24, 1950.

Nov 20, 1973: A seven-point jet **fuel conservation plan** designed to save up to 20,000 barrels (840,000) gallons of jet fuel per day went into effect. Implemented in response to President Nixon's national campaign to conserve fuel in the aftermath of the Arab petroleum embargo (see Oct 6, 1973), the plan:

*Revised gate holding procedures to reduce the time aircraft spent with engines running while awaiting takeoff.

*Revised air traffic flow procedures to reduce time spent aloft in holding patterns.

*Encouraged increased use of optimum aircraft cruising speeds.

*Advised controllers to effect fuel savings wherever possible by holding aircraft at high altitudes, assigning optimum altitudes, and minimizing circuitous routings.

*Encouraged taxiing aircraft to shut down one or more engines where possible.

*Endorsed the increased use of simulators for airline training and check flights.

*Encouraged airports to expedite certain runway and taxiway improvements.

As part of this plan, FAA also advised airport operators to coordinate all construction and maintenance activities with the agency to avoid unnecessary disruptions that might result in excess fuel consumption.

On Nov 25, the Nixon Administration released a fuel allocation plan under which air carriers would be cut 5 percent below their 1972 usage level on Dec 1, and 15 percent below this level on Jan 7, 1974. In other categories of aviation, planned cuts ranged from 20 percent for activities such as air taxi operations to 50 percent for recreational flying. The reductions met vigorous opposition from the aviation community, and were softened in the rule published on Jan 2, 1974. No restrictions were placed on regional and commuter airlines, air taxis, and certain other commercial and industrial activities. Air carriers were cut by only 5 percent, business flying by 20 percent, and pleasure and instructional flying by 30 percent. Later in Jan, the cut for business flying was changed to only 10 percent, and various types of personal flying received allocations that were no more than 15 percent below previous usage. The fuel shortage eased after the end of the Arab embargo in Mar 1974. (See Dec 26, 1973.)

Dec 17, 1973: Arab **terrorists used incendiaries to kill 30** passengers aboard a Pan American airliner at Rome's Leonardo Da Vinci Airport. They then killed a guard, hijacked a Lufthansa jet, murdered a passenger in Greece, and eventually surrendered in Kuwait.

Dec 17, 1973 An Iberia Airlines **DC-10 crashed on landing at Boston's Logan Airport**, causing injuries but no fatalities. Information from the aircraft's digital flight data recorder helped the National Transportation Safety Board establish the presence of **wind shear** (an abrupt shift in wind speed or direction). Study of the accident led to a new understanding and awareness of the wind shear hazard. (See Jun 24, 1975.)

Dec 20, 1973: **New airworthiness standards became effective for small aircraft** (12,500 lbs. or less) applying for type certification after this date. The new rules contained almost 200 changes affecting flight characteristics, structures, design and construction, powerplants, equipment, and operating limitations.

Dec 26, 1973: **President Nixon used a commercial airliner** instead of Air Force One to fly from Washington to Los Angeles for a post-Christmas holiday, a move designed to show his concern for fuel savings during the energy crisis. (See Oct 6, 1973.)

Calendar year, 1973: **Not a single airliner was hijacked in the U.S.** in 1973, a record traceable at least in part to the stringent airport security measures implemented early in the year. (See Dec 5, 1972.)

***1974**

Jan 1, 1974: The Federal Aviation Administration established the **first Group II terminal control area (TCA)** at St. Louis. Group II TCAs were designed for locations with a lower level of enplaned passengers and aircraft operations than at Group I sites. **On Jan 13, the agency completed establishment of nine Group I TCAs** when the Dallas-Fort Worth TCA became operational. The other Group I TCAs were at Atlanta, Chicago, Washington, New York, Los Angeles, San Francisco, Boston, and Miami. (See Jun 4, 1973, Aug 1, 1975)

Jan 2, 1974: Public Law 93-239, enacted on this date, extended the deadline for installation of **emergency locator transmitters (ELTs)** in certain types of aircraft from Dec 30, 1973, to Jun 30, 1974. The law also added certain new categories of operation, such as flights incident to design and testing, to the list of exceptions to the ELT requirement. (See Dec 29, 1970, and Mar 16, 1978.)

Jan 13, 1974: Scheduled airline service began at the **new Dallas-Fort Worth Regional Airport**, which had been dedicated on Sep 22, 1973. Decentralized in design, the $700 million complex was the world's largest airport. (See Sep 1965.)

Jan 24, 1974: A U.S. appeals court issued a **decision upholding the Age-60 rule** (see Mar 15, 1960). The court held that FAA rules that apply generally, even though they affect individuals, do not require an adjudicatory proceeding before being adopted. The case grew out of a petition filed with FAA on Jun 5, 1970, by the Air Line Pilots Association. The petition charged that the rule was invalid and requested that it be revoked and that FAA hold "public evidentiary proceedings for the development of a record" that could be used to decide the rule's legality.

Subsequent years saw **further legal challenges to the Age-60 rule**, but courts continued to uphold it. On Dec 19, 1978, for example, a U.S. appeals court affirmed FAA's decision to deny the petition of an airline pilot for exemption from the rule. The pilot had argued that his physical condition met medical standards, but the court found that FAA's application of the age-60 criterion was reasonable. (See Aug 4, 1977.)

Jan 30, 1974: A **Pan American Boeing 707 crashed** short of the runway during a rain storm at Pago Pago, American Samoa. The impact force only slightly exceeded that of a normal landing, and only the copilot received traumatic injuries. Yet only 10 of the 101 persons aboard escaped the **post-crash fire**. Six of these survivors died within nine days. Like two accidents in Chicago in late 1972, the crash helped to renew interest in controlling toxic fumes and other fire hazards. FAA issued four rulemaking proposals on these issues during 1974 and 1975 (see Jun 26, 1978).

In its initial finding on the probable cause of the accident, the National Transportation Safety Board concluded that the crew had failed to adequately monitor their instruments during the approach (see Apr 26, 1974). Following complaints by the Air Line Pilots Association, the Board issued a revised report in 1977. The new report gave somewhat more emphasis to the presence of **visual illusion and wind shear**.

Feb 12, 1974: FAA inaugurated a new **program aimed at providing a general review of airworthiness regulations every two years** to see that such rules were promulgated or amended in a more timely and systematic manner. The process was to be carried out with the full participation of other Federal agencies, the U.S. aviation industry, and foreign governments, which were invited to submit rulemaking proposals. The suggestions were processed and considered at a Biennial Airworthiness Review Conference, held in Washington on Dec 2-11, 1974. The success of this event lead to the establishment, on Feb 26, 1975, of a **similar program for operational rules**, and to a Biennial Operations Review Conference in Dec 1975.

The two review programs eventually resulted in hundreds of rule changes. It proved impossible to complete the process within a two-year period, however, and a biennial cycle was not established.

Feb 17, 1974: **A soldier flew a stolen Army helicopter to the White House**, where guards open fire with shotguns. Wounded in the legs, the soldier landed on the lawn and was taken into custody.

Feb 22, 1974: At Baltimore-Washington International Airport, a former mental patient killed two persons and seriously wounded another in an **attempt to hijack a DC-9 and crash it into the White House**. The gunman committed suicide when wounded by a policeman.

Mar 3, 1974: A **McDonnell Douglas DC-10 wide-body airliner crashed shortly after takeoff from Paris, France**, killing all 346 people on board in the worst air disaster up to that time. The Turkish Airlines jet had reached an altitude of about 12,000 feet when its **rear bulk-cargo door opened, producing explosive decompression**. The resulting collapse of the floor over the cargo compartment disabled vital flight-control cables.

McDonnell-Douglas had known of difficulties with the latching mechanism of the DC-10 cargo doors, and had introduced modifications. On Jun 12, 1972, however, an improperly secured cargo door opened on an American Airlines DC-10 flying over Windsor, Ontario. The resulting decompression disrupted some control cables running through the floor beams, but the aircraft landed safely at Detroit. Following this event, McDonnell Douglas issued a series of FAA-approved service bulletins aimed at controlling the problem. On Oct 25, 1973, the manufacturer issued a final service bulletin that introduced a "closed-loop" system as a definitive solution.

The "closed-loop" modification had not yet been applied to the Turkish DC-10 that crashed near Paris. The French accident report also indicated that the manufacturer had failed to complete one of the earlier improvements contained in a service bulletin issued before it delivered the aircraft in Dec 1972. The report further concluded that improper in-service modifications and adjustments were among the factors that permitted the ground crew's defective closing of the door before the ill-fated flight.

Following the Paris crash, FAA issued two airworthiness directives dated Mar 6 and Mar 22, 1974. These directives required implementation of the various modifications contained in the manufacturer's service bulletins, which did not carry the force of law. Shortly thereafter, FAA Administrator Alexander P. Butterfield announced that **the agency would henceforth employ airworthiness directives in all situations involving a design change to correct unsafe conditions**. (See Dec 27, 1974.)

On Jul 7, 1975, FAA issued an airworthiness directive **requiring the manufacturers to ensure that the floors of all wide-body jets could withstand the effects of rapid in-flight decompression** caused by sudden appearance of an opening of up to 20 square feet in the lower deck cargo compartment. This could be achived by **strengthening the floors and/or installing relief vents** between the passenger cabin and aft cargo compartment.

Apr 26, 1974: FAA began an in-depth **inspection of the worldwide flight operations of Pan American World Airways following the Apr 22 crash of a Pan Am Boeing 707** into a mountain in Bali, Indonesia. The Bali accident, in which all 107 persons aboard died, followed **three other Pan Am 707 crashes**: Tahiti, Jul 23, 1973; Boston, Nov 3, 1973 (see entry for Jun 7, 1973); and Pago Pago, Jan 31, 1974 (see that date).

May 9, 1974: FAA signed the Memorandum of Understanding for a joint international program to test, evaluate, and demonstrate the use of aeronautical satellites to provide improved communications and air traffic services over the North Atlantic. The **aeronautical satellite program, known as AEROSAT** and jointly operated by the 10 countries of the European Space Research Organization (ESRO), Canada, and the United States, was intended to furnish the information upon which to base a follow-on operational system expected to be required in the mid-1980s. On Aug 2, representatives from Canada and ESRO signed the Memorandum. (See Nov 12, 1974.)

May 29, 1974: FAA announced a new advisory circular on **safety parameters for hang gliding**, which included recommendations not to fly: over 500 feet above general terrain; in clouds; in controlled airspace, or within five miles of an uncontrolled airport without proper notification; in restricted or controlled areas without prior permission; over or within 100 feet horizontally of buildings, populated areas, or crowds. Hang gliding, a sport involving unpowered, kite-like craft, had grown rapidly in recent years. In announcing the circular, Administrator Butterfield stated his hope that observance of the guidelines would

make it unnecessary to regulate the sport. FAA also advised hang gliding clubs to establish training and safety programs, and urged manufacturers to ensure quality control. (See Sep 2, 1982.)

May 30, 1974: FAA certificated the **Airbus A-300**, the first of a series of wide-body transport aircraft produced by Airbus Industrie, an international consortium established in Dec 1970 with French, West German, British, Spanish, Dutch, and Belgian partner companies. The emergence of Airbus Industrie signaled greater competition for U.S. aircraft manufacturers. (See Apr 6, 1978.)

Jun 11, 1974: A **headquarters reorganization** established the positions of: Associate Administrator for Aviation Safety, with control of the Flight Standards Service and the Civil Aviation Security Service; Associate Administrator for Airports, with control of the Airports Service and of the new Metropolitan Washington Airport Service, which operated Washington National and Dulles International Airports; and the Associate Administrator for Air Traffic and Airway Facilities, with control of the Air Traffic Service and Airway Facilities Service. The Associate Administrator for Plans was redesignated the Associate Administrator for Policy Development and Review. The post of Associate Administrator for Operations, which had controlled the Flight Standards, Air Traffic, and Airports Services, was abolished. The Office of Appraisal and the Quiet Short-Haul Air Transportation System Office were also eliminated. An Office of Investigations and Security was established under the Associate Administrator for Administration (See Aug 3, 1970), and the Office of Personnel and Training was created from two formerly separate offices. The reorganization achieved Administrator Butterfield's aim of placing the flight standards and air traffic functions under separate Associate Administrators, but only partially fulfilled his goal of grouping safety-related functions under the Associate Administrator for Aviation Safety. On Jun 12, the press reported the retirement of Oscar Bakke, the experienced official designated for the Aviation Safety post, who was disappointed by the scope of the new position.

Jun 15, 1974: FAA launched **Operation Ground Assist**, a 30-day general aviation safety program, to raise the level of safety consciousness among general aviation pilots and ground personnel with safety responsibilities. The program was designed to help reverse a continued rise in the number of accidents in personal flying. It entailed visits to selected general aviation airports by FAA field personnel, who looked for unsafe practices, made suggestions, and encouraged a candid exchange of ideas between airmen and the aviation agency.

Jul 12, 1974: FAA announced a contract with Honeywell for 10 **Central Control and Monitoring Systems** for use at air route traffic control centers and the Aeronautical Center. The computerized devices were designed to to keep watch on electrical, mechanical, and fire alarm systems. They would alert technicians in case of trouble, and also effect savings by reducing or turning off power to certain equipment at off-peak periods. FAA announced a contract for an additional 11 systems on Jan 30, 1976, and a total of 9 were installed by the end of that year.

Jul 31, 1974: A Delta Air Lines **DC-9 crashed against a sea wall** while making an instrument approach to Logan International Airport in Boston, Mass., with the loss of 89 lives. The National Transportation Safety Board attributed the accident to flight crew error. Although the Board also named "nonstandard" air traffic control service as a contributory factor, a U.S. district court cleared FAA of liability.

Aug 5, 1974: President Nixon signed the **Anti-Hijacking Act of 1974** into law. Under its provisions, the act:

* authorized the President to suspend air transportation between the United States and nations that aided terrorist groups who used the illegal seizure of aircraft as an instrument of policy.
* empowered the Secretary of Transportation, with the approval of the Secretary of State, to impose sanctions against the carriers of nations that failed to maintain minimum security standards in the transportation of persons, property, and mail, as required by the Convention on International Civil Aviation.
* required air carriers to refuse to carry persons unwilling to submit to personal search, and any article that a passenger did not allow to be inspected.
* required FAA to continue in effect passenger and baggage screening procedures (see Dec 5, 1972).
* allowed FAA to use, for as long as needed, Federal personnel, including FAA personnel, to supplement state, local, and private law enforcement officers in airport security programs. (In anticipation of this responsibility, FAA had established a new unit, the Civil Aviation

Security Service, out of what had been the anti-hijacking and cargo security section of the Office of Air Transportation Security: see Jun 11, 1974.)

The passenger screening program and other precautionary measures continued to be effective in combating the hijacking menace. For the second consecutive year (see Calendar year 1973) not one successful hijacking occurred on a scheduled U.S. air carrier aircraft.

Aug 9, 1974: **Richard M. Nixon resigned the Presidency and was succeeded by Vice President Gerald R. Ford**.

Aug 9, 1974: **James E. Dow became FAA's Deputy Administrator**. The appointment was among the last official acts of President Nixon, who had nominated Dow on Jul 24.

A native of East Machias, Maine, Dow was a graduate of the University of Maine. He entered the Federal service in 1943 as an air traffic controller in CAA's Central Region. After several promotions in the field, Dow transferred to CAA's Washington headquarters in 1956, where he served successively as Assistant Chief of both the Systems Engineering and Systems Management Divisions, Chief of the Plans Division, and Director of the NAS Special Projects Office. Following a year at Princeton University on a fellowship in the Woodrow Wilson School for Public and International Affairs, he became Director of the Office of Budget in July 1967. In August 1972, Dow became Associate Administrator for Administration. He became Acting Deputy Administrator in July 1973, assuming on a collateral basis the responsibilities of an post that had been vacant since the departure of Kenneth M. Smith on Jul 15, 1972. (See May 11, 1970, and Mar 31, 1976).

Aug 14, 1974: The Operations Committee of the Air Transport Association (ATA) decided that, effective Sep 1, its member airlines would withdraw from the **familiarization flight (SF 160) program** under which an air traffic controller could make up to eight free flights per year as a cockpit observer. Members of the Professional Air Traffic Controllers Organization reacted by conducting **work slowdowns that continued until ATA reversed its decision on Oct 16**. (See May 7, 1975.)

Aug 21, 1974: FAA announced a rule providing for issuance of **"limited" airport operating certificates** to airports serving CAB-certificated air carriers conducting only unscheduled operations or operations with small aircraft. FAA allowed airports in this category to operate under previously-issued provisional certificates until Dec 15. (See May 21, 1973)

Aug 26, 1974: **Charles A. Lindbergh died** in Maui, Hawaii, at the age of 72. (See May 20-21, 1927)

Sep 4, 1974: The **U.S. and Mexico announced an agreement on air traffic services** adjacent to their common border. The culmination of over 15 years of negotiation, the pact authorized air traffic facilities in 6 pairs of cities to enter into agreements on coordinating air traffic control.

Sep 5, 1974: FAA shut down the **last four-course radio range** still in operation, at Northway, Alaska, after more than 40 years of service. The four-course range was the first navigation system that enabled pilots to fly "blind"--that is, fly a direct line between airports when visibility was poor or nonexistent (see Jun 30, 1928). Beginning in the late forties, FAA replaced the system with the more efficient very-high-frequency omnidirectional range (VOR). The VOR's higher frequency reduced static and its omnidirectional signal afforded guidance to pilots on any bearing from the transmitter. (See Mar 17, 1982.) The center antenna of the Northway range, now designated for use with a nondirectional beacon, remained in operation.

Sep 8, 1974: A **bomb exploded in the aft cargo compartment of a Trans World Airlines Boeing 707**. The flight had originated in Tel Aviv, stopped over at Athens, and was bound for Rome and then New York. The explosion disabled the aircraft's control system, and the 707 crashed into the Ionian Sea with the loss of all 88 persons aboard. Floating debris and 24 bodies were recovered, but the wreckage was not raised from the sea bottom.

Sep 11, 1974: An Eastern Air Lines **DC-9 crashed 3.3 miles short of a runway at Charlotte, N.C.**, while approaching through patchy fog. All but 10 of the 82 persons aboard lost their lives. The National Transportation Safety Board attributed the accident to "lack of altitude awareness" due to "poor cockpit discipline." Eastern Air Lines and 19 insurance companies sued four FAA air traffic controllers for $35 million each in connection with the accident. In Dec 1979, a jury in Charlotte found in favor of the controllers, who were defended by the Federal government.

Sep 18, 1974: Transportation Secretary Claude S. Brinegar announced the Ford Administration's **decision not to ask Congress to subsidize the nation's financially troubled flag carriers**, Pan American and Trans World Airlines. Instead, the Administration continued to pursue an "action plan" to assist the two airlines through a variety of means that did not involve subsidy or new legislation. Congress, however, passed the **International Air Transportation Fair Competitive Practices Act** of 1974. As signed on Jan 3, 1975, this law included provisions designed to raise overseas mail rates, require Federal agencies to use U.S. flag carriers whenever possible, and control rebates by shippers and ticket agents. The law mandated negotiations aimed at protecting U.S. flag carriers from discriminatory landing fees and airport charges, and directed the Secretary of Transportation to impose retaliatory fees against the airlines of nations that failed to respond. (See Feb 15, 1980)

Sep 19, 1974: FAA commissioned the first of a new-generation **Power Conditioning System** for the 20 Air Route Traffic Control Centers in the contiguous U.S. at the Los Angeles ARTCC. The system processed all incoming power, ensuring that it remained at the proper voltage level and frequency. In the event of commercial power failure, it also provided battery power until emergency generators could take over. The system was designed to replace less sophisticated versions in use at some ARTCCs. (See Jun 27, 1969 and Jul 13, 1977.)

Oct 1, 1974: Effective this date, FAA **reduced the minimum separation distance for simultaneous Instrument Landing System (ILS) approaches to parallel runways**. The change from 5,000 feet to 4,300 feet allowed certain airports to add parallel runways when needed to handle increasing traffic.

Nov 1, 1974: Tougher **new rules covering the training, testing, and certification of pilots** in nearly all categories except airline transport pilot went into effect. For the first time, FAA required a **biennial flight review** for all pilots not engaged in airline or other commercial operations for which FAA already required periodic flight checks. Other new provisions included:

* Student pilots were required to show overall piloting proficiency in all flight operational areas before their instructors could find them eligible for the prescribed check flight.
* Flight instructor certificate requirements were upgraded to include a commercial pilot certificate, an instrument rating, ground instruction as well as flight instruction capability, and a class rating for instruction given in multi-engine airplanes and helicopters.
* Private pilot certificate requirements included increased emphasis on flight instruction in night and operational problem areas. The required flight time remained at 40 hours, but the mandatory hours of flight instruction from a certified flight instructor were raised from 3 to 20.
* Commercial pilot certificate applicants were required to have an instrument rating to qualify for unrestricted privileges. Flight time for a commercial license was raised from 200 to 250 hours, although 50 of these hours could be logged in a ground trainer.

Other new requirements included: more skills to be demonstrated for an Instrument Flight Rules (IFR) rating; IFR checks for instrument-rated pilots with recent IFR experience lapses; and annual proficiency checks for pilots-in-command of aircraft certificated for more than one pilot.

Nov 1, 1974: New certification and operating **standards for FAA-approved pilot schools** went into effect. In an amendment to FAR Part 141, FAA upgraded standards while giving these schools increased responsibilities in pilot training and testing. Schools granted examining authority by FAA could recommend graduates for pilot certificates and ratings without those graduates having to pass FAA-administered flight or written tests. The new rules also set forth standardized curriculums for each course of approved training, thus assuring that graduates trained at different locales received the same quality of instruction.

Nov 12, 1974: For the first time in history an aircraft was given routine **air traffic control instructions via aeronautical satellite relay**. The milestone occurred when an ATC demonstration project controller at the National Aviation Facilities Experimental Center (NAFEC) issued a route change to an FAA KC-135 aircraft during a test using the ATS-6 satellite. NAFEC's Experimental Oceanic Air Traffic Control Laboratory was the ground test facility for the ATS-6 ATC communications demonstrations, part of the **joint Aerosat project** involving the United States, Canada, and the European Space Research Organization (ESRO). (See May 9, 1974, and Sep 15, 1977.)

Nov 13, 1974: In an action **to reduce the bird hazard to aviation, FAA announced guidelines aimed at banning garbage dumps or sanitary landfills** within 10,000 ft. of runways used by turbojets and 5,000 ft. of those used by piston-engine aircraft. FAA personnel were instructed to inform airport operators that dumps or landfills closer than these limits should be closed. Those that could not be closed within a reasonable period of time should be operated under guidelines prescribed by the Environmental Protection Agency and Department of Health, Education and Welfare, to minimize their attractiveness to birds.

Nov 18-27, 1974: The Air Line Pilots Association **(ALPA) board of directors determined that the DC-9-50 was a "stretched" aircraft** within the meaning of ALPA's by-laws (see Nov 20-29, 1966). This decision, which reversed a previous finding by ALPA's executive board, meant that the union would not necessarily oppose operation of the DC-9-50 by a two-pilot crew. At the same time, however, the board amended its by-laws to provide for **three pilots on all turbine-powered transports, including stretched versions, certificated after Jan 1, 1975**. (See Nov 23, 1971 and Feb 21, 1976.)

Dec 1, 1974: A Northwest Airlines **Boeing 727 crashed near Thiells, N.Y.**, killing all three persons aboard. Icing had blocked the aircraft's pitot heads, causing erroneous air speed and Mach readings that contributed to a low-speed stall. On Mar 13, 1978, FAA published a rule requiring the installation within three years of a **pitot heat indication system** in all transport category aircraft having flight instrument pitot heating systems, and making such an indication system a type certification requirement for such aircraft.

Dec 1, 1974: Approaching Dulles International Airport under conditions of poor visibility, a **Trans World Airlines Boeing 727 descended too soon and crashed into a mountain** near Berryville, Va., killing all 92 persons aboard.

Unfamiliar with terrain to the immediate west of Dulles, the TWA captain interpreted a controller's "cleared for approach" instruction to mean that he could descend to the final approach altitude of 1,800 feet immediately, although his chart indicated mountain peaks and a prescribed minimum altitude of 3,400 feet. The controller had assumed the pilot knew he was not to descend to 1,800 feet until he had cleared the mountains. Soon after the accident, FAA took **steps to clarify pilot responsibilities for maintaining safe altitude** by issuing a notice, followed by a regulatory amendment. This new rule explicitly required that in-bound pilots maintain their assigned altitude until they were given a new one or became established on a published route. FAA also issued additional guidance intended to ensure that controllers informed radar arrivals of any applicable altitude restrictions at the time that they issued an approach clearance. (See Jan 1, 1976.)

With FAA still under scrutiny for its handling of the DC-10 cargo door problem (see Mar 3, 1974), the **TWA crash added to intense criticism of the agency** (see Dec 27, 1974). The accident underscored the need for a cockpit device to alert pilots if they strayed too close to terrain, and FAA speeded **work on a proposed rule to make a terrain warning system mandatory** (see Dec 24, 1974). Other FAA actions in the wake of the TWA crash included the appointment of a **Special Air Safety Advisory Group**, composed of six retired airline captains, which submitted a variety of safety recommendations on Jul 30, 1975. Meanwhile, DOT established a task force on FAA's safety mission (see Jan 28, 1975).

Dec 18, 1974: Secretary of Transportation **Claude S. Brinegar announced his resignation, effective Feb 1, 1975**. (See Feb 2, 1973.)

Dec 24, 1974: FAA published a **rule requiring installation of the Ground Proximity Warning System (GPWS)** on large turbojet and turboprop airliners. The equipment was to provide both visual and aural signals when the aircraft was less than 2,500 feet above the ground. The rule's implementation deadline of Dec 1, 1975, was subsequently extended due to persisting technical difficulties, but all major airlines were in compliance by the end of 1976. A rule published on Oct 10, 1978, extended the GPWS requirement to smaller commuter airline turbojets if able to seat as many as ten passengers. (See Dec 1, 1974, and Mar 17, 1992.)

Dec 27, 1974: A House subcommittee chaired by Rep. Harley O. Staggers (D-W.Va.) issued a **report criticizing FAA** as sluggish, insufficiently strict in its aircraft certification procedures, and too solicitous of the interests of the aviation industry. Cases cited by the committee included the agency's handling of the DC-10 cargo door problem (see Mar 3, 1974). The committee also faulted FAA for slowness in requiring the Ground Proximity Warning System on airliners, a criticism underlined by the recent crash of a TWA jet (see Dec 1, 1974). On Dec 28, public confidence in FAA was further weakened by an ABC television

broadcast, prepared by science editor Jules Bergman, that portrayed the agency as lax on postcrash survival and other safety issues.

Calendar year, 1974: FAA launched a **program aimed at the renegotiation of bilateral airworthiness agreements** with major aeronautical manufacturing countries. Previous U.S. bilateral agreements did not cover the export or import of all aviation products--engines, appliances, propellers, and other components. Since export sales frequently depended on foreign countries producing selected aircraft components, the lack of such agreements tended to inhibit the sale of U.S. aircraft abroad. (See Jan 26, 1972.)

***1975**

Jan 3, 1975: President Ford signed the **Transportation Safety Act of 1974**. Title I of this law, the **Hazardous Materials Transportation Act**, gave the Secretary of Transportation new regulatory and enforcement authority to combat the risks of transporting hazardous materials in commerce (see Jul 1, 1976). (Title II pertained to railroad safety, and Title III concerned the status of the National Transportation Safety Board: see April 1, 1975). Title I specifically **limited radioactive materials that could be shipped on commercial passenger aircraft** to those intended for research or medical use. AN FAA rule implemented this provision, effective May 3, 1975.

Effective Mar 7, meanwhile, **FAA prohibited air carriage of hazardous material unless its container had been inspected** to determine that, in all outward respects, it complied with packaging and marking requirements. In the case of radioactive materials, FAA also required scanning with a radiation monitoring instrument, after Jun 30, 1975 (a deadline later extended to Jan 1, 1976). The rule was based on a proposal published shortly after an incident on Apr 5-6, 1974, in which improperly shielded radioactive material had exposed airline passengers to unnecessary radiation.

Jan 6, 1975: FAA published a new regulation setting **maximum noise levels for small propeller-driven aircraft** that were newly produced or newly type-certificated. The rule was effective Feb 7, 1975, and applied to all propeller-driven airplanes under 12,500 pounds, with the exception of those used in agricultural and firefighting operations (which frequently required all available engine power to carry large loads). (See Oct 26, 1973, and Dec 23, 1976.)

Jan 21, 1975: FAA announced that it would study the effects of high-altitude flight on the earth's atmosphere, building upon DOT's recently-ended Climatic Impact Assessment Program, which had begun in 1971 in response to concern about environmental consequences of the fleets of supersonic transports then anticipated. FAA's study, the **High Altitude Pollution Program (HAPP)**, ended in 1982. Its final report, published in Jan 1984, concluded that the effects of civilian aircraft on ozone depletion and climactic change were not a cause of immediate concern at that time.

Jan 25, 1975: Approaching Washington National Airport, a **Beech King Air executive turboprop came in too low and crashed into a broadcasting tower at American University**, killing all five aboard. The accident occurred in the wake of the crash of a TWA jetliner on approach to Washington Dulles airport, and it added to mounting criticism of FAA. (See Dec 1 and 27, 1974.)

Jan 28, 1975: The **Secretary's Task Force on the FAA Safety Mission** convened to examine FAA's organizational structure, management, and performance on safety issues. Secretary Claude S. Brinegar had appointed this special ten-person panel in response to criticism of FAA on such matters as the crash of TWA Flight 514 and the DC-10 cargo door problem (see Dec 1 and Dec 27, 1974). The task force was headed by Lt. Gen. Benjamin O. Davis, Jr., Assistant Secretary of Transportation for Environment, Safety, and Consumer Affairs. (See Apr 8 and Apr 30, 1975.)

Jan 1975: FAA **shut down the Fairbanks ARTCC**, after 31 years of operation and transferred its functions to the Anchorage ARTCC.

Feb 19, 1975: FAA announced that it had ordered **air taxi operators using business-type jets to equip these aircraft with Cockpit Voice Recorders and Flight Data Recorders** by May 15, 1975. (See Aug 5, 1957, Jun 26, 1964, and Mar 25, 1987.)

Feb 27, 1975: The **Microwave Landing System (MLS) Executive Committee**, a group of experts representing various Federal agencies, chose the **time reference scanning beam (TRSB) technique** over

the Doppler scanning technique as the U.S. candidate for the international standard microwave landing system. The action by the committee ratified a recommendation made in late 1974 by the MLS Central Assessment Group (a recommendation participated in 140 experts assembled by FAA from around the world) and cleared the way for submission of the time reference scanning beam technique to the International Civil Aviation Organization (ICAO) as the U.S. candidate for adoption as the international precision landing system of the future. (See Jun 7, 1973, and Jul 22 1975.)

Mar 7, 1975: **William T. Coleman, Jr., became Secretary of Transportation**. An attorney from Philadelphia, Coleman was the second black Cabinet member in American history. On Jan 14, President Ford had declared his intention to nominate Coleman to replace Claude S. Brinegar, who had announced his resignation on Dec 18, 1974. Coleman served the remainder of the Ford Administration, resigning effective Jan 20, 1977.

Mar 25, 1975: **Alexander P. Butterfield announced his resignation** as FAA Administrator, effective Mar 31, after publicized differences with recently departed Secretary of Transportation Claude S. Brinegar and amid sharp criticism of FAA's recent safety record. President Ford had asked for his resignation in a move some interpreted as retribution for Butterfield's role in helping uncover the Watergate scandal (see Jul 16, 1973). Deputy Administrator James E. Dow (see Aug 9, 1974) became Acting Administrator. (See Nov 24, 1975.)

Mar 27, 1975: AN FAA **DC-3 crashed** on takeoff from Boise, Pa., injuring all 11 persons aboard. In determining the probable cause, the National Transportation Safety Board cited the inexperience of the pilot, who was not qualified for that type of aircraft. The pilot, a Regional Director, received a reprimand and 30-day suspension, and was later transferred to another position.

Apr 1, 1975: Effective this date, the **National Transportation Safety Board (NTSB) was separated entirely from the Department of Transportation**, in accordance with Title III of the Transportation Safety Act of 1974. Previously, NTSB had been an independent agency lodged within the Department for administrative purposes. In enacting Title III, Congress declared that the NTSB could not properly conduct its responsibility of determining the probable cause of transportation accidents without total separation and independence. (See Oct 15, 1966.)

Apr 4, 1975: **A regulation governing the installation and safe operation of X-ray devices** for screening carry-on luggage at airports became effective this date. The rule had been proposed on Jun 21, 1974, after a U.S. District Court judge declared that FAA acted illegally by allowing the X-ray machines to be installed without certifying as to their safety. The new regulation required testing to ensure that the devices complied fully with radiation level standards set by the Food and Drug Administration, and also provided for the training and protection of operators of this equipment.

Apr 8, 1975: Acting Administrator James E. Dow announced the establishment of the **Aviation Safety Reporting Program (ASRP)**, designed to provide the agency with information on potentially unsafe conditions in the National Airspace System, effective May 1, 1975. To encourage the reporting of violations, the program granted immunity from disciplinary action to pilots or controllers who filed a timely report. No immunity was granted, however, in the case of "reckless operations, criminal offenses, gross negligence, willful misconduct, and accidents." FAA remained free to take corrective or remedial action necessary for air safety.

Although such immunity programs had been instituted before (see Jan 1, 1968), the ASRP was the first not limited to reports of near midair collisions. The program's establishment anticipated one of the recommendations being prepared by the Secretary's Task Force on the FAA Safety Mission (see Jan 28, 1975), of which Dow served as Executive Secretary. The Air Line Pilots Association, skeptical of the ASRP, preferred a system in which a third party would process reports and protect their confidentiality. (See Aug 15, 1975.)

Apr 14, 1975: FAA **eliminated the proposed requirement for altitude reporting transponders (Mode C)** on all aircraft operating in Group II Terminal Control Areas (TCAs) 45 days before it was to go into effect (see Jun 8, 1973 and Jan 29, 1987). However, FAA still required aircraft operating to and from primary and secondary airports within the twelve Group II TCAs to carry a transponder capable of providing discrete identity information to air traffic controllers. In addition, the agency required aircraft to obtain authorization prior to entering the Group II TCAs, and to maintain two-way radio communications with controllers. The requirement for altitude reporting equipment had been strongly opposed by general

aviation operators and by such general aviation organizations as the Aircraft Owners and Pilots Association. (See Jan 1, 1974, and Aug 1, 1975.)

Apr 30, 1975: The **Secretary's Task Force on the FAA Safety Mission** (see Jan 28, 1975) submitted its report. The Task Force commended FAA for having reestablished a no-fault aviation safety reporting program (see Apr 8, 1975), and made recommendations including:

* That FAA should continue to rely on industry for safety compliance inspections required in the certification process, but should strengthen its technical staff and improve its ability to monitor the performance of those delegated safety responsibilities. In addition, FAA should insist on more comprehensive design reviews in major aircraft and engine certification.
* That FAA should conduct audits in cooperation with the National Transportation Safety Board to ensure that problems cited by NTSB were worked out satisfactorily.
* That FAA's rulemaking process, judged too slow, should be expedited by means of a priority system; the agency should also improve the clarity of the rules themselves and speed up their legal review.
* That FAA should take steps, including use of flight data monitoring systems, to improve aircrew performance.
* That air traffic controllers should give more attention to preventing collision with the ground, and that a standing group of FAA and aviation community representatives should review air traffic control procedures with the aim of increasing clarity and standardization.
* That FAA should continue as part of the Department of Transportation, but should not be subject to undue supervision by the Office of the Secretary.
* That an intensive review should be made of the FAA headquarters organization with the object of reducing the number of elements reporting to the Administrator. The task force recommended also that (1) a similar study be made of the FAA regional organization, with a view to consolidating regional functions and reducing the regions in number, and (2) that regional Engineering and Manufacturing (E & M) personnel engaged in aircraft certification be transferred from the regions to one or more E & M technical field centers that would report to FAA Headquarters at a level just below the Administrator.
* That FAA should strengthen its long-range research and development activity and establish one or more technical advisory committees.

May 7, 1975: **FAA and PATCO reached agreement on a two-year contract** (signed and effective Jul 8). The contract's 74 articles included a guarantee of controller inclusion in the Aviation Safety Reporting Program (see Apr 8, 1975) and affected such matters as an expansion of familiarization flight privileges (see Aug 14, 1974), working conditions, and career enhancement. (See Mar 17, 1973, and Jul 28-31, 1976.)

May 9, 1975 FAA announced the beginning of a new airspace program to better delineate areas of military training activities. As of Jul 1, when requested by the military, the FAA began establishing **Military Operations Areas (MOAs)** for conducting such military flight actitivities such as familiarization training, intercept practice, and air combat maneuvers. FAA Flight Service Stations in the vicinity would inform visual flight rules (VFR) pilots when a given MOA was to be used for military purposes and how to traverse or circumnavigate it safely. Properly instructed VFR aircraft operated within an active MOA without special restrictions, while instrument flight rules (IFR) aircraft were afforded appropriate separation service. By the end of fiscal 1987, 354 MOAs were in existence.

May 29, 1975: Secretary of Transportation William T. Coleman, Jr., announced that FAA's **National Aeronautical Facilities Experimental Center (NAFEC) would remain at Atlantic City, N.J**. On Jan 15, 1974, a study team had recommended that NAFEC be combined with the Aeronautical Center at Oklahoma City. (See May 29, 1980.)

Spring 1975: U.S. air carriers conducted extensive **civil aviation operations in Southeast Asia** as the United States wound down its Indochinese commitment with a final spurt of activity. Requiring close cooperation between FAA, the State Department, and the Department of Defense, the operations ranged from airlifting rice and munitions into Pnom Penh, Cambodia, to the climactic evacuation of U.S. civilians from Saigon, Vietnam, in late April.

Jun 1975: FAA received the first of the new **ASR-8 airport surveillance radars**. Features of the ASR-8 included a dual beam for expanded low-level coverage and a klystron transmitter tube that increased power output. (See Aug 25, 1960 and Sep 30, 1983.)

Jun 24, 1975: An **Eastern Air Lines** 727 **crashed** into approach lights while attempting to land during a thunderstorm at New York's Kennedy airport, causing fatal injuries to 113 of the 124 persons aboard. The National Transportation Safety Board's report stated that the crew probably relied too much on visual clues rather than instruments in assessing their altitude, but adverse winds may have been too strong for a successful approach even if they had avoided this error. The Board criticized air traffic control personnel for continued use of the runway after reports of **wind shear** from several incoming pilots.

Wind shear, a sudden change in wind speed and/or direction, may be produced by thunderstorms or even cloud formations that appear harmless. Large gust fronts can last for more than an hour and extend for several miles. In studying the Kennedy crash, however, the University of Chicago's Dr. Theodore Fujita concluded that several separate cells of intense downdrafts had occurred in the vicinity of the 727's approach path. He termed such phenomena "downbursts," and later coined the term "microburst" to describe a small downburst (see May 15-Aug 13, 1982).

The Kennedy accident spurred FAA's efforts to develop wind shear detection equipment for use both in the cockpit and on the ground, as well as improved methods for pilots to cope with the hazard. The agency tested measuring devices, and in Nov 1976 began a six-month test of forecasting techniques in cooperation with the National Weather Service. In 1977, FAA began operational testing of a **ground-based wind shear detection system** called the Surface Wind Monitoring System (SWIMS), later renamed the **Low Level Wind Shear Alert System** (see Sep 1978).

Jun 30, 1975: The original five-year **funding authority of the Airport and Airway Development Act of 1970 lapsed** (see May 21, 1970). The Subcommittee on Aviation of the House Committee on Public Works and Transportation had opened hearings in Mar 1975 on extending the act's funding authority, but did not report out a bill before the funding cutoff. A proposal by the Senate seeking a 90-day delay of the cutoff failed. (See Jul 12, 1976)

Jul 22, 1975: FAA announced that it had awarded contracts to the Bendix Corp. and Texas Instruments **to build, test, and evaluate prototypes of the new microwave landing system (MLS) under Phase III of the MLS development program**. Each contractor was to build two models of the system--the small community airport configuration and the basic configuration---using a time reference scanning beam signal format. (See Feb 27, 1975, and Jun 1976.)

Aug 1, 1975: The establishment of a **Group II Terminal Control Area (TCA) at the new Kansas City International Airport completed the creation of 12 airport areas in this category**. FAA defined each TCA after consultation with airport users. General aviation operators, in particular, registered many objections to proposed TCA rules and limits. Since the original concept in 1970, FAA reduced the number of Group II TCAs from 14 to 12. The locations were: St. Louis, Seattle, Minneapolis, Houston, Denver, Cleveland, Detroit, Pittsburgh, and Las Vegas; and Philadelphia, New Orleans, and Kansas City. (See Apr 14, 1975, and May 15, 1980.)

Aug 13, 1975: FAA completed its longstanding program to implement the **ARTS III automated radar terminal system** at the nation's busiest terminals on this date with the commissioning at the Dallas-Fort Worth Regional Airport. All 61 ARTS III systems were now operational in the contiguous states, as well as one in Hawaii and one in Puerto Rico. The basic ARTS III contract had been signed in Feb 1969, and the first ARTS III procured under it became operational at Chicago O'Hare airport (see Feb 15, 1973). The sixty-second ARTS III, which went into operation in Jul 1975 at Atlanta Hartsfield airport, replaced an ARTS I--the prototype ARTS--which had been in operation there since 1965. (See Aug 10, 1976.)

Aug 15, 1975: FAA and the National Aeronautics and Space Administration (NASA) signed an agreement under which **NASA would operate a third-party reporting system guaranteeing anonymity to persons providing information about safety hazards and incidents** (see Apr 8, 1975). This system was designed to overcome fears that FAA's Aviation Safety Reporting Program would not provide genuine immunity. NASA agreed to: receive and process reports; delete information that would reveal the identity of the informants; analyze and interpret the data; and provide the results to FAA and the aviation community. Information concerning criminal offenses, however, would be referred directly to FAA and the Justice Department. The system was to become operational by Apr 15, 1976 (see that date.)

Aug 25, 1975: In Senate testimony, Lockheed's chairman stated that his company paid **"kickbacks" to officials of foreign governments** to encourage purchase of L-1011 aircraft, an admission that was followed by a series of revelations about the questionable overseas sales practices of Lockheed, Boeing, and McDonnell Douglas.

Aug 26, 1975: The commissioning of the computerized **radar data processing system (RDP)** at the Miami Air Route Traffic Control Center marked the **end of the final phase of the completion of NAS En Route Stage A**, FAA's program of automating and computerizing the nation's en route air traffic control system, an effort covering more than a decade (see Feb 13, 1973). Miami was the last of the 20 ARTCCs to receive RDP capability.

The RDP system consisted of three key elements: radar digitizers located at long-range radar sites that converted raw radar data and aircraft transponder beacon signals into computer-readable signals transmitted to the centers' computers; computer complexes in each center able to relay this information to the controllers' screens; and new screens that displayed the information to the controllers in alphanumeric characters.

Sep 2, 1975: FAA released an **analysis of Federal grants** issued in the first five years of the Airport and Airway Development Act of 1970 (see May 21, 1970). For the period, $37.5 million had been obligated under the Planning Grant Program (PGP) and $1.3 billion under the Airport Development Aid Program (ADAP). (This was a vast increase compared to the $1.2 billion disbursed during the entire 24-year history of the earlier Federal-aid airport program: see May 13, 1946). A total of 1,059 planning grants had been approved during the five-year period. Authorized funding for ADAP--initially $280 million annually and increased to $310 million in 1973 (see Jun 18, 1973)--had made it possible for FAA to approve aid for 2,434 development projects. With the help of these funds, 85 new airports were built and more than 1,000 received improvements that included: 178 new runways; 520 new taxiways; 201 runway extensions; 28 instrument landing systems, 141 runway end identifying lighting systems (REILS), 471 visual approach slope indicators (VASIs); security fencing; and equipment for crash, firefighting, and rescue.

Nov 1, 1975: New procedures went into effect requiring air traffic controllers to provide an **extra mile of separation** between small aircraft landing behind large and heavy aircraft capable of generating hazardous **wake turbulence** (see Mar 1, 1970). Reflecting the findings of two special studies, the new procedures required that small aircraft be separated by 4 miles when landing behind large aircraft and by 6 miles when landing behind heavy aircraft. The "small" aircraft category (12,500 lbs. or less) included most of the country's air taxis and general aviation aircraft. The "large" category (12,500-300,000 lbs.) included certain business aircraft such as the Sabreliner and Jetstar, the smaller DC-8s and Boeing 707s, and the Boeing 727 and 737. (The Boeing 757 also joined the "large" category after its certification in 1982.) The "heavy" category (300,000 lbs. or more) included the C-5A, DC-10, L-1011, Boeing 747, and the larger versions of the DC-8 and 707. (See Spring 1976 and Dec 19, 1992.)

Nov 24, 1975: **Dr. John L. McLucas became the sixth FAA Administrator**, succeeding Alexander P. Butterfield (see Mar 14, 1973). The President had persuaded McLucas to give up his portfolio as Secretary of the Air Force in favor of the FAA post. McLucas had been nominated by Ford on Oct 20 and confirmed by the Senate on Nov 13.

Born in Fayetteville, N.C., in 1920, McLucas held degrees from Davidson College and Tulane University. After serving as a Navy radar officer during World War II, he earned a doctorate in physics with a minor in electrical engineering at Pennsylvania State University in 1950. McLucas authored numerous scientific articles and held ten patents. He became vice president and later president of a private electronics firm, then joined the Defense Department in 1962 as Deputy Director of Defense Research and Engineering. Two years later, he became Assistant Secretary General for Scientific Affairs at NATO headquarters. In 1966, McLucas became president and chief executive officer of the MITRE Corporation, a nonprofit research organization established at the Massachusetts Institute of Technology to work on technical problems for the government. He became Under Secretary of the Air Force in 1969, and was promoted to Secretary in 1973. McLucas served as FAA Administrator for 16 months, including the remainder of the Ford Administration and two months under President Jimmy Carter. (See Apr 1, 1977.)

Dec 26, 1975: The Soviet Union inaugurated the world's **first regular supersonic airline service**, with the departure of a Tupolev-144 from Moscow for Alma-Ata in the Kazakh Republic. The **plane carried only mail and cargo** over the 2,500-mile route. (See Jan 21, 1976).

Dec 29, 1975: A high-intensity **bomb exploded in a coin-operated locker at New York's La Guardia Airport**, killing 11, injuring 54, and doing extensive damage to the main terminal building. The incident, provoking national concern and leading to the creation of a special government-industry task force, caused FAA to issue a rule (effective Apr 15, 1976) requiring that checked baggage be screened for inspection under a "profile" system. FAA also accelerated efforts to develop automatic equipment capable of detecting explosives in lockers and cargo holds (see Sep 1985). In the meantime, the agency stepped up its Explosive Detection K-9 Dog Handler Team program begun in 1972 (see Nov 29, 1977). Following the La Guardia bombing, lockers at nearly all U.S. airports were placed in areas where they could be under surveillance.

***1976**

Jan 1, 1976: The Federal Aviation Administration issued a **new air traffic control handbook**, representing a consolidation of two formerly separate manuals--one on terminal and the other on en route air traffic control. To improve controller-pilot communications, FAA on Apr 26 announced publication of a **new air traffic control glossary** four times the length of that previously included in the Airmans Information Manual. The National Transportation Safety Board had recommended issuance of such a glossary after a crash at Berryville, Va. (see Dec 1, 1974).

Jan 9, 1976: As of this date, FAA implemented a **conflict alert system**, capable of warning air traffic controllers of less-than-standard separation between aircraft under their control, at all 20 air route traffic control centers in the contiguous U.S. FAA added the new conflict alert capability to the radar data processing system of the NAS En Route Stage A center computers (see Aug 26, 1975). The new system projected the flight paths of all aircraft on the controllers' radar sector for two minutes ahead, and flashed the relevant aircraft data tags if the projection showed the paths approaching closer than the required horizontal and vertical minimums. The controller could then radio appropriate orders to the aircraft to avoid a collision. The conflict alert system initially operated only above 18,000 feet, but by Dec 1978 all 20 centers had implemented it from the ground up. FAA later installed a similar capability in the Automated Radar Terminal System (ARTS) computers (see Jan 10, 1978).

Jan 21, 1976: British Airways and Air France began the world's **first scheduled supersonic passenger service** (see Dec 26, 1975) with simultaneous takeoffs of Anglo-French Concorde SST aircraft from London and Paris for flights to Bahrain and Rio de Janeiro. The London-Bahrain flight, normally 6 hours 30 minutes by subsonic jet, took 4 hours 10 minutes. The Paris-Rio flight, scheduled to take 7 hours 5 minutes (compared with a subsonic time of 11 hours 10 minutes), arrived 40 minutes late. (See Feb 4, 1976.)

Feb 4, 1976: Secretary of Transportation William T. Coleman, Jr., announced his **decision to permit the Anglo-French supersonic transport Concorde to land in the U.S. on a temporary, restricted basis**. Air France and British Airways had made application in Jan 1975 to conduct limited commercial operations with the SST into New York Kennedy and Washington Dulles airports, proposing a maximum of four flights daily into Kennedy and two daily into Dulles. In an environmental impact statement issued in draft in Mar 1975 and in final on this date, FAA recommended granting the application on the grounds that the limited operations could not significantly harm the environment. Secretary Coleman authorized the proposed service for a trial period not to exceed 16 months.

Working with the National Aeronautics and Space Administration, the Environmental Protection Agency, and the Office of the Secretary, FAA developed plans for noise, sonic boom, and low altitude pollution monitoring of the Concorde to determine its environmental impact during the trial period. Devices to monitor noise and emissions were installed at Washington Dulles and surrounding communities, and most were in operation when **Concorde service to Dulles began on May 24, 1976**. Intense opposition from environmental and citizen groups in the New York area and a ban by the Port Authority of New York and New Jersey delayed Concorde service at Kennedy. (See Apr 27, 1973, Sep 23, 1977, and Oct 17, 1977)

Feb 15, 1976: FAA transferred the personnel and functions of its **office at Beirut, Lebanon**, to the office at Frankfurt, Germany, because of the continuation of the civil war that began in late 1975. The Beirut office had consisted basically of three inspectors who made sure that U.S.-registered aircraft operating in the Mediterranean and Middle East were airworthy and complied with Federal regulations (see Jun 30, 1965). An office later established at Rome, Italy, took over these functions.

Feb 21, 1976: In exchange for higher salaries and shorter work hours, the **pilots of Frontier Airlines accepted a contract calling for the elimination of the flight engineer from the crew of the Boeing 737**. The Air Line Pilots Association executive board tried, but failed, to expel Frontier pilots from the union for violating the union's by-laws. (See Nov 18-27, 1974, and May 7, 1977.)

Feb 1976: The **Washington, D.C., Flight Service Station moved to the Air Route Traffic Control Center (ARTCC) at Leesburg, Va.**, and FAA announced that it had ordered an **AWANS (aviation weather and notice to airmen system)** for installation at Leesburg. AWANS was computer-aided system to assist flight service specialists by displaying weather and aeronautical information on viewing screens. It had been under test at the flight service station (FSS) in Atlanta, Ga., since July 1975. Once operational, FAA expected the Leesburg AWANS to take over the functions of the FSSs at Richmond and Charlottesville. This prototype would then be used to demonstrate the feasibility of consolidating several manual FSSs into a single automated station, and of collocating FSS and ARTCC facilities. The long-range **plan was to establish AWANS-equipped FSS hubs at all 20 ARTCCs** in the contiguous United States. (See Feb 4, 1964, and Sep 1977.)

Mar 1, 1976: A rule published on this date required **removal of side-facing flight attendant seats** from all airliners by May 1. In issuing the rule, FAA noted that flight attendants occupying side-facing seats were likely to receive more serious injuries during survivable accidents than passengers in forward-facing seats, and hence might be incapacitated at a time when their performance of emergency duties was most needed. (See Feb 15, 1980.)

Mar 4, 1976: FAA announced a contract for the development of three engineering model **Discrete Address Beacon System** (DABS) ground sensors and 30 compatible transponders. This new advanced radar beacon system was designed to eventually replace ATCRBS, the existing air traffic control radar beacon system (see Dec 27, 1963). The chief advantage of DABS was its ability to interrogate and receive a transponder reply from a specific aircraft rather than from all aircraft in the zone of coverage. This would help eliminate the problem of overlapping and garbling of transponder replies from aircraft flying in close proximity to one another. Since DABS would address aircraft on an individual basis, it would also provide a vehicle for automatic communications between aircraft and the ground. This data link capability was seen as the basis for future implementation of a ground-based collision avoidance system called **Intermittent Positive Control (IPC)**, later designated the Automatic Traffic Advisory and Resolution System (ATARS). (See Mar 1976.)

Mar 21, 1976: Effective this date, FAA required **foreign air carriers** operating large aircraft to and from the United States in scheduled passenger operations **to maintain security programs** which would insure: that all passengers and property carried aboard their aircraft were subject to effective weapons screening procedures prior to boarding; that there was no unauthorized access to their aircraft; that no unauthorized weapons, bombs, or incendiary devices were carried aboard; that appropriate baggage security measures were in place; and that they were in compliance with the FARs in dealing with bomb threats and threats of hijacking. In addition, each foreign carrier was to provide the FAA Administrator upon his request information on the status of its screening program.

In addition, as of Aug 23, 1976, the FAA also required foreign carriers: to deny boarding to passengers refusing to permit their persons or property to be screened for weapons; ensure that their x-ray equipment in use at U.S. airports met minimum U.S. safety and effectiveness standards; and provided that the prohibition against carrying weapons aboard a foreign aircraft would not apply if the weapons, after inspection by the carrier, were in checked baggage and inaccessible to the passenger.

Mar 31, 1976: Several **organizational changes** became official this date at the FAA Headquarters. The Office of the Associate Administrator for Airports and the Airports Service were abolished and replaced by the Office of Airport Programs, headed by an assistant administrator who reported directly to the Administrator. The Metropolitan Washington Airports Service was converted to a field element headed by a director who also reported to the Administrator. Finally, the Office of the Associate Administrator for Aviation Safety lost its two largest components--the Flight Standards Service and the Civil Aviation Security Service, which now reported directly to the Administrator--and was renamed the Office of Aviation Safety, a small staff unit headed by an assistant administrator who reported to the Administrator. (See Nov 2, 1978 and Jun 13, 1979.)

Mar 31, 1976: **FAA Deputy Administrator James E. Dow retired** after 32 years of Federal service, all with CAA and FAA (see Aug 9, 1974). Dow had been Deputy or Acting Deputy since Jul 1973, and had served as Acting Administrator between the tenures of Administrators Butterfield and McLucas. (See Mar 25, 1975, Nov 24, 1975, and May 4, 1977.)

Mar 1976: Responding to public and congressional concern about near collisions in the air, Administrator John L. McLucas announced a five-point **separation assurance program**: continued enhancement of ground-based air traffic control; consideration of increased use of Instrument Flight Rules and radar beacon surveillance; possible additional requirements for carriage of radar beacons (transponders) with altitude reporting capability; development of the **Beacon Collision Avoidance System (BCAS)**; and development of Intermittent Positive Control (IPC), which would allow automatic transmission of collision warnings from ground facilities (see Mar 4, 1976).

The inclusion of BCAS represented a milestone in the long search for an airborne collision warning device that had been begun by the Air Transport Association in 1955. FAA began participating in 1959 by sponsoring a government-industry advisory group, but by the early 1970s was under fire for failure to achieve prompt deployment of such a system. At congressional request, the agency in 1972 undertook an evaluation of three forms of Airborne Collision Avoidance System (ACAS) developed by Honeywell, McDonnell-Douglas, and RCA. Within FAA, however, opinion tended to favor the BCAS system, which made use of radar transponders and was more compatible with the ground-based air traffic control system. On Feb 9, 1976, McLucas reported to Senator Howard Cannon that, although Honeywell's system was the best of the three ACAS versions, increased separation assurance could best be achieved by other means, including development of BCAS. (See Dec 27, 1978.)

Apr 15, 1976: The National Aeronautics and Space Administration (NASA) implemented a **system for processing reports of aviation hazards and safety-related incidents while preserving the reporters' anonymity** (see Aug 15, 1975). FAA made certain modifications to its Aviation Safety Reporting Program (ASRP) that took effect on the same date that NASA's participation began. Under the new policy, FAA would waive disciplinary action against all those involved in an incident provided a timely report was filed with NASA and certain other stipulations were fulfilled. FAA would not use reports for disciplinary purposes even if they involved reckless operation, gross negligence, or willful misconduct (although disciplinary action might be taken in such cases on the basis of information obtained independently). As before, no form of immunity was provided in cases involving accidents or criminal offenses, and FAA remained free to take remedial action to ensure safety. (See Mar 16, 1979.)

Apr 27, 1976: An American Airlines **Boeing 727 crashed on landing at Charlotte Amalie** on St. Thomas in the Virgin Islands, killing 37 of 88 persons aboard. The accident, the third crash of a jetliner at St. Thomas's Truman Airport in less than 8 years, revived criticism of the airport as unsafe because of a short runway (4,650 feet), mountainous surroundings, and tricky winds. Later in the year, Transportation Secretary William T. Coleman announced that grants would be provided to assist in **building a longer runway**.

May 5, 1976: The United States, France, and the United Kingdom concluded an **agreement providing for the monitoring of ozone levels** in the stratosphere and cooperation to ensure that the ozone layer was not degraded by emissions from supersonic transports. (See Feb 4, 1976, and Sep 23, 1977.)

May 24, 1976: The FAA Depot at Oklahoma City completed a highly successful **emergency resupply of the FAA Center/Approach Control (CERAP) facility on Guam** following the destruction wrought three days earlier by Typhoon Pamela. The depot primarily resupplied air traffic control equipment lost when winds of up to 170 miles per hour swept the island.

Jun 1976: FAA received delivery of the **first prototype microwave landing system (MLS)**. The program--a high-priority undertaking begun in 1971 and participated in by FAA, DOD, and NASA--was considered a key element of the upgraded third generation air traffic control system (see Jul 1971). FAA planned to test the prototypes at the National Aviation Facilities Experimental Center, in Atlantic City, and at a NASA base in California. (See Jul 22, 1975, and Mar 16, 1977.)

Jun 2, 1976: In a suit brought by a citizens group known as Virginians for Dulles, the U.S. Court of Appeals for the Fourth Circuit held that the **"vastly expanded use" of Washington National and Dulles International Airports over recent years required FAA to file Environmental Impact Statements** concerning the operations of these airports. (See Mar 23, 1978.)

Jun 6, 1976: The **air route traffic control center at Great Falls, Mont., closed** after 34 years of service. Great Falls was the last of 10 centers phased out in a program begun in the early 1960s to consolidate en route air traffic control. Its closing left only 20 modernized ARTCCs within the contiguous U.S. FAA had been reducing the airspace controlled by Great Falls since 1970. (See Appendix V.)

Spring, 1976: FAA installed a **prototype wake vortex advisory system (VAS)** at Chicago O'Hare airport (see Nov 1, 1975). The prototype's computer was designed to analyze wind measurements collected in the runway area in order to predict aircraft wake turbulence, or give assurance of its absence. This would making it possible for controllers to safely reduce the separation distances between landing aircraft and thereby expand airport capacity. FAA subsequently removed the VAS, however, concluding that it did not provide sufficient data for the purpose. (See Dec 18, 1992.)

Jul 1, 1976: The principal provisions of **FAA's hazardous materials rules became incorporated into the regulations of DOT's Materials Transportation Bureau**. The change resulted from legislation that gave the Secretary of Transportation increased regulatory and enforcement authority over the movement of hazardous materials in all the transportation modes (see Jan 3, 1975). DOT had accordingly established the Materials Transportation Bureau, and transferred the authority for regulation of hazardous materials from the various administrations, including FAA, to the new Bureau (see Sep 23, 1977).

Jul 12, 1976: FAA put into effect a national **beacon code allocation plan** under which pilots flying in the contiguous U.S. would be able to keep the same radar beacon identification code from takeoff to landing, without having to change codes as had previously been required when they flew from one area or altitude to another.

Jul 12, 1976: President Ford signed Public Law 94-353, the **Airport and Airway Development Act Amendments of 1976**, ending a one-year lapse in authorization for Federal airport aid (see Jun 30, 1975). The legislation marked the third time that the Airport and Airway Development and Revenue Acts of 1970 were amended (see May 21, 1970, Nov 27, 1971, and Jun 18, 1973). The new law sharply **raised the Airport Development Aid Program (ADAP) funding levels** to a total of $2.73 billion for the five-year period 1976-1980. It also increased the Federal share for ADAP grants from 50 percent to 75 percent for the nation's 67 largest airports. For smaller airports, the Federal share rose from 75 percent to 90 percent for fiscal 1976-78 and 80 percent for fiscal 1979-80. The Federal share for planning grants rose from 66 2/3 percent to 75 percent, with some exceptions. The new law simplified funding procedures and **expanded the types of projects eligible for ADAP assistance** to include snow removal equipment as well as equipment, barriers, landscaping, and land acquisition for the purpose of airport noise abatement.

In addition, the legislation **authorized appropriations from the Airport and Airway Trust Fund** during fiscal 1976-80 of : $1.3 billion for establishing and improving Federal air navigation facilities; $1.5 billion for maintaining such facilities; and $1.275 million to assist the states in developing their own general aviation airport standards. Other provisions of the law included authorizing the Secretary of Transportation to select **four states to receive demonstration grants for administering the general aviation portion of the ADAP program** (see Nov 24, 1976). The law also established **commuter service airports**, a new class of air carrier airport not served by carriers holding CAB certificates of public convenience and necessity. (See Sep 30, 1980.)

Jul 12, 1976: FAA redesignated its Office of Information Services the **Office of Public Affairs**, its name prior to a 1973 reorganization (see Sep 10, 1973). This change also transferred from Public Affairs the congressional correspondence function to the Executive Secretariat and the congressional liaison function to the Special Assistant for Legislative Affairs.

Jul 28, 1976: Capt. Eldon W. Joersz, USAF, piloted a Lockheed SR-71A "Blackbird" at 2,193.16 mph near Beale Air Force Base, Calif., setting a Federation Aeronautique Internationale absolute **world record for speed** over a straight course. (See Oct 3, 1967.)

Jul 28-31, 1976: A **slowdown by PATCO-affiliated air traffic controllers** disrupted traffic around the country. PATCO president John F. Leyden had ordered the slowdown to protest the U.S. Civil Service Commission's delay in completing a pay reclassification study for controllers. Leyden had also protested a Civil Service proposal to downgrade controllers at certain low-activity facilities. The slowdown ended when the Civil Service Commission agreed to reconsider its position and expedite the review, while FAA

Administrator John L. McLucas publicly confirmed his support of upgradings at certain facilities. FAA took no disciplinary action against PATCO. (See May 7, 1975, and Nov 12, 1976.)

Aug 10, 1976: FAA announced a contract for **enhancement of its ARTS III automated terminal radar systems** (see Aug 13, 1975). Of the 65 existing ARTS III systems, 29 would be **upgraded to ARTS IIIA** installations by the addition of certain capabilities. The ARTS IIIA would provide radar tracking of aircraft not equipped with transponders, and enable controllers to place alphanumeric data tags on the scope to allow automatic reporting of identity and altitude for these targets (whereas the basic ARTS III displayed data tags only for transponder-equipped aircraft). The ARTS IIIA would also possess improved computer efficiency, as well as capacity for additional radar displays and for continued operations with reduced capabilities in the event of component failure (see Mar 1978). In addition, the contractor agreed to upgrade all 65 existing ARTS installations to permit air traffic control operations to be continuously recorded on magnetic disks.

The contract also called for the installation of a **special ARTS IIIA system at the new New York terminal radar control room (TRACON)**. Ground-breaking for the building to house the TRACON had taken place during July at Long Island's Mitchel Field. The new facility would replace the Common Radar Room at Kennedy International, which controlled traffic approaching and departing New York's three major airports and several smaller airports. (See Jan 10, 1981.)

Finally, the contract provided for installation of four **en route automated radar tracking systems (EARTS)** at air route traffic control centers in Alaska, Hawaii, and Puerto Rico, as well as at Nellis Air Force Base (see Aug 4, 1980).

Sep 2, 1976: CAB approved **Advance Booking Charter fares**, available to anyone who paid 30 days in advance (or 45 days in advance for certain destinations) and not restricted to members of pre-existing "affinity groups." Like the approval of One Stop Inclusive Tour Charters during the previous year, this move was part of a trend to liberalize charter regulations. The new competition from charter operators helped stimulate scheduled carriers to begin offering deeply discounted prepaid fares during 1977. (See Jun 10, 1977).

Sep 10, 1976: A **British Airways Trident and a Yugoslav DC-9 collided** over Zagreb, Yugoslavia, killing all 176 occupants of the two airplanes, a higher toll than in any previous civil midair collision. In May 1977, a Yugoslav court sentenced an air traffic controller to 7 years in prison for negligence in handling the two aircraft, the first known criminal prosecution of a civilian controller for negligent performance of duties.

Sep 10, 1976: The first **successful hijacking** of a scheduled American air carrier aircraft since comprehensive security measures were instituted on Dec 5, 1972, occurred when five Croatian nationalists commandeered a TWA jetliner en route from New York's La Guardia Airport to Chicago. The hijackers seized the plane by threatening to blow it up with realistic-looking "bombs" they had assembled in a lavatory from an assortment of innocuous objects brought aboard on their persons and in their carry-on luggage. To bolster their deception, they revealed the location of a real bomb in a New York subway locker. That device exploded after removal to a disposal area, killing one policeman. The hijackers demanded that newspapers publish a pro-Croatian manifesto and that aircraft drop leaflets over cities in the U.S., Canada, England, and France. This was complied with, and the hijackers eventually surrendered in France.

Oct 1, 1976: Fiscal year 1977 began for the Federal government.This was the **first Federal fiscal year to begin on Oct 1** instead of Jul 1. Fiscal 1976 had ended on Jun 30, 1976, and the following three months had been designated a transition quarter.

Oct 1, 1976: FAA began to receive the **first prototypes of the ARTS II automated radar terminal system** for testing and evaluation. Developed under contracts concluded in Aug and Dec 1974, FAA programmed the system for installation at 71 terminals whose traffic volume did not warrant the more highly automated and much more costly ARTS IIIs in use at the major hubs. Designed around a relatively low-cost minicomputer, the ARTS II lacked certain capabilities of the ARTS III but could provide controllers using it at airports with direct alphanumeric readouts of the identity, heading, and altitude of the transponder-equipped aircraft they were tracking. (See Dec 12, 1978)

Oct 5, 1976: The Labor Department certified the **Federal Aviation Science and Technological Association (FASTA)**, a National Association of Government Employees union, as the exclusive

bargaining representative of some 7,700 airway facilities employees. The employees had selected FASTA as their representative in an April 1976 election, but certification had been delayed by an objection by the American Federation of Government Employees. FAA and FASTA signed a national labor agreement in September 1977. (See Dec 31, 1981.)

Oct 15, 1976: A new nationwide standardized format went into effect for **Pilot Reports (PIREPS)**, reports by en route pilots describing in-flight weather conditions as they encountered them. FAA, the National Weather Service, and Department of Defense personnel received and encoded PIREPS into the new format and fed them into a teletypewriter network for distribution to civil and military aviation facilities around the country. Replacing earlier informal reports given by the pilots in no particular order, the new format facilitated the reading and relay of PIREPS, and made them more adaptable for use with several automated weather communication systems FAA had under development.

Nov 5, 1976: FAA commissioned the first **Minimum Safe Altitude Warning (MSAW)** system, an add-on computer software feature specially devised for use with the ARTS III radar terminal system, at Los Angeles International Airport. MSAW had the capacity to spot unsafe conditions by automatically monitoring aircraft altitudes and comparing them to terrain maps stored in the computer's memory. If aircraft descended dangerously close to the ground, aural and visual alarms on their consoles alerted controllers who could then radio warnings to pilots (see Oct 28, 1977). Sperry Rand's UNIVAC division developed MSAW under a contract announced by FAA on Jul 17, 1974. The need for such a system had been highlighted by the crash of an L-1011 near Miami (see Dec 29, 1972).

Nov 12, 1976: The U.S. Civil Service Commission, in a reversal of a position taken earlier, announced its support for **upgrading air traffic controllers** at 8 of the nation's busiest air traffic control facilities from GS-13 to GS-14. The Commission also approved the upgrading of controllers of lower grades at approximately 23 other installations, but insisted on downgradings at a few facilities. PATCO continued to demand better terms, backing its position with the threat of renewed slowdowns. On Jan 13, 1977, the Commission dropped its insistence on downgradings and approved promotions at some 45 facilities, including the GS-14 level at 8 locations. (See Mar 15, 1978.)

Nov 24, 1976: The Secretary of Transportation chose Arizona, Pennsylvania, South Dakota, and Michigan to participate in a **four-state demonstration program** mandated by Congress (see Jul 12, 1976). The chosen **states administered Federal grants for the development of general aviation airports** within their borders for fiscal 1977-78 to determine whether state agencies could manage these funds more effectively than FAA. Although FAA recommended that the demonstration be extended beyond fiscal 1978, Congress allowed the program to expire. (See Oct 1, 1989.)

Dec 10, 1976: FAA announced completion of the **conversion of the airway intersection and waypoint identifiers** on en route aeronautical charts to five-letter code names specifically designed for use in the filing of computerized flight plans. Under the old system, pilots had listed the identifier using a geographic name based on a nearby terrain feature or town, making it necessary for persons receiving the flight plan to change the name to a computer code--a task that took time and greatly increased the chance for coding error. On the same date, FAA also announced a similar program to convert the fix names on approach and departure charts within 2 to 3 years.

Dec 21, 1976: FAA deemed **contact lenses permissible** to meet the distance visual acuity requirements for all classes of airman medical certificates, by a rule effective this date. Previous FAA regulations governing medical certification had allowed for visual correction by eye glasses only, with exceptions being made under a time-consuming waiver process. The new rule eliminated the waiver procedure. It did not affect the eye glass requirement for correcting near visual acuity.

Dec 23, 1976: FAA published a rule establishing **deadlines for phased compliance of all jet transport aircraft with the noise standards already established for new aircraft types** (see Oct 26, 1973). The agency gave operators whose fleets included aircraft that did not meet the standards the option of modifying or replacing them. FAA also required all two- and three-engine jets exceeding 75,000 lb. to comply within six years (by Jan 1, 1983), with half the total in each airline fleet to be in compliance at the end of four years. Aircraft in this category included the BAC-111, DC-9, Boeing models 727, 737, and 747-100. Non-complying four-engine jets were to meet the standards within eight years, with one-fourth of them complying within four years and one-half within six years. This category included the Convair 990, DC-8, and Boeing 707.

The rule did not immediately apply to foreign-flag aircraft or U.S. aircraft on international routes, since FAA was working with the International Civil Aviation Organization to establish world-wide noise standards. If no agreement was reached by Jan 1, 1980, however, the agency would take regulatory action to ensure compliance by at least Jan 1, 1985 (see Nov 28, 1980).

The rule followed President Ford's Oct 21, 1976, announcement that noise standard compliance must be achieved within eight years. It also implemented a major provision of an FAA-**DOT noise policy dated Nov 18, 1976**. Other elements of the policy included: a **new rule, published Nov 29, requiring the use of noise abatement flap settings; a decision not to prescribe the two-segment approach procedure**, which was considered to involve unacceptable risks; and implementation of a **Local Flow Traffic Management system** aimed at reducing low-altitude jet flying time, rather than the minimum altitude regulations proposed by the Environmental Protection Agency. In accordance with another element of the policy, FAA during fiscal 1977 issed grants to four airports to participate in a **noise control and land use planning demonstration program**. (See Mar 3, 1977, Jan 19, 1979, and Feb 18, 1980.)

***1977**

Jan 10, 1977: FAA published a rule **raising the maximum number of transport aircraft passenger seats per main (Type A) emergency exit** from 100 to 110, effective Feb 10, 1977. The change cleared the way for certification of Boeing 747s seating over 500.

Jan 20, 1977: **Jimmy (James E.) Carter became President**, succeeding Gerald R. Ford.

Feb 1, 1977: **Brock Adams became Secretary of Transportation**, succeeding William T. Coleman, Jr., with the change in administrations. Adams had been a Democratic congressman from the State of Washington since 1964 and a leading transportation authority in the House of Representatives. (See Jul 20, 1979.)

Mar 3, 1977: FAA published a rule establishing **three "stages" of aircraft noise levels** for subsonic large transport aircraft and subsonic turbojets. Stage 1 aircraft were those that did not meet current noise standards and hence must be modified or replaced according to a previously established schedule (see Dec 23, 1976). Stage 2 aircraft met the current standards, while Stage 3 aircraft were able to meet the **more rigorous noise standards for the next generation of jet transports** prescribed by the rule.

The agency judged that improved noise-reduction technologies made it economically reasonable to apply the new standards, which were effective on Oct 1, 1977 and covered all large (over 75,000 pounds) aircraft for which application for new type certificates had been made after May 5, 1975. Noise limits on landing approaches were reduced from the old standard of 102-108 effective perceived noise decibels (EPNdB) to 98-105 EPNdB, depending on aircraft weight. For the first time, the standards for takeoff and sideline noise levels were based on number of engines as well as weight. Takeoff limits were reduced from the old standard of 93-108 EPNdB to 90-106 for four-engine jets, 90-104 for three engines, and 89-101 for one and two engines. Sideline noise limits were reduced from 102-108 EPNdB to 96-103 for three and four engines and 94-103 for one and two engines. In addition, the measuring points for sideline noise were altered. The new noise limits were not retroactive to aircraft types already certificated. (See Feb 18, 1980.)

Mar 16, 1977: The All-Weather Operations Panel of the International Civil Aviation Organization (ICAO) recommended to ICAO's Air Navigation Commission the adoption of the U.S.-Australian **Time Reference Scanning Beam (TRSB) technique as the world standard for a microwave landing system (MLS)**. The vote was six for the U.S-sponsored system and one for the British Doppler system, with three abstentions (Britain, France, and West Germany). Britain protested the decision as biased and technically flawed, and hence the debate about MLS continued pending a final decision in 1978 by the full All-Weather Operations Division of ICAO. (See Jun 1976, and Apr 19, 1978.)

Mar 27, 1977: **Two Boeing 747s collided on a runway at Tenerife**, Canary Islands, under conditions of limited visibility. One of the aircraft, a Pan American jet, was moving down the runway toward an assigned taxiway. The other, belonging to Royal Dutch Airlines (KLM), had been assigned to wait at the end of the same runway. The Dutch crew was approaching the legal flight duty time limit. Their captain apparently misinterpreted a message from the tower as clearance to take off. Disregarding the doubts of a crew member, he began the takeoff roll. The resulting collision killed all 248 persons aboard the KLM jet and 335 of the 396 persons aboard the Pan American. The fatality total of 583 was the worst that had

occurred in any aviation accident. Most of the casualties were caused by the intense fires that engulfed both aircraft. The accident stimulated interest in fire safety (see Jun 26, 1978) and in airport surface detection equipment (see Jul 5, 1977).

Mar 30, 1977: Secretary of Transportation Brock Adams announced the withdrawal of Federal support for a **proposed new St. Louis airport** near Waterloo, Ill. His predecessor, William T. Coleman, Jr., had given conditional approval to the Waterloo site in Sep 1976, but Adams, in reversing this decision, said that pressing ahead on a new airport there was "premature." He acknowledged that his choice had been influenced by strong political opposition in Missouri to the project, as well as by the recent signing of long-term leases by major airlines at the existing Lambert-St. Louis Municipal Airport. (Langhorne M. Bond, who became FAA Administrator on May 4, 1977, had been a leading advocate of the Illinois site while he was Illinois Secretary of Transportation. Bond agreed during his confirmation hearings not to take part in a decision on the issue.)

Apr 1, 1977: **John L. McLucas' resignation as Federal Aviation Administrator became effective**. The post of Acting Administrator was assumed by Quentin S. Taylor, an FAA executive who was President Carter's nominee for Deputy Administrator. (See entries for May 4, 1977.)

Apr 4, 1977: A Southern Airways **DC-9 crashed near New Hope, Ga**. The pilot attempted an emergency landing on a highway, but the aircraft broke apart and caught fire. The accident killed 62 of the 85 persons aboard, as well as 8 persons on the ground. In addition, one passenger and one person injured on the ground died about a month later. The National Transportation Safety Board cited the probable cause of the crash as the **total and unique loss of thrust after the engines ingested massive amounts of water and hail** as the aircraft penetrated an area of severe thunderstorms. As contributory causes, the NTSB listed: failure of the airline's dispatch system to provide up-to-date severe weather data; the captain's reliance on airborne weather radar to enter a thunderstorm area; and FAA's lack of a system for disseminating real-time hazardous weather warnings. (See May 19, 1977.)

Apr 1977: FAA set up a unique transport unit of the Miami General Aviation District Office to provide **greater oversight of non-certificated air cargo operations concentrated in the northwest corner of Miami airport**. Recent accidents had given rise to FAA concerns about the safety of these operators of private-carriage cargo aircraft for lease.

May 4, 1977: **Langhorne M. Bond became the seventh Administrator of the Federal Aviation Administration**, succeeding John L. McLucas (see Mar 31, 1977). Bond had been nominated by President Carter on Mar 30 and confirmed by the Senate on Apr 27.

Born in Shanghai, China, in 1937, Bond was the son of a vice president of Pan American Airways. After earning an A.B. (1959) and law degree (1963) at the University of Virginia, he went on to study at the Institute of Air and Space Law at McGill University, the London School of Economics, and Oxford University. Bond was a member of the task force that developed the legislation establishing the U.S. Department of Transportation, and then served one-year stints as special assistant to the first DOT Secretary, Alan S. Boyd, and as Assistant Administrator for Public Affairs in DOT's Urban Mass Transportation Administration. He left Federal service in 1969 to become Executive Director of the National Transportation Center, a nonprofit research organization in Pittsburgh that managed bus technology projects for transit authorities. In Mar 1973, Bond was named Secretary of Transportation for the State of Illinois, the position he held when tapped for the FAA job. He served as FAA Administrator for the remaining three years and eight months of the Carter Administration. (See Jan 20, 1981.)

May 4, 1977: **Quentin S. Taylor became FAA's Deputy Administrator**, succeeding James E. Dow (see Mar 31, 1976). A career civil servant, the 41-year-old Taylor was Director of FAA's New England Region when President Carter nominated him for the Deputy post on Mar 30, 1977.

Born in Front Royal, Va., he held degrees from Howard University in electronic engineering and Syracuse University in political science. Taylor joined FAA in 1959 as an electronics engineer assigned to the Airway Facilities Service and served successively as a staff specialist in the Office of Appraisal, Special Assistant to the Associate Administrator for Administration, FAA's first Director of Civil Rights, and Deputy Director of the Alaskan Region. His appointment to the New England Region's top post in Feb 1975 made him the first African American to head an FAA region.

Taylor served as Deputy Administrator for the remainder of the Carter Administration, resigning on Jan 20, 1981. He continued his FAA career, serving as Consultant to the Office of the

Administrator, then Director of the Office of International Aviation, and later Deputy Assistant Administrator for Airports. (See Aug 1, 1981.)

May 7, 1977: The **pilots of Wien Air Alaska went on strike** when the company determined to reduce its Boeing 737 cockpit crew to two pilots (see Nov 23, 1971). The strike lasted 21 months, but Wien maintained partial operations by hiring nonunion pilots. On Nov 2, 1978, President Carter created a Presidential Emergency Board to help settle the dispute. Three months later, on Feb 9, 1979, the board reported that both parties had agreed to accept a two-man crew for 737 operations. This settlement left only United and Western among U.S. airlines with a three-man crew for the 737. (See Feb 21, 1976 and Mar 27, 1980.)

May 12, 1977 Administrator Bond imposed an agency-wide **hiring and promotion freeze**. At FAA's national Headquarters and its Metropolitan Washington Airports office, the freeze affected both external and internal hiring. Field offices, however, could fill positions from within FAA, as long as promotions were not involved. The few exceptions to these rules included hiring required to meet air traffic training schedules. To further trim back Washington Headquarters personnel, Bond later instituted a **field placement program between Mar 27 and Oct 24, 1978**. Under the program, field offices could not fill vacancies until it was determined that qualified candidates were available at the Washington Headquarters. During his tenure, Bond succeeded in reducing overall FAA employment from 58,081 at the end of fiscal year 1977 to 55,340 on Dec 30, 1981. During the same period, Washington Headquarters personnel fell from 2,683 to 2,069.

May 16, 1977: A Sikorsky S-61L **helicopter parked atop New York's Pan Am Building rolled on its side** due to collapse of a landing gear. Rotating blades killed four boarding passengers, and one pedestrian on a street below died when struck by a separated blade portion. Originally opened in 1965, the controversial heliport had closed in Feb 1968 because of a contract dispute, then reopened on Feb 1, 1977. The facility closed permanently after the accident.

May 16, 1977: **Regulations regarding airline transportation of disabled passengers** went into effect after several years of discussion and debate. Noting increasing complaints on the subject, CAB had in 1971 referred the issue to FAA for determination of relevant safety parameters. After a series of hearings, FAA had in Jul 1974 proposed a comprehensive, detailed set of safety regulations. Public reaction was strongly negative, largly because many believed that the proposed rules placed unfair restrictions on disabled travelers.

Guided by research and tests by the Civil Aeromedical Institute (CAMI), FAA adopted a more flexible approach in its Mar 1977 rule. The agency ordered each air carrier to develop its own set of procedures, appropriate to its particular aircraft and operations. FAA would then review these procedures and direct any changes needed for safety or the public interest. Airlines were prohibited from denying passage to anyone who met the criteria in its FAA-approved plan. In addition, the new rule specifically prohibited airlines from barring a passenger because of his or her inability to sit up in an airline seat, and required individual briefings on evacuation procedures for all disabled persons before takeoff. (See Mar 2, 1990.)

FAA had originally proposed to require that canes and crutches be readily available for use during evacuation. The agency decided against this, however, citing CAMI research indicating that canes and crutches might actually hamper evacuation and might puncture inflatable evacuation slides. (See Nov 20, 1981.)

May 19, 1977: FAA issued a **rule requiring each air carrier to obtain approval by year's end for its system of gathering and disseminating information on adverse weather** that might affect safety. Current rules already required airlines to supply flight crews with pertinent weather data, but contained no provision for FAA approval of these weather information systems. In proposing this rule in a notice published on Nov 15, 1976, FAA cited factors that included an accident at St. Louis (see Jul 23, 1973). Following this proposal, the need for such a rule was highlighted by an accident in Georgia (see Apr 4, 1977).

Jun 10, 1977: The Senate confirmed **Alfred E. Kahn as Chairman of the Civil Aeronautics Board (CAB)**. A former economics professor at Cornell, Kahn was a long-time champion of free market competition. Although the effort to increase competition in air transportation had begun before President Carter appointed him (see Sep 2, 1976), Kahn carried it much further. During his 15 months at CAB, the Board approved major fare reductions and awarded many new routes and services, such as the transatlantic

Skytrain (see Sep 16, 1977). Kahn's policies at CAB helped pave the way for legislation that virtually ended the economic regulation of airlines. (See Nov 9, 1977.)

Jun 16, 1977: FAA published a **rule requiring the installation of shoulder harnesses on the front seats of new small airplanes** weighing 12,500 pounds or less that were manufactured after Jul 18, 1978. This rule upgraded safety standards included in an Aug 1, 1969, rule that required manufacturers of small aircraft to provide protection against head injuries for all occupants. This protection was to be achieved through seat belts in combination with either harnesses, energy-absorbing rests, or the elimination of injurious objects within striking radius of the head. The added requirement concerning harnesses for front seats stemmed from a Jan 1973 rulemaking proposal that followed recommendations by the National Transportation Safety Board and a petition from consumer advocate Ralph Nader. (See Nov 13, 1985.)

Jul 5, 1977: FAA announced award of a contract for an engineering model of a new generation of **Airport Surface Detection Equipment, designated ASDE-3**. ASDE surface radar had been in service at U.S. airports since Sep 1960 (see that date). FAA planned to use ASDE-3 as a replacement for the ASDE-2 systems in use at 13 airports, as well as to install ASDE-3 at additional locations. The new equipment would provide clearer outlines of runways and taxiways while at the same time suppressing radar returns from buildings and rainfall. In Apr 1977, FAA had ordered display enhancement units for the ASDE-2 as an interim measure.

FAA ordered the ASDE-3 engineering model a few months after a ground collision in the Canary Islands caused 583 deaths (see Mar 27, 1977). Deficiencies in surface radar had earlier been cited by the National Transportation Safety Board as a factor in a crash in fog involving a North Central Airlines DC-9 and a Delta Airlines Convair 880 that killed 10 passengers on the night of Dec 20, 1972, at Chicago's O'Hare International Airport. (See Aug 1979.)

Jul 13, 1977: FAA gave uninterrupted air traffic control service during a **massive electric power failure** that left approximately 9 million people in the New York City area without electricity for periods ranging from 5 to 25 hours. The uninterrupted service was possible because of the **continuous power airport program** that FAA had begun after an earlier massive blackout, in 1965, initially selecting 50 key airports to be equipped with standby engine generators. (See Sep 19, 1974.)

Jul 21, 1977: FAA issued an advisory circular on **ozone irritation in aircraft cabins**. Beginning in the winter of 1976, persons on high-altitude flights had reported such symptoms as shortness of breath, coughing, and eye irritation. By Mar 1977, FAA had concluded that ozone was the probable cause. Although the main atmospheric ozone layer lies above altitudes normally used by airliners, concentrations of the gas occasionally descend lower, particularly at high latitudes and during certain seasons of the year. FAA recommended that pilots descend to lower altitudes if effects of ozone contamination were noted. If pilots experienced significant exposure to the gas, they were advised to breathe pure oxygen before landing to counteract ozone's known effect on night vision. FAA also undertook research on more permanent ways of dealing with the problem. (See Feb 20, 1980.)

Jul 23, 1977: The **United States and the United Kingdom signed the "Bermuda II" agreement** governing civil air services between the two countries. Negotiations had been completed a month earlier, only shortly before an impending cessation of U.S.-U.K. air travel. On Jun 22, 1976, the British had given a year's notice of the termination of the original, landmark Bermuda pact (see Feb 11, 1946). Among their objectives were to increase their share of transatlantic passenger revenue by instituting capacity restrictions and to curtail American air carriers' "fifth freedom" rights to fly passengers east from London and west from Hong Kong. The U.S. negotiating team, led by former Secretary of Transportation Alan S. Boyd, argued for open competition. The resulting compromise: placed limits on American fifth-freedom rights; restricted situations in which more than one U.S. carrier served the same U.S.-U.K. route; and established a procedure that governments might use to control capacity. On the other hand, the treaty opened new routes for airlines of both countries, allowed the entrance of new carriers into the U.S.-U.K. market, and resulted in lower fares. (See Sep 26, 1977 and Mar 10, 1978.)

Aug 4, 1977: FAA Administrator Bond signed a **policy paper reaffirming the age-60 rule** on mandatory retirement of airline pilots (see Mar 15, 1960). Bond had promised to review the rule during his confirmation hearings. Citing a new study by FAA's Office of Aviation Medicine, the policy paper concluded that medical examination could not sufficiently predict the future health and functional capacity of a pilot who reached age 60. (See Dec 29, 1979.)

Aug 23, 1977: In the desert at Shaffer, Calif., Bryan Allen made the **first flight propelled by human muscle through a one-mile, figure-eight course**. Allen pedaled the course in the Gossamer Condor, a heavier-than-air craft weighing less than 70 pounds that had been designed by Paul MacCready. Nearly two years later, on Jun 12, 1979, Allen made the **first human-powered flight across the English Channel**, pedaling the MacReady-designed Gossamer Albatross.

Aug 29, 1977: FAA published a notice in the Federal Register announcing the **elimination of seven of eleven FAA advisory committees** as the result of a review conducted under President's Carter's order for a strict evaluation of such committees. The elminated committees were: the Citizens Advisory Committee on Aviation; the Microwave Landing System Advisory Committee; the U.S. Advisory Committee on Obstacle Clearance Requirements; the U.S. Advisory Committee on Visual Aids to Approach and Landings; the U.S. Advisory Committee on Terminal Instrument Procedures; the Flight Information Advisory Committee; and the Southern Region Air Traffic Control Committee. The remaining committees were: the Air Traffic Procedures Advisory Committee; the Radio Technical Commission for Aeronautics (RTCA); the Technical Advisory Committee, later terminated on Mar 1, 1978; and the High Altitude Pollution Program Technical Advisory Committee, later terminated on Jul 1, 1982.

Sep 7, 1977: The **Aircraft Loan Guaranty Program** lapsed on this date as Congress had failed to provide funds for program, which had guaranteed loans of $307 million during its 20-year existence. (See Jun 13, 1968, and Oct 24, 1978.)

Sep 9, 1977: **FAA abolished the Executive Secretariat** in the Office of the Administrator and transferred all of its functions, except administrative support and correspondence control and review, to other national headquarters elements.

Sep 15, 1977: The **dynamic simulation radar controller training laboratory (DYSIM)** became operational at the Denver Air Route Traffic Control Center, the last of the 20 centers to be so equipped. FAA had determined that it was better to train new center controllers on a simulator than on an operational ATC sector, and began a program in 1975 to provide the centers with training equipment that duplicated all the conditions experienced on operational NAS En Route Stage A display equipment.

Sep 15, 1977: **FAA formally notified the U.S.-European Aerosat council that the United States was withdrawing from the satellite project**, following a congressional cut-off of funds for the program. Aerosat's objective was to increase the communications capacity over the North Atlantic. Originally a European idea, the project had long been marked by controversy over shared ownership, radio bands, and costs. (See Nov 12, 1974.)

Sep 16, 1977: FAA closed the **Airport District Offices** at Denver, Salt Lake City, and Pierre, South Dakota, and transferred their services to Colorado, Wyoming, Utah, and South Dakota to the Rocky Mountain Regional Office at Aurora, Colorado.

Sep 23, 1977: At the end of the 16-month trial of the Anglo-French Concorde supersonic transport at Dulles International Airport (see Feb 4, 1976), Secretary of Transportation Brock Adams announced **proposed permanent rules for civil supersonic transport (SST) operations** in the United States. Most of these related to the new noise restrictions adopted in 1977. Secretary Adams proposed to exempt the 16 Concordes manufactured before Jan 1, 1980, from retrofit requirements for older jet transports (see Dec 23, 1976), while requiring future SST's to meet all noise standards for newer subsonic aircraft (see Mar 3, 1977). In view of the exceptional loudness of the Concorde, however, the ban on Concorde operations between 10 p.m. and 7 a.m. was retained, as was the absolute prohibition on supersonic flight over land. In addition, **the Concorde was granted permission to land** at Washington, New York, and 11 other American cities.

These proposed regulations became final on Jul 31, 1978, after several more public hearings on the subject. At that time, FAA justified its "grandfather clause" for the first 16 Concordes by noting that they constituted the entire production run of the aircraft. (Because of its high fuel costs and limited payload, the Concorde had been purchased only by the state airlines of France and Britain.) FAA felt that modifications that would bring these aircraft into compliance with subsonic noise standards were neither technologically practicable nor economically reasonable. On the other hand, some restrictions on the Concorde were justified by thorough analysis of FAA test results on the plane's loudness, which showed that the perceived noise generated by a Concorde on its takeoff path was double that of a Boeing 707, four times that of a Boeing 747, and eight times that of a DC-10. FAA also reviewed a number of

environmental concerns that had been expressed about SSTs, the most important of which was the fear that emission from SST engines might damage the ozone layer of the earth's atmosphere (see May 5, 1976). Citing a number of recent research studies, including one submitted by the National Academy of Sciences, FAA concluded that the possibility of such damage from the Concordes was too small to be an immediate concern.

Sep 23, 1977: The **Research and Special Programs Administration (RSPA) came into being** as a new element of the Department of Transportation. RSPA received responsibility for many issues common to all transportation modes, and for a variety of special programs. Its responsibilities included: ensuring the safe movement of hazardous materials and the safe operation of pipelines; improving cargo security; facilitating cargo movement; and conducting research in support of a range of Departmental programs. Organizations placed under RSPA included: the Materials Transportation Bureau (see Jul 1, 1976); the Transportation Safety Institute (see Feb 23, 1971); and the Transportation Systems Center, which had conducted much of DOT's multimodal research since its creation in 1970. (On Sep 18, 1990, the Transportation Systems Center was renamed the Volpe National Transportation Systems Center.) After 1984, RSPA assumed responsibility for collecting air carrier economic data (see Dec 31, 1984).

Sep 1977: The new **consolidated Washington Flight Service Station** (co-located with the Air Route Traffic Control Center at Leesburg, Va.) became operational after the installation of a computerized data-retrieval system. The new station handled all the flight services previously provided by the stations at Washington, Richmond, and Charlottesville. Instead of the experimental AWANS computer system (see Feb 1976), the new Leesburg station used another system, called **Meteorological and Aeronautical Presentation System (MAPS)**, which was more compatible with the ARTCC's computers. The AWANS originally ordered for Leesburg was installed at another co-located FSS at the Indianapolis ARTCC. After testing both modernized stations, the FAA concluded that FSS consolidation offered the prospect of significant improvements in cost and service. (See Jan 1978.)

Sep 26, 1977: Laker Airlines' **low-cost "Skytrain" transatlantic service** made its first flight from New York to London, signalling the start of a revolution in international air fares. The new standby fare for the British airline had been a part of the new Bermuda II treaty (see Jul 23, 1977). On the same day, President Carter moved to regain the initiative for the United States by approving a package of new low-cost standby and reserved fares for U.S. scheduled transatlantic flag carriers. On Dec 21, he also moved to increase the extent of transatlantic service, approving new routes for 11 American cities. (See Mar 10, 1978.)

Oct 17, 1977: **A U.S. Supreme Court decision ended the long dispute over landing rights for the Anglo-French Concorde supersonic transport at New York Kennedy airport**. In 1976, Secretary of Transportation William T. Coleman had allowed a 16-month trial of the Concorde at Washington and New York (see Feb 4, 1976); however, the Port Authority of New York and New Jersey, operator of Kennedy airport, had banned the Concorde pending further study of its environmental impact. During the spring of 1977, citizens concerned about the Concorde's potential noise conducted demonstrations that included the deliberate snarling of automobile traffic by driving cars very slowly down Kennedy's access roads.

Meanwhile, on May 11, 1977, a Federal District Court ruled that the Port Authority's landing ban was illegal because it was in "irreconcilable conflict" with Federal prerogatives. A month later, on Jun 14, the U.S. Court of Appeals for the Second Circuit modified this ruling, holding that the Port Authority had the right to establish "fair, reasonable, and nondiscriminatory" noise standards. The Court of appeals sent the case back to the District Court to determine whether the Port Authority's actions met the "fair, reasonable, and nondiscriminatory" test. On Aug 17, the District Court ruled that the Port Authority's long delay in formulating noise standards constituted unreasonable and discriminatory treatment of the Concorde. It was this decision that the Supreme Court upheld. **Concorde passenger service from New York to London and Paris began on Nov 22, 1977**.

Oct 18, 1977: **FAA required operators of certificated airports to provide emergency medical plans** for medical assistance, transportation, and crowd control for an emergency involving the largest aircraft that might reasonably be expected to serve their airports. FAA based the action on deficiencies discovered in a random review of airport emergency plans. (See May 21, 1973, and Nov 9, 1987.)

Oct 28, 1977: FAA announced that **Minimum Safe Altitude Warning (MSAW)** was operational at all 63 major U.S. airports equipped with ARTS III automated terminal radar systems. (See Nov 5, 1976 and Sep 30, 1981.)

Nov 9, 1977: President Carter signed **legislation virtually ending economic regulation of air cargo operations**. The President stated his hope that this was the first of many such steps to reduce regulation. (See Jun 10, 1977, and Oct 24, 1978.)

Nov 20, 1977: Teams of **dogs specially trained to detect explosives** were in place at a network of 29 U.S. airports chosen so that no airliner flying over the United States would be more than 30 minutes away from one of the designated facilities. The placement of dog teams at San Juan airport marked the complete implementation of a joint FAA-Law Enforcement Assistance Administration (LEAA) program begun in 1972 (see Dec 29, 1975). Between 1972 and 1977, dogs had detected the presence of explosives in aircraft cargo on 21 occasions. FAA assumed full financial support for the program after Jul 1, 1981, when LEAA terminated its participation.

Dec 1, 1977: A **new air route system between Hawaii and the U.S. mainland** permitting more direct flight paths and greater fuel economy on the 2,500-mile trip became permanent, following a successful six-month test that began in May 1976. The new system provided six great circle routes between Hawaii and the U.S. west coast in place of the previous four essentially parallel routes. The increase in routes was made possible by the use of composite separation criteria that permitted lateral separation of as little as 50 miles instead of the previous 100, so long as the aircraft had at least 1,000 feet vertical separation. The procedure had been used successfully on North Atlantic routes for some time.

*1978

Jan 10, 1978: A **conflict alert system designed to warn air traffic controllers of potential midair collisions in busy terminal areas** became operational at Houston International Airport, the first Automated Terminal Radar System (ARTS III) to be so equipped. The terminal conflict alert system was similar to the one installed in the 20 Air Route Traffic Control Centers (see Jan 9, 1976). In Apr 1980, FAA completed the commissioning of conflict alert at 62 designated terminals.

Jan 20, 1978: Fulfilling one of President Carter's campaign promises, the Federal Aviation Administration and other executive agencies used the **Zero Based Budget (ZBB)** process in submitting its fiscal year 1979 budget proposal. In applying ZBB principles, the Office of the Secretary of Transportation divided FAA's budget into 16 "decision units" which were expected to facilitate budget choices. For each unit, FAA developed four "decision packages," reflecting four different funding levels, and then ranked the packages in priority order. ZBB continued during the Carter years but was discontinued under the Reagan Administration.

Jan 1978: FAA and the Office of the Secretary of Transportation submitted to Congress a **new master plan for the long-delayed modernization of FAA's 292 flight service stations (FSSs)**. The plan involved a three-stage process to complete system automation. The first stage involved the installation of semi-automated computer equipment at the 43 busiest stations. The second involved a choice between: the eventual consolidation of all 292 stations into 20 large ones, co-located at the 20 Air Route Traffic Control Centers (ARTCCs), and modernization of up to 150 of the existing stations at their present sites. The decision on this stage could be postponed until 1982. The third stage would add the capacity for pilot self-briefings, thus completely automating the most important FSS function. FAA estimated that if the FSS system was left unchanged, up to 11,500 specialists would be needed to operate it by 1995, as opposed to only 4,500 in 1978. (See Sep 1977 and Jun 1979.)

Feb 22, 1978: Secretary of Transportation Brock Adams **nominated the terminal building at Dulles International Airport for the National Register of Historic Places**. Long recognized for the excellence of its design (see Jun 28, 1966), the terminal was ranked third on a list of important structures of the nation's first 200 years in a 1976 poll sponsored by the American Institute of Architects. Concerns about FAA's aesthetic stewardship of the terminal increased in 1977, when the agency announced plans for a large addition and stated its unwillingness to nominate the building to the National Register. After considerable public discussion, the proposed addition (for waiting rooms on the side of the terminal facing the airfield) was generally approved by critics. Inclusion on the National Register guaranteed that any future modifications would be submitted for review by the President's Advisory Council on Historic Preservation. Before actually placing the Dulles terminal on the National Register in May 1978, the Secretary of the Interior granted it a special exception from the Register's rule excluding buildings less than 50 years old.

Mar 10, 1978: The **United States and the Netherlands signed a new international aviation agreement, based on the principle of free competition** and regarded as a model for similar understandings that the United States hoped to negotiate. On Mar 17, the United States also announced a new agreement with the United Kingdom, within the context of the Bermuda II treaty (see Jul 23, 1977), making possible a range of lower fares between the two nations. During 1978, the United States concluded liberal new aviation agreements with Israel and several other nations. In an Aug 21 statement explaining its negotiating stance, the Carter Administration declared that "maximum consumer benefits can be best achieved through the preservation and extension of competition between airlines in a fair market place."

Mar 15, 1978: A three-year **labor-management agreement between PATCO and FAA** went into effect. Since the controllers' pay had recently been adjusted in their favor by the Civil Service Commission (see Nov 12, 1976), the agreement dealt primarily with working conditions. The contract contained 75 articles, including provisions for overtime pay. In addition, FAA agreed to pay controllers' salaries while on foreign as well as domestic familiarization flights. Previously, only controllers who handled international flights were eligible for overseas familiarization trips. In the past airlines had always provided free familiarization flights for eligible controllers, but now the principal overseas air carriers balked at the prospect of providing cockpit space on international flights for all air traffic controllers at the GS-10 or higher level. Even domestic familiarization flights were difficult to arrange in 1978 because of the airlines' own active training programs. (See May 25, 1978.)

Mar 16, 1978: In a regulation effective on this date, FAA permitted temporary operation of an aircraft without the required **emergency locator transmitter (ELT)**. The rule responded to an amendment to the legislation that had mandated ELT use on most civil aircraft (see Dec 29, 1970). Because the equipment frequently malfunctioned, emitting false signals and causing other problems, Congress changed the law to permit operation of an aircraft for up to 90 days while its ELT was being inspected, modified, repaired, or replaced. (See Mar 28, 1979.)

Mar 23, 1978: In response to a Federal court order (see Jun 2, 1976), FAA issued draft **Environmental Impact Statements concerning the operation of Washington National and Dulles International Airports** and published a notice of proposed policy for these airports. After comments on this proposal had been considered, **Secretary of Transportation Neil Goldschmidt announced a new policy for National Airport on Aug 15, 1980**. The new policy included: a 17 million cap on the number of passengers permitted at National per year; retaining the 60 slots per hour provided by the High Density Rule (see Jun 1, 1969), while reducing the share of slots for Part 121 air carriers from 40 to 36; prohibiting all departures between 10:30 pm and 7:00 am, and all arrivals between 11:00 pm and 7:00 am; lifting the ban on 2- and 3-engine widebody jets; and extending the nonstop service perimeter rule from a radius of 650 to 1,000 miles, with no exceptions (see Apr 24, 1966).

The new policy was scheduled to take effect on Jan 5, 1981, but its **implementation was delayed**. Because Congress attached a rider to DOT's fiscal 1981 appropriations act that prohibited FAA from reducing the number of Part 121 airline slots until Apr 26, 1981, FAA decided to postpone the entire policy until after that date. Shortly after his inauguration, President Ronald Reagan pushed the effective date back again by his Feb 17, 1981, executive order that postponed final approval of pending regulations until the issuing agencies had reconsidered their actions. Because of this order, the new Secretary of Transportation, Drew Lewis, on Mar 25 ordered a review of the Goldschmidt policy and postponed its effective date until Oct 25, 1981. (See Nov 3, 1980, and Dec 6, 1981.)

Mar 27-28, 1978: In an extreme example of opposition to new airports, about **6,000 demonstrators rioted at the new Tokyo Airport** near Narita, Japan, on the eve of its scheduled opening, some smashing equipment inside the control tower. Protesting farmers and students had already delayed the airport opening for five years, largely by erecting tall towers along the flight paths. The airport eventually opened on May 20.

Mar 1978: The **first ARTS-IIIA, an improved model of the Automated Radar Terminal System III, became operational** at the FAA Academy in Oklahoma City (see Aug 10, 1976). Features of the new model included the capacity to track and identify planes not equipped with transponder beacons, and a backup system to maintain alphanumeric tags on controllers' screens in case of a computer failure in the primary circuits. (See Dec 1979.)

Apr 6, 1978: Eastern Air Lines signed a $778 million contract to add 23 **Airbus Industrie A-300** aircraft to its fleet. FAA Administrator Langhorne Bond called the airplane "the strongest challenge to the U.S. aircraft industry in years," reflecting widespread concern about the absence of an American entry in the market for smaller wide-body jets to replace the aging first generation of jet transports. Airbus Industrie had mounted an aggressive campaign to secure the Eastern order, allowing the airline to operate four A-300s on a six-month cost-free lease, with the manufacturer paying for all legal fees, tariffs, certification charges, maintenance, and repairs. Airbus Industrie provided $96 million in financing and promised to compensate Eastern for certain operating costs.

Apr 17, 1978: **National Weather Service meteorologists began working at 13 of FAA's Air Route Traffic Control Centers** under a recently signed agreement between the two agencies. At each of those centers, a team of three NWS meteorologists provided information on hazardous weather throughout the day to center controllers, as well as to FAA towers and flight service stations. FAA provided each center with new equipment for receiving data from NWS weather radar and satellites. This new program was part of a general effort to provide pilots with more en route weather information, since the lack of accurate knowledge of hazardous weather, particularly thunderstorms, had been found responsible for several air crashes (see May 19, 1977). NWS meteorologists were already on duty at FAA's national flow control center in Washington, and by Nov 1980 they were stationed at all U.S. mainland en route centers.

Apr 19, 1978: The All-Weather Operations Division of the International Civil Aviation Organization (ICAO) voted to adopt the FAA-sponsored **time reference scanning bean (TRSB) microwave landing system** for future use at the world's airports. A special technical panel had earlier recommended the U.S.-sponsored system (see Mar 16, 1977), but the small size of the panel and the heated nature of its deliberations had partially discredited its conclusion. As a result, backers of the competing British and U.S.-Australian systems staged worldwide lobbying campaigns to support the adoption of their system. When the ICAO body began its meeting in early April, the decision appeared to be further complicated by the late entry of a West German MLS based on distance-measuring equipment (DME). The FAA delegation, however, agreed to begin research on how to incorporate the 360-degree azimuth coverage of the DME system into the TRSB. This helped to clear the way for the selection of TRSB by a vote of 39 to 24, with 8 abstentions. Although the TRSB was now referred to the Air Navigation Council of ICAO for the definition of standards, Third World nations at the conference succeeded in gaining agreement to a ten-year extension (from 1985 to 1995) of the period during which existing instrument landing systems would be protected. (See Jan 28, 1982.)

Apr 20, 1978: **FAA proposed a new and much higher schedule of user fees** for certificating airmen and for aircraft registrations. The agency based the proposal on an existing government policy, contained in a statute of 1952, that individuals or groups receiving special services from Federal agencies should pay their cost. In 1967, FAA had proposed a new fee schedule, but withdrew the proposal after the General Accounting Office pointed out that it did not entirely meet the costs of the services supplied. The April 1978 proposal encountered considerable opposition from within the aviation community, and Congress adopted legislation prohibiting FAA from implementing the proposed fees without prior congressional approval. **FAA withdrew the proposal on May 8, 1981**, stating that the data on which it was based were no longer valid.

May 25, 1978: **PATCO began intermittent slowdowns** to protest the refusal of some U.S. flag carriers to provide controllers with overseas familiarization flights. The slowdowns lasted until May 26 and were renewed on Jun 6-7. Delays were especially severe because of the increased air travel resulting from new low transatlantic and domestic fares (see Mar 15, 1978, and Jun 21, 1978).

Jun 19, 1978: President Jimmy Carter signed a law renaming the FAA Aeronautical Center at Oklahoma City the **Mike Monroney Aeronautical Center**. A. S. ("Mike") Monroney represented Oklahoma in both houses of Congress for 30 years, and served as chairman of the Senate Aviation Subcommittee from 1955 until his retirement in 1969. He was a principal sponsor of the Federal Aviation Act (see May 21, 1958), the Airport and Airways Development Act (see May 21, 1970), and many other pieces of aviation legislation. The Aeronautical Center, located in Oklahoma City through Monroney's efforts, was then the largest FAA facility, incorporating the FAA Academy, the central records center for aircraft and airmen's certificates, a major FAA supply depot, and the Civil Aeromedical Institute (see Dec 13, 1959). On Oct 13, 1978, Administrator Bond presided over ceremonies rededicating the facility.

Jun 21, 1978: The Professional Air Traffic Controllers Organization (PATCO) agreed to obey a Federal-court injunction and end a **"work to rule" slowdown** by its members that had intermittently snarled air traffic during the spring, particularly during the period May 25-26 and Jun 6-7 (see May 25, 1978). PATCO also agreed to pay a fine of $100,000 to the Air Transport Association for violating the permanent injunction won by the ATA in 1970 against air traffic slowdowns (see May 4, 1979).

Jun 26, 1978: FAA established the **Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee** to examine the topic of post-crash survival of aircraft cabin occupants. The committee's 24 members were drawn from airlines, aircraft manufacturers, universities, research organizations, as well as flight and cabin crews. Formation of the committee resulted from two hearing held by FAA during 1977 regarding four rulemaking proposals concerning fire hazards in transport aircraft. The hearings reflected a concensus that the issues addressed in the four rules were interrelated and should be addressed systematically as one problem.

In view of the SAFER committee's establishment, FAA on Aug 24 published a notice withdrawing the four rulemaking proposals. One of these, published on Apr 4, 1974, would have required fuel tank explosion prevention systems. The other three concerned the effects of fire on compartment interior materials: toxic gas emission standards (published Dec 30, 1974); smoke emission standards (Feb 12, 1975); and replacement of existing materials that did not meet flammability standards (Jul 11, 1975). FAA expressed confidence that it would be able to develop comprehensive standards in the near future due to ongoing research and the SAFER committee's work.

Issuance of the four proposed rules during 1974 and 1975 had followed a fiery crash at Pago Pago (see Jan 30, 1974). The collision at Teneriffe further demonstrated the destructive potential of fire (see Mar 27, 1977). During 1977, FAA intensified its research on post-crash fire, and signed an agreement with the United Kingdom on cooperation in developing **anti-misting kerosene fuel, known as AMK**. In Nov 1978, FAA also announced that a **new test laboratory for fire research** would be built at its National Aviation Facilities Experimental Center. (See Sep 10, 1980)

Jul 17, 1978: At an economic summit conference in Bonn, the leaders of United States, West Germany, France, Great Britain, Japan, Canada, and Italy announced a joint resolution to isolate from international air traffic all countries harboring air hijackers. In the resolution, they stated their intent to stop all flights to any country that refused to extradite or prosecute those who have hijacked an aircraft and/or failed to return such an aircraft. The resolution also called for a ban on incoming flights from an offending nation, as well as a ban on any traffic to it by airlines of participating countries. The conferees informally agreed to make no exceptions, not even for persons escaping from totalitarian governments. Diplomatic efforts were begun to gain the agreement of as many other countries as possible.

The **Bonn Resolution** followed the doubling of hijacking attempts throughout the world in 1977 -- the death toll in hijackings for that year was 129 persons. In Dec, a Malaysian Airlines Boeing 737 crashed after being hijacked, killing all 100 persons aboard. The most spectacular incident of 1977, however, was the five-day odyssey of a Lufthansa B-737 hijacked in Oct over the Mediterranean and flown to various places in the Near East. The hijackers murdered the pilot, and later, in Somalia, threatened to massacre the other 86 people on board. Just 90 minutes before their deadline, West German commandos stormed the aircraft and rescued all the hostages. After this episode, the International Federation of Air Line Pilots threatened a two-day international pilots' strike unless the United Nations took immediate action on air piracy. In Dec, the Flight Engineers International Association urged extradition or prosecution of hijackers held in four countries.

Jul 25, 1978: A new FAA regulation extended to both domestic and international charter operations **security screening procedures** long in effect for scheduled airlines. Although no charter aircraft operating from American airports had ever been hijacked, FAA took this action in response to two recent developments: the worldwide increase in hijacking attempts (see Jul 17, 1978), and rulings of CAB that relaxed many of the regulations that governed charter operations. The old requirement that only "affinity" groups could qualify for reduced charter fares had heretofore been regarded as a protection against hijackers, but that was among the rules no longer applied by CAB.

Aug 4, 1978: The Department of Transportation Appropriation Act signed by President Carter on this date discontinued funding for the **Air Traffic Controllers Second Career Program** (see May 16, 1972). FAA Administrator Bond said later that congressional anger over recent controller slowdowns (see Jun 21, 1978) may have cost them their special rehabilitation program, but it had in fact been under attack for some time. Two studies--by the House Appropriations Committee staff and by the General Accounting Office--were begun in 1977 and issued to Congress in 1978. The GAO report revealed that about 50 percent of the 2,580

controllers eligible to participate in the program since 1972 either declined or withdrew from training, and only 7 percent of those who had completed training actually entered the new careers they had prepared for. The cost for each successful participant had averaged $370,000. About 1,900 former controllers had enrolled in the program, and its total cost since fiscal year 1973 had been $104 million. The House Appropriations Committee report suggested that controllers who had been incapacitated on the job should seek rehabilitation services under the auspices of the Office of Worker's Compensation. FAA agreed that the program had not been a success and did not contest the conclusions of either report. An attempt to restore the program failed in the House of Representatives in December 1979.

Aug 10, 1978: A five-year, **FAA-funded study of the health problems of air traffic controllers** challenged the generally held view that unusually high incidences of ulcers, psychiatric problems, and other serious stress-related diseases were to be found among controllers. A team of researchers, led by Robert Rose from the University of Texas, did find higher-than-normal rates of hypertension, social drinking, and minor psychological problems among controllers. They concluded, however, that these did not lead to incapacitating conditions. The most common psychological problem they discovered was "impulse control difficulties"-- i.e., dealing with sudden emotions like anger. The researchers found that a more serious mental problem, controller burnout, was mostly limited to those controllers who expected it to occur. Despite the abnormal rates of social drinking, controllers had lower rates of alcoholism than the national average. As for hypertension, researchers cautioned against the conclusion that it was directly related to the work of controlling air traffic, since other "risk factors" were also important. The findings of the **Rose Report**, or officially the Air Traffic Controller Health Change Study, confirmed similar ones in studies by the FAA's Civil Aeromedical Institute. (See Mar 5, 1969.)

Aug 11-17, 1978: Ben L. Abruzzo, Maxie L. Anderson, and Larry M. Newman made history's **first balloon crossing of the Atlantic**. Flying in a helium-filled balloon dubbed the *Double Eagle II*, they lifted off from Presque Isle, Maine, and landed near the village of Miserey, France, 50 miles west of Paris.

Aug 27, 1978: FAA issued a type certificate under FAR Part 23 for the twin-turboprop **Bandeirante** aircraft manufactured by Embraer of Brazil, thus clearing the way for export to the United States. The Bandeirante was one of several foreign airplane types expected to see service on expanding U.S. commuter airline routes. The airplane could carry up to 19 passengers, and was the only non-pressurized, non-STOL airliner of its size still in production.

Sep 10, 1978: The following **changes in the Washington Headquarters organization** became effective on this date:

* The Office of General Aviation was abolished. The aviation education program was transferred to the Office of Aviation Policy.
* The Associate Administrator for Policy Development and Review was redesignated as the Associate Administrator for Policy and International Aviation Affairs.
* The Office of International Aviation Affairs was placed under the executive direction of the Associate Administrator for Policy and International Aviation Affairs. The position of Assistant Administrator for International Aviation Affairs was retitled Director of International Aviation Affairs.
* The Office of Environmental Quality was renamed the Office of Environment and Energy to reflect the newly assigned responsibility for national aviation policy concerning energy matters (see Dec 22, 1979).

Sep 25, 1978: A **midair collision over San Diego** between a Pacific Southwest Airlines Boeing 727 and a Cessna 172 caused more fatalities than any previous civil aviation accident within U.S. airspace. All 137 persons aboard the two aircraft and seven on the ground were killed. Both aircraft were transponder-equipped and were operating in clear weather under local air traffic control when they collided at 2,600 feet. Both pilots had been warned of the presence of the other aircraft. The PSA pilot, which was overtaking the smaller plane, had received clearance for visual, "see-and-avoid" separation procedures after reporting to controllers that he had the Cessna in sight.

The National Transportation Safety Board (NTSB) concluded that the accident's probable cause was the PSA crew's failure to comply with the provisions of a maintain-visual-separation clearance, including the requirement to inform the controller if they no longer had the other aircraft in sight. The Board cited as a contributing factor the procedures that allowed controllers to authorize visual separation procedures when the capability to provide radar separation was available.

NTSB member Francis H. McAdams dissented, citing the use of visual air traffic control (ATC) procedures as part of the probable cause rather than merely contributory. He also listed a number of contributing factors, mostly inadequacies of the ATC system. Among these were failure to resolve an automated conflict-alert alarm that the approach controller had disregarded on the assumption that the pilots were maintaining visual separation. (NTBS later adopted McAdams' viewpoint in an Aug 1982 amendment that included both ATC and pilot failings in the probable cause finding.)

The San Diego accident followed **another midair collision that had occured on May 10, 1978**, between a Falcon Jet and a Cessna 150 over Memphis, Tenn., with the loss of six lives The NTSB's finding of probable cause in that case cited the failure of controllers to maintain proper separation as well as the pilots' failure to see and avoid each other. The two accidents set off intense criticism of FAA's ATC program and the pace of its plans to develop an airborne collision-avoidance system. (See Dec 27, 1978.)

Sep 26, 1978: A Special Federal Aviation Regulation (SFAR 37) permitted persons who were not in the air transportation business to receive payment for the **carriage of candidates in Federal elections**. The SFAR responded to a Federal Elections Commission requirement that candidates pay for air transportation. As a result of the election rule, owners of private and business aircraft who offered transportation to candidates were required to comply with the rules for commercial operations (i.e., Federal Aviation Regulations Part 135 instead of the less demanding Part 91). Air taxi and charter operators strongly criticized the SFAR, which lapsed in June 1980.

Sep 1978: FAA's **Low Level Wind Shear Alert System** (LLWAS) became operational on a full-time basis at seven major airports. The agency announced that 17 other airports would be similarly equipped during 1979. The new system detected the severe downdrafts and wind changes associated with the phenomenon of wind shear (see Jun 24, 1975) by means of sensors around the airport periphery that measured wind speed and direction. A mini-computer compared the readings from these detectors with readings at the center of the airport and, when significant differences were found, sounded an alarm in the tower. Controllers could then warn pilots of the problem. In Oct 1979, FAA announced a contract for 34 more units, which would bring the number of LLWAS-equipped airports to 58. (See Jul 9, 1982.)

Oct 12, 1978: President Carter signed Public Law 95-452, establishing Offices of **Inspector General** in the Department of Transportation and several other departments and agencies. The independent offices were to conduct objective audits and investigations of programs and operations.

Oct 24, 1978: President Carter signed the **Airline Deregulation Act** of 1978 allowing immediate fare reductions of up to 70 percent without CAB approval, and the automatic entry of new airlines into routes not protected by other air carriers. CAB's authority over fares, routes, and mergers was to be phased out entirely before 1983, and, unless Congress acted, CAB itself would shut down by Jan 1, 1985. The prospective abolition of CAB brought to a culmination the work of Chairman Alfred E. Kahn at that agency (see Jun 10, 1977). Moreover, by Oct 1978, the major emphasis of deregulation had changed from an ideological campaign against government regulation to a key element in the President's effort to curb inflation. This was highlighted by the President's appointment of Kahn as head of his anti-inflation program, which was announced on this date.

This day also ended the week-long vigil of twenty-two airline representatives who had lined up outside CAB headquarters to submit first-come-first-serve applications for dormant airline routes under the terms of the new act. By the end of the year, CAB had awarded 248 new airline routes to these applicants. Smaller communities, from which the airlines might wish to shift their operations, were guaranteed essential air services for 10 years under the act, with a government subsidy if necessary. Along with the subsidies for smaller-city service, the act provided for the inclusion of commuter airlines in the FAA equipment loan guarantee program and in uniform methods for establishing joint fares between air carriers. It also authorized the use of larger aircraft by commuter airlines. These special provisions for commuter airlines boosted their already-booming growth rates, and led to important new FAA regulations later in 1978 (see Dec 1, 1978).

The Airline Deregulation Act also **revived the aircraft loan guaranty program** (see Sep 7, 1977), raising the total amount that could be guaranteed for any eligible participant from $30 million to $100 million, expanding the eligible participants to include charter air carriers, commuter air carriers, and intrastate air carriers, and extending the term of eligible loans to 15 years. Congress withdrew authority for the program in 1983, however, and FAA ceased issuing new loan guarantees after Jun 30 of that year. Over its life, the program had guaranteed 106 loans totaling $900 million. Twelve airlines had defaulted on 23 of the loans for a loss of $182 million, but FAA had been able to recover $132 million.

Oct 29, 1978: **Pan American World Airways discontinued most of its European services**, withdrawing from Amsterdam, Ankara, Lisbon, Paris, Moscow, Vienna, and all of Eastern Europe except Warsaw. Denouncing the new "open skies" policy (see Mar 10, 1978) as a "giveaway," the airline shifted its attention to finding a domestic merger partner.

Nov 2, 1978: FAA officially established the **Office of the Associate Administrator for Aviation Standards**, with the Office of Aviation Safety, the Civil Aviation Security Service, and the Flight Standards Service placed under its executive direction (see Jul 10, 1979). The agency retitled the position of Assistant Administrator for Aviation Safety the Director of Aviation Safety.

Nov 20, 1978: In a **joint program to deal with the hazards posed by birds** and other animals to aircraft, FAA and the Fish and Wildlife Service of the Department of Interior agreed to improve training programs for airport personnel and conduct more sophisticated research on the problem. FAA estimated that, since 1940, bird collisions had led to 140 aviation deaths, and that 1,200 bird strikes in an average year caused approximately $20 million in damage to military and civilian aircraft.

Dec 1, 1978: Effective this date, FAA promulgated a **comprehensive revision of Federal Aviation Regulations Part 135, governing air taxi and commuter airline operations**, the fastest growing segment of the air transportation business. Since the Civil Aeronautics Board had created the designation "commuter airlines" (see Jul 1, 1969), the number of passengers on these lines had increased at an average annual rate of over 10 percent; the growth rate in 1977 was 16.5 percent. The new competitive environment created by airline deregulation (see Oct 24, 1978) was expected to bring ever greater increases.

As the commuter airline and air taxi business had grown in the 1960s and 1970s, FAA had tried to tailor new regulations for it; however, serious doubts remained about the safety of the industry (see Dec 26, 1972). An important aim of the revised Part 135 was to bring the safety level of the commuter airlines more closely in line with that of the major airlines operating under Part 121. The new rules required pilots of virtually all multi-engine commuter airliners to hold an airline transport pilot's rating. Depending on the size of their operations and aircraft, commuter airlines were required to have a director of operations, a chief pilot, and a director of maintenance, as well as more stringent programs of maintenance and pilot training and testing. Again depending on size, FAA also required commuter airliners to have such equipment as a ground proximity warning indicator, a third attitude gyro, and thunderstorm detection equipment. The safety upgrade, and the fact that requirements were tied to the size and complexity of operations, permitted FAA to raise the maximum size of aircraft included under Part 135. Commuter airlines and commercial operators could now use aircraft with a seating capacity of up to 30 passengers or a payload of up to 7500 lb.

Dec 12, 1978: The first production model of the **Automated Radar Terminal System (ARTS) II** began service at Toledo, Ohio (see Oct 1, 1976). The device was developed for airports whose traffic volume did not warrant the much more costly ARTS III in use at major hubs. Designed around a minicomputer, the ARTS II lacked the full-scale system's ability to predict where a target would be on the next radar scan, and to calculate its ground speed. Like the ARTS III, however, it provided controllers with alphanumeric tags that indicated the identity, heading, and altitude of transponder-equipped aircraft. In addition, the ARTS II allowed controllers to record and receive flight data from adjacent air route traffic control centers. Developed by the Burroughs Corp. under contracts concluded in 1974, ARTS II was eventually installed at over 80 airports. It replaced engineering models developed by other manufacturers that had been in service at Wilkes-Barre, Pa., and Knoxville, Tenn. (See Jul 24, 1985.)

Dec 27, 1978: FAA Administrator Bond and Secretary of Transportation Brock Adams announced a **regulatory program to reduce the risk of midair collisions by 80 percent**. Formulated in response to criticism of FAA after the San Diego midair collision (see Sep 25, 1978), and submitted as a notice of proposed rulemaking, the program included:

* Establishing new voluntary Terminal Radar Service Areas (TRSAs) at 80 air carrier airports (see Dec 22, 1983), and establishing new Terminal Control Areas (TCAs) at 44 additional airports.
* Lowering the floor of positive area control from 18,000 feet to 10,000 feet over the States east of the Mississippi and much of California, and to 12,000 feet over the rest of the contiguous 48 States.

* Establishing a new flight category, controlled visual flight rules, for positive airspace below 18,000 feet, which would allow non-instrument rated pilots to use the airspace above 10,000 feet with radar separation provided by air traffic controllers.
* Requiring all aircraft operating in TRSAs and TCAs to have altitude-reporting transponders installed by Jul 1981. All transponders installed after Jul 1982 would have to incorporate the new Discrete Area Beacon Systems (DABS), which would provide an automatic data link with a ground-based collision avoidance system (see Mar 4, 1976 and Jun 23, 1981).
* Requiring all airliners and air taxi aircraft to carry an airborne "active" Beacon Collision Avoidance System (BCAS) by Jan 1985. A proposed national standard for such systems had been issued earlier in December. (See Jun 23, 1981.)

These proposals elicited a massive negative public response, much of it orchestrated by the Aircraft Owners and Pilots Association (AOPA). On Sep 7, 1979, Administrator Bond announced he had withdrawn all the en route proposals. Although the general plan to increase the number of TCAs temporarily remained in effect, FAA gradually withdrew most of the proposed new TCAs. (See May 15, 1980.)

Dec 28, 1978: Administrator Bond established a **Light Transport Airplane Airworthiness Review** looking to the adoption, in December 1980, of a new FAR Part 24 that would establish separate airworthiness standards for airplanes intended for commuter operations. FAA had airworthiness standards for two basic designations of airplanes: Part 23 for airplanes 12,500 pounds or under that seated up to nine passengers, and Part 25 for transport category airplanes. FAA proposed to apply the new certification category to airplanes that carried up to 60 passengers and had a maximum takeoff weight of 50,000 pounds. In Dec 1980, however, FAA withdrew the proposal. Foreign manufacturers, already manufacturing commuter aircraft under the more stringent Part 25 standards, opposed the new rule. FAA also determined that the savings in costs between manufacturing airplanes under the proposed standards and the existing Part 25 standards would be minimal.

Calendar year, 1978: Aircraft of U.S. registry experienced eight **hijacking attempts** during 1978--the highest level since the screening of passengers and carry-on luggage was instituted in early 1973. None of the hijackers, however, had been able to slip firearms or explosives through airport screening points. Their claims to have a gun or bomb in their possession proved to be false in every case. The eight hijacking attempts were the most since 1972, when 27 attempts were made, eight of them successful. In the six years since beginning mandatory screening, hijackers had attempted to commandeer U.S. airlines on 25 separate occasions. None involved the smuggling of weapons through a screening point, and only one was successful.

*1979

Jan 8, 1979: The Federal Aviation Administration and Panama's Department of Civil Aviation signed an **agreement under which FAA's air traffic facilities would be gradually turned over to the Republic of Panama** over a five-year period. The transfer process began on Oct 1, when the Panama Canal Treaty went into effect. The agreement affected over 125 FAA personnel employed at the International Flight Service Station (IFSS), the Center and Terminal Radar Approach Control (CERAP), and in related operational and maintenance responsibilities. As part of the agreement, FAA helped to train Panamanian personnel for their new air traffic responsibilities.

The presence of FAA and its predecessor agency in Panama dated back to 1942, when the Civil Aeronautics Administration established a communications station there at the request of the Navy. A 1949 agreement called for the U.S. to provide air traffic control services for Panama, a function initially performed by the Air Force but transferred to FAA after its creation in 1958.

In a ceremony **on Apr 22, 1983, FAA turned over the CERAP, its last facility in Panama** to the government of that country. Only four FAA technicians then remained to perform maintenance and training for another year.

Jan 14, 1979: **Braniff Airlines began flying leased Concorde supersonic airliners** between Washington Dulles and Dallas-Fort Worth airports, under the terms of a unique interchange agreement with British Airways and Air France. Since the Concordes carried passengers between two American cities, they had to be registered in the United States. This involved FAA certification of the Concorde and a special FAA rule allowing the speedy re-registration of the planes between the two European carriers and Braniff. The

Braniff flights were over land and therefore had to be flown at subsonic speeds under U.S. environmental rules, but nevertheless cut the flight time between Dallas-Fort Worth and Europe. The service did not prove to be profitable, however, and Braniff terminated it on Jun 1, 1980.

Jan 19, 1979: To reduce airport noise levels nationwide, FAA recommended a **two-segment departure profile** for jet aircraft of 75,000 pounds or more. Aircraft using the new procedure would climb under full power to 1,000 feet to get up quickly over airport communities, thus minimizing the noise reaching the ground. At that altitude, they reduced their climb angle to pick up speed and permit retraction of flaps and other high-lift devices before continuing to climb to 3,000 feet under reduced power. The new procedure was intended to replace a variety of practices at many airports, under which the power cutback points varied from 450 to 1,500 feet. FAA did not make the procedure mandatory because safety considerations sometimes dicate that pilots employ other departure procedures. (See Aug 1, 1972.)

Mar 16, 1979: FAA Administrator Bond announced his **plan to eliminate the "blanket immunity" provisions of the Aviation Safety Reporting Program (ASRP)** while continuing to provide anonymity to those using the program to report hazards and safety-related incidents (see Apr 15, 1976). The Administrator said he wished to close "the loophole that makes it possible for a violator to escape punishment even if the offense is commited in full public view." On Mar 21, Bond issued a notice that the change would take effect on Apr 30. Before the effective date, however, a sharp reaction in the aviation community produced a **compromise under which modified immunity provisions became effective Jul 1**. Reports of hazards or incidents submitted under the ASRP could not be used in any disciplinary action except in cases of accidents or criminal offenses. When FAA learned of a violation of safety regulations from another source, it would take appropriate enforcement action. If the violator had filed a prompt report with NASA, however, FAA would impose no penalty provided the violation was inadvertent and not deliberate, did not involve an accident or criminal offense, or disclose a lack of competency, and the person had committed no prior violation since the initiation of the ASRP. A later modification, effective Mar 1, 1985, applied the no-prior-violation requirement to only the five years before a reported incident. These provisions did not apply to air traffic controllers involved in incidents reported to NASA, whose cases were governed by internal FAA regulations. An important difference between the new system and the old was that immunity now applied only to the reporter rather than to all those involved in an incident.

Mar 28, 1979: Effective this date, FAA required the **removal of lithium sulfur dioxide batteries** from U.S. civil aircraft. The batteries were **used primarily to power emergency locator transmitters, known as ELTs** (see Dec 29, 1970). The agency acted because of incidents in which the batteries exploded, burned, or leaked gas that formed corrosive acid. The order affected approximately 60,000 aircraft, most of them privately owned. In September, FAA issued new standards for the batteries, including requirements that they be heremetically sealed and be replaced every two years. The agency ordered users of lithium batteries to reinstall their ELTs by Mar 28, 1980, but later extended the deadline to Oct 15, 1980, because of a shortage of the improved batteries.

Mar 29, 1979: Effective this date, FAA revised its rules for **airport security**. In a departure from previous rules (see Dec 5, 1972), the agency permitted police officers assigned to security checkpoints in some airports to patrol other areas of the terminal, as long as they could respond quickly to trouble at their checkpoints (see Sep 11, 1981). In another major change, FAA made it a Federal offense for anyone, passenger or not, to carry guns or explosives into the "sterile" areas beyond the checkpoints. Before, regulations only prohibited carrying weapons on board air aircraft. FAA had originally proposed banning unauthorized guns and explosives from all areas of airport terminals, but relaxed the provision after a negative response from various sporting groups. The revised airport-security regulations represented increased concern, since the bomb explosion at La Guardia Airport (see Dec 29, 1975), for the safety of people in airport terminals as well as aboard airliners.

Apr 4, 1979: A Trans World Airlines 727 flying at 39,000 feet over Michigan entered an **uncontrolled spiral dive** and descended to about 5,000 feet in about 63 seconds before the flight crew regained control. Eight passengers received minor injuries. The crew denied that they had caused the dive or erased the Cockpit Voice Recorder tape, most of which was found to be blank. In a June 1981 report, however, the National Transporation Safety Board described the probable cause of the mishap as the crew's manipulation of the flap/slat controls.

Apr 6, 1979: FAA announced award of a contract for acquisition of **second generation common radar digitizers**, equipment that converts radar returns into computer-readable digital messages that are then

transmitted to the appropriate air traffic control facility. The major advantage of the new common digitzers, known as **CD-2s**, was the addition of a second channel to permit the equipment to keep working if one channel failed or was shut down for maintenance. The contract provided for 106 of the CD-2s to be installed at long range radar sites, while three would be used in conjunction with airport radars, and seven would be used for training and support services. (See Mar 1986.)

May 1979: A Fokker Company workman discovered a **soft spot in aluminum plate** manufactured by Reynolds Metals, leading FAA in August to issue a general notice establishing an inspection program to be conducted by FAA-approved production holders and their suppliers. FAA discontinued the program after Reynolds discovered the cause of the problem in early fiscal 1981.

May 4, 1979: The regional director of the Washington Office of the Federal Labor Relations Authority ruled that a **strike fund established by PATCO was legal**. His ruling held that while strikes or other overt job actions by Federal employees were prohibited by statute, strike funds were not. PATCO had established a National Controller Subsistence Fund in May 1978, "to provide for the financial support of members whose participation in a nationally sanctioned job action has resulted in suspension and/or dismissal." FAA, believing the fund was a war chest for financing illegal job actions, filled an unfair labor practice complaint against PATCO. The three-member FLRA panel upheld the regional director's ruling in Dec 1980. (See Jun 21, 1978, and Jan 7, 1980.)

May 25, 1979: An **American Airlines DC-10 crashed into an open field near Chicago's O'Hare airport** after its left engine and pylon assembly separated from the aircraft on takeoff. The engine and pylon rotated up and over the left wing, taking part of the wing's leading edge with them and damaging the control system. The ensuing crash and fire killed all 272 persons aboard the flight and two people on the ground, an unprecedented toll for an airline accident within U.S. airspace.

Early in its investigation, the National Transportation Safety Board discovered the presence of a fatigue fracture of a pylon forward thrust link attach bolt. On May 28, FAA Administrator Langhorne Bond ordered all airlines to keep their DC-10s on the ground until they had completed certain visual inspections. The next day, after learning that these checks were turning up potentially dangerous deficiencies in the pylon mountings, Bond grounded the entire U.S. DC-10 fleet pending a more comprehensive inspection. His order included U.S.-certificated Airbus A-300s because of the similarity of their pylon to the DC-10's.

As these inspections progressed, evidence mounted that the problem might lie in American Airline's non-standard use of a forklift to dismount and remount engine and pylon as a single unit during maintenance. Similar cracks had been found on DC-10s operated by Continental Airlines, the only other carrier using the forklift method. On Jun 5, however, the discovery of cracks that appeared unrelated to the forklift procedure strengthened evidence that seemed to suggest the existence of some more fundamental problem. On Jun 6, Bond suspended the DC-10's type certificate indefinitely. He then ordered three parallel investigations into the DC-10 issue.

Thirty-seven days later, FAA's investigative teams concluded that the aircraft destroyed in Chicago had indeed been damaged by the forklift procedure. This was also the cause of the other cracks found in the pylons of DC-10s operated by American and Continental. (The two airlines later received civil penalties of $500,000 and $100,000 respectively for using the procedure.) Other findings of the teams supported the conclusion that the DC-10 should be returned to service, and FAA therefore lifted the grounding order. The agency required a stringent program of inspections, however, and directed the manufacturer to redesign certain engine mount components.

Jun 1979: FAA signed a contract with Western Union Telegraph Company to lease a **new telecommunications system** for 150 of the busiest flight service stations. The new computer-based equipment featured cathode-ray-tube displays and high-speed printers. It would replace teletypewriters used for Service A transmission of weather and aeronautical information (see Jan 16, 1961). The lease was to be an interim step, pending implementation of full flight service modernization. (See Jan 1978 and Jan 25, 1980.)

Jun 13, 1979: The following **changes in the FAA Washington Headquarters organization** became effective on this date:

*A new Office of Associate Administrator for Airports was established.

*The Office of Airport Programs and the position of Assistant Administrator for Airports Programs were abolished.

*The Office of Airport Standards and the Office of Airport Planning and Programming were established and placed under the executive direction of the Associate Administrator for Airports.
*Metropolitan Washington Airports were placed under the executive direction of the Associate Administrator for Airports.

Jun 25, 1979: The first of a **new generation of air route surveillance radars (ARSR-3s)** went into operation. The solid-state ARSR-3 was the first new en route radar system acquired in 20 years (see Nov 20, 1956). It improved radar tracking range by 25 percent, to 200 nautical miles, and could track aircraft flying as high as 61,000 feet. The new radar could also display weather formations without interference with aircraft targets, providing a much clearer picture for controllers. FAA eventually deployed twenty-two ARSR-3s along high density segments of the en route system, commissioning the last in Jan 1983. An additional unit, delivered in Feb 1978, was installed at the Aeronautical Center for training purposes. FAA also purchased four mobile units. With their antenna capable of operating from a flat-bed truck, they could be rushed to any location where the existing radar had failed. (See Sep 1986.)

Jul 1, 1979: **Southern Airways and North Central Airlines merged to form Republic Airlines, which in turn acquired Hughes Air West on Oct 1, 1980**. (See Jan 23, 1986.)

Jul 10, 1979: FAA **reorganized the offices and services under the Associate Administrator for Aviation Standards** (dee Nov 2, 1978):
*The Flight Standards Service was abolished.
*A new Office of Flight Operations was established and all functions affecting flight operations were lodged under it.
*A new Office of Airworthiness was established and all functions affecting airworthiness were lodged under it.
*The Civil Aviation Security Service was renamed the Office of Civil Aviation Security.
*A Safety Regulations Staff was established in the Office of the Associate Administrator and given all flight standards safety regulation functions.

Jul 20, 1979: **Brock Adams resigned as Secretary of Transportation**. Adams had voiced concerns about the Carter Administration's transportation policies and his own need for access to the President. After resigning, he stated to the press that he took the action rather than comply with White House demands that included dismissal of one of his aides. Adams' resignation was part of a Cabinet shakeup that involved the departure of four other secretaries.

Jul 25, 1979: **FAA abolished the Europe, Africa, and Middle East Region**. The agency assigned the executive direction of the Europe, Africa and Middle East Office to the Associate Administrator for Policy and International Affairs. On the same day, FAA transferred the responsibility for the **flight inspection program** in the North Atlantic, European, African and Middle Eastern areas from the Europe, Africa and Middle East Region to the Flight Standards National Field Office.

Aug 1979: An engineering model of a new generation of **Airport Surface Detection Equipment (ASDE-3)** was delivered to FAA for testing and concept evaluation. (See Jul 5, 1977, and Dec 23, 1983.)

Aug 15, 1979: **Neil E. Goldschmidt became Secretary of Transportation**, succeeding Brock Adams, who had resigned on Jul 20. Goldschmidt, who had been the mayor of Portland, Ore., at the time of his selection by President Carter, received a recess appointment. The Senate eventually confirmed him on Sep 21, and he took the oath a second time on Sep 24. Goldschmidt served the remainder of the Carter Administration and resigned effective Jan 20, 1981.

Oct 18, 1979: The first prototype of the **McDonnell Douglas MD-80 series** made its initial flight. Originally designated the DC-9 Super 80, the aircraft was a "stretched" derivative of the DC-9. The MD-80 received FAA type certification on Aug 26, 1980, and the first production aircraft was delivered to Swissair on Sep 12, 1980.

Oct 28, 1979: **Allegheny Airlines changed its name to USAir**, reflecting the growing route system of this former local-service carrier. (See Jan 11, 1949.)

Nov 1, 1979: **Midway Airlines began service** from Chicago's Midway Airport. The new airline was the first all-jet air carrier created to take advantage of the new era inaugurated by the Airline Deregulation Act (see Oct 24, 1978). Midway began with DC-9 flights to Cleveland, Kansas City, and Detroit, with more routes to be added later. (See Nov 13, 1991.)

Nov 2, 1979: FAA redesignated the Office of Accounting and Audit the **Office of Accounting**. FAA's audit functions had earlier been transferred to the newly created Office of Inspector General in the Office of the Secretary of Transportation.

Nov 6, 1979: FAA proposed a **civil penalty of $1.5 million against Braniff Airways** for numerous maintenance violations. The fine was the largest that the agency had proposed to that date. In Jan 1981, however, FAA accepted a settlement of $400,000, stating that its decision was influenced by Braniff's safety improvements.

Dec 29, 1979: Enacted on this date, **Public Law 96-171 required the National Institutes of Health to produce a study of FAA's Age-60 rule** (see Mar 15, 1960) in consultation with DOT. Within one year, NIH was to submit to Congress a study examining questions that included "whether an age limitation which prohibits all individuals who are sixty years of age or older from serving as pilots is medically warranted."

The issue had come to a head because more airline pilots were reaching 60 than ever before, a trend that was expected to increase. The Pilots Rights Association, a group of some 300 older airline pilots, had waged a strong campaign against the rule. The Air Line Pilots Association (ALPA) was divided on the question, with many members (especially younger ones) favoring the rule. (Later, ALPA's board endorsed the Age-60 rule in a Nov 1980 vote that reversed the union's longstanding position on the issue.) Another factor that may have influenced the congressional debate was a fatal in-flight heart attack suffered by a 59-year-old Braniff captain on Mar 13, 1979. The outcome was a legislative mandate for a study rather than a change in the rule.

In response to P.L. 96-171, NIH requested the Institute of Medicine, National Academy of Sciences, to prepare a study. Released to the public on Apr 2, 1981, this report did not recommended either retaining or abandoning the Age-60 rule. It did recommend, however, that FAA institute "a more rigorous and comprehensive medical examination" if it discontinued the rule. **In August 1981, the National Institute on Aging also submitted a report to Congress** with three basic recommendations: that the age-60 rule be retained for major airline pilots; that FAA extend the rule to all other pilots engaged in carrying passengers for hire; and that FAA conduct a systematic program to collect the medical and performance data necessary to consider relaxing the rule. (See Mar 30, 1984.)

Dec 1979: At Minneapolis-St. Paul International Airport, FAA installed the **first operational ARTS IIIA** automated radar terminal system, one of 29 produced under a contract announced on Aug 10, 1976 (see that date and Mar 1978). This initial group of ARTS IIIA systems at first used the same A1.01 software package employed at ARTS III facilities, pending completion of computer programs able to realize the full potential of the new equipment. While this software development continued, FAA in Nov 1980 awarded a contract to upgrade the other 34 operational ARTS III units to the IIIA hardware level. In Oct 1982, Seattle-Tacoma International Airport became the site of the **first ARTS IIIA able to track aircraft not equipped with transponders**, a capability made possible by the new A3.01 software (see Oct 1985). Since Dec 1978, meanwhile, Tampa International Airport had been the site of operational testing of an ARTS IIIA that used all-digital processing. FAA commissioned this unique system on Sep 7, 1982, but it did not become a model for use at other locations.

***1980**

Jan 1, 1980: Effective this date, Administrator Langhorne Bond established the **lead region concept** under which designated Federal Aviation Administration regions assumed certain responsibilities on a nationwide basis. FAA assigned "lead regions" to perform national headquarters staff functions relative to various aspects of aircraft certification, while "certificating regions" held final certification authority for certain categories of aircraft, parts, or materials. The lead regions were: Central (for aircraft under 12,500 lbs.); Southwest (for rotorcraft); Great Lakes (for propellers); and New England (for engines). In addition, the agency designated New England as the first certificating region, with certification authority for all foreign engines as well as all domestically-manufactured turbojet engines of 15,000 lbs. thrust or greater. Later in 1980, two more of the original lead regions were designated certificating regions for their categories of special responsibility: Great Lakes, effective Jul 1, 1980; and Central, effective Jan 15, 1981. In addition,

Northwest became the lead region for transport aircraft with gross takeoff weights of 12,500 pounds or more, as well as the certificating region for foreign transport aircraft and domestically-manufactured transports of 75,000 lb. or greater, effective Nov 1, 1980. (See Nov 1, 1981.)

Jan 7, 1980: **John F. Leyden resigned as president of the Professional Air Traffic Controllers Association (PATCO)** after a bitter struggle for control of the organization with Robert E. Poli, a regional vice president. Both Poli and Leyden had submitted their resignations to the PATCO board, but the board accepted only Leyden's resignation. Leyden resigned effective Feb 1, and Poli became interim president on that day. Poli subsequently was elected to a three-year term on Apr 24. (See May 4, 1979, and Apr 15, 1980.)

Jan 7, 1980: Effective this date, the Environmental Protection Agency (EPA) established a **new schedule for reducing air pollution from older transport aircraft using the JT3D jet engine** (mostly DC-8s and Boeing 707s). The standards were to be applied according to a timetable that would involve the replacement of one-fourth of these engines by Jan 1, 1981; one-half by Jan 1, 1983; and all by Jan 1, 1985. This postponed earlier requirements (see Jul 6, 1973), but was designed to be more compatible with a similar timetable for noise standards (see Dec 23, 1976), thereby saving airlines the cost of two successive engine retrofittings on the same aircraft. Unlike the noise rule, the emissions standards applied to foreign-owned aircraft serving U.S. airports. On Jan 20, 1983, however, EPA published a rule eliminating the requirement that the remaining in-use JT3D engines be retrofitted to meet the standards. (See Dec 23, 1983.)

Jan 7, 1980: **Pan American World Airways signed a merger agreement with National Airlines, which formally ceased to exist on Oct 26**. (The defunct carrier's name was revived on May 15, 1994, when Private Jet Expeditions began using the designation National Airlines.) The merger with National gave Pan American a long-sought domestic system to feed its international routes.

Jan 18, 1980: **Two air traffic controllers alledgedly erased flight data information on a Soviet Aeroflot jet** making its final approach to New York Kennedy airport with Soviet Ambassador Dobrynin aboard. Unaware of the erasure, the controller who was handling the flight misidentified the Soviet aircraft and ordered it to make an early descent through unprotected airspace. The plane nevertheless landed safely. The incident reportedly stemmed from a local PATCO protest over the Soviet invasion of Afghanistan. After reviewing the case, FAA decided on Jan 16, 1981, to reprimand one of the controllers implicated in the data erasure and to suspend the other for 60 days.

Jan 21, 1980: FAA published a **rule limiting the amount of ozone gas that might be present in airliners** flying above 18,000 feet (see Jul 21, 1977). The agency restricted ozone concentration in the cabin to a maximum of 0.25 parts per million at any point in time. In addition, the average exposure on flights of more than four hours was to be no more than 0.1 parts per million. FAA left the airlines the choice of achieving these standards through air filters, use of engine heat to break down ozone, or selection of routes that avoided ozone concentrations. The agency expected, however, that about 500 large transport aircraft used at high altitudes in northern latitudes would require modification. The deadline for compliance was Feb 20, 1981. The same rule amended airworthiness standards for new transport aircraft to provide protection against ozone irritation.

Jan 25, 1980: Armed with a pistol and pretending to have a bomb, a hijacker who identified himself as a Black Muslim diverted a Delta Airlines L-1011 to Cuba. He demanded to be flown to Iran, but eventually surrendered to Cuban authorities. This was the **first U.S. air carrier hijacking in which real weapons or high explosives passed through the passenger screening system since the implementation of strict new airport security measures on Dec 5, 1972** (see that date and Jul 22, 1980).

Jan 25, 1980: DOT announced the award of competitive contracts to three companies to design computer systems for **automating FAA's network of flight service stations (FSS)**. The winning design was expected to improve upon AWANS and MAPS, two systems already tested in use at certain FAA facilities (see Sep 1977). Computers were to be located at air route traffic control centers and linked by telephone lines to the FSS sites. (See Jun 1979 and Apr 2, 1980.)

Feb 15, 1980: FAA announced **improved standards for the seats of airline crew members**. The new rule required the flight attendant seats to be equipped with combination seat belts and safety harnesses, and that the seats themselves have energy-absorbing backs. The rule also required the seats of the cockpit crew

to be equipped with a combination seat belt and shoulder harness so designed that the harness need not be unbuckled during takeoff or landing. The standards for flight attendant seats were effective on Mar 6, 1980, and those for the cockpit crew, a year later. The **rule also upgraded certain other safety standards for large passenger aircraft** concerning storage and service compartments, waste containers, and non-slip floors. (See Sep 10, 1980.)

Feb 15, 1980: Signed into law on this date, the **International Air Transportation Competition Act** of 1979 reduced the Civil Aeronautics Board's power to regulate U.S. international airlines, while authorizing the Board to retaliate against the airlines of nations that discriminated against U.S. carriers. Other provisions: revised the rules governing Federal use of foreign air carriers; and defined circumstances under which foreign-registered aircraft might operate on U.S. domestic routes. As a result of the law, an FAA rule effective Oct 16 permitted U.S. airlines to fly passengers and mail in foreign-registered aircraft. The airlines were allowed to use such leased or chartered aircraft on both foreign and domestic flights.

Section 29 of the law **limited scheduled airline operations at Love Field**, Dallas, Tex., to aircraft seating 56 passengers or less, except for service within Texas and states bordering on Texas. This provision was known as the "Wright Amendment" after Rep. James C. Wright, Jr. (D-Tex.) of Fort Worth.

Feb 18, 1980: President Carter signed the **Aviation Safety and Noise Abatement Act** of 1979. The law gave airlines **more time to comply with Stage 2 aircraft noise standards** insofar as they applied to two-engine jets over 75,000 lb (see Dec 23, 1976, and Mar 3, 1977). These two-engine aircraft had been required to comply by Jan 1, 1983, but that deadline was extended, with exceptions: until Jan 1, 1985, for those with over 100 seats; and until Jan 1, 1988, for those with 100 seats or fewer (see Dec 31, 1987). In other matters, the new legislation authorized funds for noise planning and land use compatibility projects (see Feb 28, 1981) and, in certain circumstances, barred suits for damages due to airport noise.

The act also authorized the FAA to **regulate the access to public areas at Washington National and Dulles International by individuals or groups soliciting funds or distributing materials**. The law prohibited solicitors, including those representing religious groups, from interfering with airport users or using threatening or abusive language. FAA adopted rules, effective Jul 28, requiring solicitors at the two airports to have permits and placing certain limits on their number and the areas in which they could operate (see Jun 26, 1992).

Mar 1, 1980: AN FAA **emergency rule on experience requirements for commuter airline pilots** became effective. The pilot-in-command of a two-pilot crew was required to have logged between 10 and 25 hours of flight time in the particular aircraft make and model under the supervision of a qualified check pilot. The agency keyed the number of hours required to the complexity of the aircraft in question. Pilots of commuter aircraft approved for single-pilot operations with the aid of an autopilot were required to have 100 flight hours in the particular make and model of aircraft. FAA based its action on an analysis of 13 fatal commuter airline accidents that occurred during 1979.

Mar 5, 1980: FAA abolished the Office of Investigations and Security and transferred its internal security functions to the **Office of Civil Aviation Security**. Earlier, the fraud and abuse investigative functions of the Office of Investigations and Security had been transferred to the new Office of Inspector General, in the Office of the Secretary of Transportation.

Mar 27, 1980: The Boeing Company revealed plans for flight decks accommodating **two-member crews for** the fuel-efficient new generation **757 and 767** twin-engine jets. The new decks would include an engine indicating and crew alerting system (EICAS) to centralize all engine displays and provide automatic monitoring of engine operation. (See May 7, 1977 and Aug 26, 1980.)

Apr 2, 1980: Administrator Bond announced a proposed **revision to the master plan for automating the flight service stations** (see Jan 1978). A feature of that plan had been the ultimate consolidation of the entire network of FSS sites into 20 automated stations co-located with air route traffic control centers (ARTCCs). Instead, Bond called for eventual consolidation into 61 automated stations. Although linked by telephone lines to computers at the air route traffic control centers, these sites would be housed in new buildings at airports that were centers of general aviation activity. Bond rejected the co-location of FSSs and ARTCCs (see Sep 1977), stating that this experiment had isolated flight service stations from general aviation pilots while showing no cost or operational advantages. (See Jan 25, 1980, and May 28, 1981.)

Apr 15, 1980: PATCO distributed to its members an "educational package" that many in FAA considered a "**strike plan**." The materials provided: information on how to establish communications networks and

committees on security, welfare, and picketing; recommendations for a variety of financial preparations in case of the loss of wages during a job action; and advice to local PATCO organizations to make arrangements for bail bondsman and for other legal services. (See Jan 7, 1980, and Aug 15, 1980.)

Apr 30, 1980: Effective this date, FAA required a **triennial aircraft registration report**. Aircraft certificate holders were to submit the report whenever three years elapsed since the Registry received information indicating continued registration eligibility. The procedure was less burensome to the public than an earlier annual report requirement (see Mar 7, 1970).

May 12, 1980: Maxie and Kris Anderson, father and son, completed what is considered the **first nonstop balloon crossing of the North American continent**, after a four-day flight from Fort Baker, Calif. They landed at Matane, on Quebec's Gaspe Peninsula, about 160 miles from the Gulf of St. Lawrence.

May 15, 1980: FAA established a **terminal control area (TCA) at San Diego** as part of the agency's response to a midair collision that killed 144 persons (see Mar 1976). FAA established another TCA at **Honolulu** on Nov 27. These new Group II TCAs brought the total in this category to 14, in addition to 9 Group I TCAs at the nation's busiest locations. (See Aug 1, 1975 and Aug 31, 1986.)

May 16, 1980: A U.S. district **court decision put FAA's medical exemption system on temporary hold** by enjoining the agency from issuing medical certificates to airmen with a history of any of nine "absolutely disqualifying conditions," including myocardial infarction, angina pectoris, or alcoholism. Henceforth, FAA could issue medical exemptions to airmen with a history of these disqualifying conditions only after "a proper finding that such an exemption was in the public interest." In addition, the court enjoined the Federal Air Surgeon from placing any functional limitation on any medical certificate on the grounds that the authority to do this had not been properly delegated to this official from the FAA Administrator.

The decision arose from a suit by Delta Airlines, which opposed FAA's policy of issuing certificates with functional limitations to pilots who had suffered heart attacks. This practice often enabled such pilots to serve as flight engineers, and thus ran counter to Delta's policy that flight engineers must possess a first class medical certificate. By mid-1982, FAA had adopted regulatory language for medical exemptions that satisfied the public-interest criteria of the court and allowed the process of granting pilot medical exemptions to continue.

May 18, 1980: Washington state's **Mt. St. Helens erupted**, destroying over 100 square miles of timber and leaving at least 61 persons dead or missing. Ash from the volcano caused widespread disruption, but did not close FAA facilities in the area. The agency informed airmen of the location of the volcanic cloud, which damaged several aircraft, and issued a maintenance checklist for planes that had entered suspected areas. FAA also set up a mobile air traffic control tower to assist military missions of reconnaissance, search, and rescue. **Interest in the threat of volcanoes to aircraft increased in 1982**, when two Boeing 747s lost all engine thrust temporarily as they encountered ash from an Indonesian volcano. (See Dec 14, 1989.)

May 29, 1980: **FAA changed the name of its National Aviation Facilities Experimental Center (NAFEC) to the FAA Technical Center**, and at the same time dedicated a **new complex of buildings** at the New Jersey facility (see May 29, 1975). Under an agreement signed in 1976, the Atlantic City Improvement Authority had constructed the new complex for lease to FAA. On May 28, the agency had also dedicated a **new heliport** at the facility, and on Jun 20 dedicated the Center's large new **fire research building**.

Jun 26, 1980: The Committee on FAA Airworthiness Certification Procedures, popularly known as the **Blue Ribbon Panel on Aircraft Certification**, issued its report. The panel had been formed at the request of Secretary of Transportation Neil Goldschmidt in response to congressional concerns after the Chicago DC-10 accident (see May 25, 1979). The National Research Council selected a 13-person committee of experts, headed by George M. Low, president of Rensselaer Polytechnic Institute, and including among its members former FAA Administrator John L. McLucas. While concluding that the agency's system of assuring the airworthiness of U.S.-built aircraft had worked satisfactorily in the past, the committee believed that FAA must upgrade its certification staff's technical proficiency and familiarity with current developments. The panel's recommendations included that FAA: establish a central engineering group responsible for type certification and participation in rulemaking; improve the type certification process through a series of milestone reviews; develop a rule requiring that aircraft be designed to continue to fly

despite structural failure; increase surveillance of airline maintenance operations; and accelerate development of a system for gathering safety-related data.

Jul 22, 1980: Holding what was reported to be a small handgun to the back of a flight attendant, a man diverted a Delta Air Lines L-1011 to Cuba, beginning a **series of hijackings by Cuban refugees** who had arrived in the U.S. during the boat lift from the port of Mariel that began in Apr 1980 (see Jan 25, 1980). Mariel refugees returned to their homeland in 10 hijackings between Aug 10 and Sep 17. During the last quarter of 1980, however, no successful "Marielista" hijackings occurred. Factors in this improvement were special FAA security measures, coupled with the immediate return of two hijackers by the Cuban government. The phenomenon continued, however, and one successful Marielista hijacking took place in 1981. During 1982, three airliners were diverted to Cuba by Spanish-speaking men (at least one of whom was a Marielista) using flammable liquid as their weapon. The threat to ignite real or alleged flammable liquid had been used in every successful hijacking to Cuba since Aug 13, 1980. (See May 1, 1983.)

Aug 4, 1980: FAA commissioned the first **En Route Automated Radar Tracking System (EARTS)** at the air route traffic control center at Anchorage, Alaska. The system was the product of contracts with Sperry Rand's Univac Division announced by FAA in Jul 1974 and Aug 1976 (See Aug 10, 1976). Developed for the special needs of the widely dispersed centers at Anchorage, Honolulu, and San Juan, EARTS was simpler and less costly than the automated systems used to track en route traffic at centers within the contiguous U.S. It was essentially an expanded Automated Radar Terminal System (ARTS III) modified for en route operations by adding a plan view display component. FAA commissioned Hawaii's EARTS in Jul 1982 and Puerto Rico's in Dec 1982. (See Mar 1984.)

Aug 15, 1980: **PATCO-affiliated controllers** at O'Hare International Airport **conducted a one-day traffic slowdown** that caused 616 delays of 30 minutes or more and cost air carriers more than $1 million in wasted fuel. The slowdown followed FAA's turning down a demand by O'Hare controllers for an annual tax-free bonus of $7,500. (See Apr 15, 1980, and Oct 20, 1980.)

Aug 19, 1980: An **in-flight fire on a Saudi Arabian Airlines L-1011** killed all 301 persons aboard. Smoke inside the aircraft prompted a return to Riyadh shortly after takeoff. The aircraft landed normally, but was destroyed by fire on the taxiway. Saudi investigators concluded that the fire probably began in the aft pressurized cargo compartment, but were unable to determine its cause. The accident was followed by development of improved liner material for L-1011 cargo compartments, and by FAA action to upgrade cargo compartment safety standards (see May 16, 1986).

Aug 26, 1980: FAA type-certificated the **McDonnell Douglas DC-9-80** for operation with a two-pilot crew. The Air Line Pilots Association challenged the certification in a law suit, ultimately without success, and picketed the White House in October to protest FAA's position. (See Mar 27, 1980, and Dec 29, 1980.)

Sep 10, 1980: The **Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee** (see Jun 26, 1978) released its final report. The committee reported that, over the past 15 years, fatalities due to post-crash fire or its effects in U.S. scheduled air carrier operations had averaged about 32 per year. It concluded that, with the exception of toxic hazards assessment, aircraft fire research had been reasonably well funded since the early- to mid-1970s. The SAFER group's most urgent recommendation was to expedite the investigation and validation of **anti-misting kerosene**, known as AMK (see Dec 1, 1984). Among the numerous additional recommendations were: mandatory fuel tank vent protection; maximizing the probability of engine fuel shut-off in potential fire situations; research on lowering the flashpoint of kerosene fuels; improved accident investigation and reporting; research to establish the contribution of cabin interior materials to the post-crash fire hazard; development of fire-blocking layers for seats; accelerated toxicity research; radiant heat resistance standards for evacuation slides; and development of improved fire-resistant cabin windows. In conclusion, the committee's report urged FAA to create a standing advisory committee to provide regular expert advice in the field of fire and explosion research. FAA set up working groups to examine the SAFER recommendations and take rulemaking action when feasible. (See Oct 26, 1984.)

Sep 30, 1980: The **Airport Development Aid Program lapsed** as of midnight on this date due to Congress' failure to extend or replace legislative authorization (see Jul 12, 1976). Congress also failed to authorize the collection of user taxes paid into the Airport and Airway Trust Fund. As a result, some of these taxes expired, while others were reduced to the levels collected before Jul 1, 1970. Taxes eliminated completely included the 5 percent air cargo tax, the $3 international departure fee, the aircraft use tax, and

the jet fuel tax. The 8 percent passenger ticket tax was reduced to 5 percent, and was now paid into the Treasury's general fund. The general aviation gasoline tax was reduced from seven to four cents per gallon, and was paid into the Highway Trust Fund, which also received revenues from continuing taxes on aircraft tires and tubes. Although it no longer received any tax revenues, the Airport and Airway Trust Fund continued to exist and to receive interest payments on the Treasury bills in which its liquid assets were invested. While FAA ceased to award grants from the Fund, the agency continued to liquidate obligations previously made under the grant program. The Trust Fund also continued to provide support for FAA facilities and equipment, as well as for the agency's research, development, and engineering. (See Aug 13, 1981.)

Oct 2, 1980: Recognizing the changing nature of airline operations under deregulation, the Civil Aeronautics Board adopted a report that led to **new system of classifying air carriers** for statistical and financial analysis. The carriers were described as either Majors, Nationals, Large Regionals, or Medium Regionals, depending on the amount of their annual operating revenue. After CAB became defunct at the end of 1984, the Research and Special Projects Administration continued this general system, although the amounts of revenue required for the various categories were periodically adjusted.

Oct 9, 1980: FAA published a new Federal Aviation Regulations Part 125, representing a **substantial upgrade of safety standards for certain large airplanes**. The new Part 125 established a uniform set of certification and operating rules for large airplanes capable of carrying 20 passengers or more, or a payload of 6,000 lbs. or more, and used for any purpose other than common carriage.

Oct 20, 1980: Republican presidential candidate **Ronald Reagan wrote to PATCO president Robert E. Poli**, saying: "You can rest assured that if I am elected President, I will take whatever steps are necessary to provide our air traffic controllers with the most modern equipment available and to adjust staff levels and work days so that they are commensurate with achieving a maximum degree of public safety." On Oct 23, the PATCO executive board endorsed Reagan for President. At the same time, the union charged President Carter with ignoring serious safety problems that jeopardized the nation's air traffic control system. (See Aug 15, 1980, and Dec 15, 1980.)

Nov 3, 1980: FAA published a **special rule allocating reservations, or "slots," for takeoffs and landings under instrument flight rules at Washington National Airport**. The rule applied to air carriers, except air taxis, and was effective Dec 1, 1980, to Apr 26, 1981. The slots had previously been assigned by an air carrier scheduling committee, the system used at the other high density airports subject to flight restrictions in force since Jun 1, 1969 (see that date). Since the Airline Deregulation Act of 1978, however, the number of carriers seeking slots at National had increased and the committee found it more difficult to reach agreement. On Oct 14, 1980, the body advised FAA it was deadlocked, necessitating government intervention. (See Mar 23, 1978, and Dec 6, 1981.)

Nov 28, 1980: FAA published a rule requiring foreign operators of aircraft over 75,000 lb. serving the U.S. to comply with the same **noise standards** as U.S. operators (see Dec 23, 1976). The rule generally required final compliance by 1985.

Dec 15, 1980: A U.S. District Court judge in Illinois, **dismissed a court action brought by FAA against PATCO** and its Chicago O'Hare Local No. 316 for a slowdown which had begun on Aug 15, 1980 (see that date). On Aug 17, FAA had brought suit for a preliminary and permanent injunction against the controllers. The following day, a U.S. District Court judge had issued a temporary restraining order prohibiting PATCO and its O'Hare affiliate from taking part "in any work stoppage or slowdown." Subsequently, FAA pressed its plea for permanent injunctive relief. In ruling that the case was not properly before his court, the judge held that a slowdown was an unfair labor practice and that Title VII of the Civil Service Reform Act of 1978 gave original jurisdiction in such controversies to the Federal Labor Relations Authority, not to U.S. district courts. (See Mar 15, 1981.)

Dec 19, 1980: **New York Air began operations**, competing against Eastern Air Lines' Washington-New York shuttle. The new, non-union regional carrier was **a creation of Texas Air**, a holding company created by Frank Lorenzo in 1980. Texas Air also owned Texas International Airlines, which Lorenzo had headed since 1972. (See Aug 6, 1981, and Feb 1, 1987.)

Dec 22, 1980: FAA placed the **Office of Aviation Medicine** under the executive direction of the Associate Administrator for Aviation Standards. Although no longer reporting directly to the Administrator, the Federal Air Surgeon retained delegated responsibilities for medical determinations.

Dec 29, 1980: The Air Line Pilots Association (ALPA) organized a **"public awareness" campaign called Operation USA** (Unity for Safe Airtravel). Shortly thereafter, the union threatened a general one-day work stoppage in March unless the President appointed a **panel of independent experts to examine the question of crew complement**. On Mar 5, 1981, President Reagan appointed a three-man task force headed by former FAA Administrator John L. McLucas to review FAA's certification of the DC-9-80 for operation with a minimum cockpit crew of two pilots (see Aug 26, 1980). On Jul 2, the task force reported that the certification was proper and that a third crew member was not be justified in the interest of safety. The board also noted that safe operation by a two-pilot crew would be permitted by the designs of Boeing's new 757 and 767 aircraft, and of the A-310 aircraft being developed by the European consortium, Airbus Industrie. On Jul 14, ALPA's executive board voted unanimously to accept the findings of the task force.

Dec 31, 1980: The end of this day marked the completion of the **first calendar year without a fatal accident for major U.S. airlines (Part 121) in scheduled service**, including the flag, trunk, and local service categories. The only fatal accident involving Part 121 operators engaged in any type of service was an incident in which a parachutist was struck by a military contract cargo flight. (See Dec 31, 1970, and Dec 31, 1981.)

***1981**

Jan 10, 1981: The **New York terminal radar control room (TRACON)** became operational at Hempstead, Long Island. The building had been completed in Jan 1978, after which the Federal Aviation Administration had begun installing electronic equipment. Commissioning of the facility had been delayed, however, until the closing of a nearby resource recovery plant ended FAA's concern about unhealthful emissions. The TRACON replaced the Common Radar Room (also called the "Common IFR" or "Common I") at Kennedy International. Initially, the new facility handled approaches and departures at New York's three major airports, but was scheduled to later take over responsibility for numerous smaller airports in area. The TRACON's special ARTS IIIA system had 44 displays, 91 keyboard stations, and a track capacity of 1,200 aircraft (see Aug 10, 1976, and Mar 26, 1986). In contrast, the Common Radar Room's ARTS IA had only 12 displays.

Jan 19, 1981: FAA announced that it had begun a **program to improve navigational charts** used by pilots flying under visual flight rules. The improvements were based on recommendations of an agency working group established in Sep 1980, and were to be implemented in cooperation with the Inter-Agency Cartographic Committee.

Jan 20, 1981: **Ronald Reagan became President**, succeeding Jimmy Carter. **The resignations of Langhorne M. Bond as FAA Administrator and Quentin S. Tayor as Deputy Administrator became effective**, although Taylor accepted another post with FAA (see May 4, 1977). Charles E. Weithoner, Associate Administrator for Administration, became Acting Administrator. (See Apr 22, 1981.)

Jan 23, 1981: **Drew Lewis became Secretary of Transportation**, succeeding Neil E. Goldschmidt with the change of administrations. President Reagan had nominated Lewis on Dec 11, 1980, and the Senate had confirmed the nomination on Jan 22, 1981. A business management specialist from Philadelphia, Lewis first came to national attention in 1974, when he made an unsuccessful run for governor of Pennsylvania. He had served as Deputy Chairman of the Republican National Committee prior to accepting the Transportation cabinet post. (See Dec 28, 1982.)

Jan 30, 1981: FAA announced the adoption of **new security rules** making commuter aircraft with a seating capacity of 60 or more passengers subject to the same anti-hijacking programs as the aircraft of larger airlines.

Feb 2, 1981: FAA commissioned the first **Direct Access Radar Channel (DARC)** at the Salt Lake City air route traffic control center. By Jun 28, when FAA commissioned DARC at the Minneapolis ARTCC, all 20 en route centers within the contiguous 48 states had been equipped with the system (see Apr 5, 1988) As a result of development begun in the late 1970s, the Raytheon Company produced DARC as a backup

system to be switched on when the primary radar processing system failed or was turned off for maintenance. DARC provided a sharper display than the noncomputerized broadband backup system that it replaced. Whereas the broadband system had presented only an unmarked "blip" for each radar target, DARC provided a limited data bloc that gave a discrete code for each aircraft equipped with a discrete beacon code transponder, as well as the altitude of those equipped with an altitude-encoding transponder. The discrete code helped controllers to identify quickly the targets when changeover from the primary system occurred. Initially, however, controllers using DARC were still obliged to keep track of targets by moving plastic markers across the radar display, and hence were required to shift their scopes to a horizontal position. In Fib 1984, therefore, FAA began installing RAH01 software that made it possible for DARC to provide full data blocs that remained on the display between radar scans even if the radar missed the target. Meanwhile, the agency awaited delivery of a 1982 order for a more advanced hardware and software **enhancement designated E-DARC**. As compared to RAH01, E-DARC's advantages included predicted position tracking and the capability to present composite displays using returns from several radar sites. E-DARC also allowed an individual controller to switch back and forth between primary and backup systems at the touch of a button, and permitted non-verbal handoffs of aircraft between sectors within a center. FAA commissioned the first E-DARC system at the Seattle center on Nov 26, 1986.

Feb 28, 1981: Effective this date, a new Part 150 of the Federal Aviation Regulations established requirements and procedures for airport operators participating in a **voluntary noise compatibility planning program** as authorized by the Aviation Safety and Noise Abatement Act (see Feb 18, 1980). The new regulations provided standardized methods for measuring noise, identified land uses compatible with various noise levels, and set forth criteria for FAA approval of the plans.

Mar 15, 1981: The labor **contract between FAA and PATCO expired**. In accordance with Article 75 of the agreement, however, all its provisions but one (immunity under the aviation safety reporting program) remained in force until a new agreement was reached. (See Dec 15, 1980, and Apr 28, 1981.)

Apr 12, 1981: The United States launched space shuttle *Columbia* on the **first shuttle orbital flight**.

Apr 22, 1981: **J. Lynn Helms became the eighth FAA Administrator**, succeeding Langhorne M. Bond (see May 4, 1977). President Reagan had made the nomination on Mar 3, and the Senate confirmed it on Apr 8.

Born in 1925 in DeQueen, Ark., Helms attended the University of Oklahoma. He received his flight training as part of the U.S. Navy's V-5 program during World War II, then entered the Marine Corps to serve as both a test pilot and instructor pilot. After leaving the Marine Corps with the rank of Lt. Colonel in 1956, he went to work as a design engineer for North American Aviation. In 1963, he joined the Bendix Corp., eventually becoming vice president, then accepted the presidency of the Norden Division of United Aircraft in 1970. He joined Piper Aircraft Corp. in 1974, serving as president, chairman, and chief executive officer before retiring from the company in 1980. Helms was an active pilot holding a commercial pilot's certificate. His honors included selection as General Aviation Man of the Year for 1978, and he had been chairman of the General Aviation Manufacturers Association in 1979. Helms served as FAA Administrator for two years and nine months. (See Dec 23, 1983.)

Apr 28, 1981: After 37 negotiating sessions with FAA, **PATCO representatives walked out of the contract talks**, claiming that the agency was not responsive to their proposals. PATCO had submitted its bargaining proposals to FAA in early January 1981, and negotiations had begun the following month. PATCO's proposals for a 32-hour work week and separate pay scale for controllers, embodied in legislation before Congress, were opposed by the Office of Management and Budget. (See Mar 15, 1981, and May 23, 1981.)

May 6, 1981: FAA issued an Advisory Circular concerning the new **Supplemental Structural Inspection Program (SSIP)** under which manufacturers developed special programs to ensure the continued airworthiness of their older types of large transport aircraft. The background of the SSIP included the 1977 loss of a British 707 in Zambia due to structural failure. Continued **concern about the airworthiness of aging aircraft** reflected a tendancy for operators to retain older planes for longer periods. This trend was due to such factors as a slackened demand for the fuel-efficiency offered by new aircraft and the competitive pressures of airline deregulation. Effective Jul 5, 1985, FAA made the inspections developed under SSIP mandatory for certain Boeing 707s with high in-service time. Similar directives for other aircraft types soon followed. (See Apr 28, 1988.)

May 23, 1981: At its annual convention, in New Orleans, **PATCO set a Jun 21 deadline for reaching agreement on a new contract** with FAA. PATCO President Robert Poli said if agreement was not reached by that date the union would poll its members for a strike vote. Newspapers quoted Poli as vowing that the "the skies will be silent" if FAA's negotiators did not "come to their senses." (See Apr 28, 1981, and Jun 18, 1981.)

May 26, 1981: **FAA banned any new long-haul airline flights to or from Washington National Airport** pending issuance by the Department of Transportation of a new Metropolitan Washington Airports Policy. The ban preserved a policy, begun in 1966 and continued voluntarily, under which nonstop flights to and from National were limited to a perimeter with a 650-mile radius, with certain exceptions. FAA acted to preserve National's traditional role as a short-haul airport in the face of a decision by three carriers--American, Pan Am, and Braniff--to inaugurate nonstop flights into National from Houston and Dallas, each of which would have exceeded 1,000 miles. (See Sep 1, 1966, and Dec 6, 1981.)

May 28, 1981: At a meeting on this date, Administrator Helms directed a **change in policy on acquisition of space for the planned Automated Flight Service Stations, known as AFSSs** (see Apr 2, 1980). In addition to building and owning the facilities, FAA would also lease space at airports from municipalities, airport operators, private parties, or government agencies at the state or Federal level. FAA would seek competitive bids to obtain the most favorable rates. (See Oct 2, 1981, and Nov 1982.)

Jun 12, 1981: FAA announced a **planned regional consolidation**, to be effective Jul 1, that would reduce the number of regional headquarters from eleven to six (see Apr 2, 1971). The headquarters at New York, Chicago, Denver, Los Angeles, and Honolulu would be phased out, and their functions merged with the remaining sites. Boston would take over the functions of New York, and Kansas City would assume those of Chicago. Seattle would take over the functions of Denver, Los Angeles, and Honolulu. The regional offices at Anchorage, Atlanta, and Fort Worth would remain essentially unchanged. The plan aroused political opposition, and FAA agreed to review the decision. (See Sep 4, 1981.)

Jun 17, 1981: **PATCO rejected a Reagan Administration contract proposal** as inadequate and broke off informal talks with representatives of FAA. The informal talks, conducted irregularly since the break in formal talks on Apr 28, were held under the aegis of the Federal Mediation and Conciliation Service. (See Jun 18, 1981, and Jun 22, 1981.)

Jun 18, 1981: The **U.S. District Court rejected a PATCO motion to vacate the injunction** restraining the union from engaging in illegal job actions or strikes (see Jun 21, 1978). PATCO moved to have the injunction lifted on the grounds that it had been superceded by the Civil Service Reform Act of 1978, which gave the Federal Labor Relations Authority original jurisdiction in Federal labor-management disputes. (See May 23, 1981, and Jun 17, 1981.)

Jun 22, 1981: **Department of Transportation and PATCO representatives reached agreement on a tentative new contract** after a marathon bargaining session, thus averting a threatened nationwide strike by PATCO-affiliated controllers that had been scheduled to begin at 7 a.m., Monday, Jun 22.

Secretary of Transportation Drew Lewis and PATCO President Robert Poli had gone back to the bargaining table Friday evening, Jun 19, at the behest of Representative James J. Howard (D-N.J.), chairman of the House Public Works Committee. The resumption of talks may also have been prompted by a letter to Poli from 36 U.S. Senators, stating that a strike by PATCO "will do nothing to further your goals of increased pay and changes in working conditions." The bargaining sessions, which took place at the offices of the Federal Mediation and Conciliation Service and were joined in by Federal mediator Kenneth Moffett, lasted more than 25 hours, with the last session running past 3 a.m., Monday.

The agreement contained four key provisions, which the Reagan Administration agreed to recommend to Congress:

* A "responsibility" differential that would give controllers 42 hours pay for each normal 40-hour week worked.
* An increase in the night differential from 10 to 15 percent of base pay.
* The exclusion of overtime, night differential, and Sunday and holiday pay from the limitations of the Federal pay cap.
* A retraining allowance equivalent to 14 weeks of base pay for controllers who became medically disqualified after five consecutive years of service at the journeyman level or above and who were ineligible for retirment or disability compensation.

The first-year cost of the total package, which included a cost-of-living raise of 4.8 percent due Federal civil service employees in October, came to approximately $40 million or, on the average, $4,000 per controller per year. PATCO had been seeking a package that would have cost the government, initially, in excess of $700 million per year. (See Jun 17, 1981, and Jul 2, 1981.)

Jun 23, 1981: Administrator Helms announced FAA's decision to adopt the Threat Alert and Collision Avoidance System, soon renamed the **Traffic Alert and Collision Avoidance System (TCAS)**. The TCAS system was an evolutionary improvement of the Beacon Collision Avoidance System (BCAS) that the agency had been developing (see Mar 1976). Like BCAS, TCAS would work in conjunction with the Air Traffic Control Radar Beacon System (ATCRBS) transponder already in wide use. It would also be **compatible with the next-generation transponder, originally designated the Discrete Address Beacon System (DABS) and later known as Mode S** (see Dec 27, 1978, and Oct 5, 1984).

Two types of the new collision avoidance system were planned. TCAS I, intended for general aviation use, would in its basic form simply alert the pilot to the proximity of another aircraft carrying TCAS I or a conventional ATCRBS transponder. More expensive TCAS I versions would have some ability to provide certain data on the altitude and/or "o'clock" position of threat aircraft. TCAS II would provide more sophisticated advisories, including data on range and bearing of transponder-equipped aircraft. When the transponder aboard the threat aircraft had altitude-reporting capability, TCAS II's advisories would also include altitude data. In the case of two aircraft equipped with TCAS II, coordinated advisories would be provided. TCAS II would suggest vertical escape manuevers. If feasible, the system might be enhanced to include both vertical and horizontal escape manuevers, a version later designated TCAS III. TCAS was expected to overcome a fundamental limitation of BCAS by its ability to operate effectively even in the highest air traffic densities. This modified the need for a new ground-based collision avoidance system, and led to **discontinuance of the Automatic Traffic Advisory and Resolution System (ATARS) project, originally known as Intermittent Positive Control** (see Mar 4, 1976).

On Nov 13, 1981, FAA announced a contract with Bendix Corporation to provide two TCAS II engineering models to be tested and then enhanced to advise pilots of horizontal escape manuevers. (See Mar 18, 1987.)

Jul 2, 1981: **PATCO's nine-member executive board recommended unanimously that the union's members reject the tentative contract** agreed to on Jun 22 by PATCO President Robert Poli and Secretary of Transportation Drew Lewis. Poli also voted to reject the contract, although he had stated that he was pleased with the settlement at the time of its negotiation. On Jul 29, PATCO announced that its **members rejected the tentative contract** by a vote of 13,495 to 616. Two days later, on Jul 31, PATCO President Robert Poli announced at a press conference in Washington that his **union would go on a nationwide strike** beginning on Monday, Aug 3, unless the government met PATCO's demands. (See Jun 22, 1981, and Aug 3, 1981.)

Jul 30, 1981: In **San Diego Unified Port District v. Gianturco**, the U.S. Court of Appeals for the Ninth Circuit struck down an attempt by the State of California to impose more stringent noise rules at Lindbergh Field than those imposed by Lindbergh's proprietor. The court's decision included a rationale for the **"Burbank exception"** (see May 14, 1973). Noting that the U.S. Supreme Court had held in Griggs v. Allegheny that airport proprietors can be held liable for the noise produced by aircraft using their facilities (see Mar 5, 1962), the Court observed that "fairness dictates that they must also have power to insulate themselves from that liability." At the same time, the Court set forth criteria that determine airport proprietorship, including "ownership, operation, promotion, and the ability to acquire necessary approach easements." If a local or state entity possessed these characteristics, then it also possessed power to regulate noise. In the case of Lindbergh Field, however, the State of California did not possess these characteristics, having entrusted them to the San Diego Unified Port District.

On Sep 23, 1981, in **Santa Monica Airport Association v. City of Santa Monica**, the same Court reaffirmed the "Burbank exception" by upholding aircraft-noise abatement ordinances and a night curfew on takeoffs and landings imposed by the City of Santa Monica, which owned and operated the local airport. In reaching this decision, the Court again emphasized that "municipal airport owners needed some means of limiting their liability under Griggs." The Court did strike down, however, a categorical ban on all jet aircraft as violating the Commerce and Equal Protection clauses of the Constitution. (See Aug 24, 1983.)

Aug 1, 1981: **Michael J. Fenello became FAA's Deputy Administrator**, succeeding Quentin S. Taylor (see May 4, 1977). A native of Rochester, N.Y., Fenello was a graduate of Buffalo State Teachers College

and held a Master's degree in Administration and Supervision from New York University. He was a junior high school teacher before starting a 38-year career with Eastern Air Lines in Jan 1943. Fenello began as a copilot, rose to captain, and later served as a flight instructor and supervisor of flying before being promoted in 1963 to Assistant Operations Manager in New York. The following year, he was named Director of Administration for Flight Operations, with headquarters in Miami. In 1968, Fenello became Assistant to the Vice President, Operations Group, and in 1972 was promoted to Vice President, Operations Control. From 1976 until his retirement from Eastern in Feb 1981, he served as Vice President for System Operations and Safety. Fenello was FAA's Deputy Administrator for two years and 9 months, resigning effective May 1, 1984. (See Dec 23, 1983, and Dec 13, 1984.)

Aug 3, 1981: Nearly 12,300 members of the 15,000-member **Professional Air Traffic Controllers Organization (PATCO) went on strike**, beginning at 7 a.m., EST, grounding approximately 35 percent of the nation's 14,200 daily commercial flights. The controllers struck after the failure of eleventh hour negotiations, which began 2 p.m. Sunday, Aug 2, and continued, with one break, past 2 a.m. Monday, Aug 3. Shortly before 11 a.m. on Aug 3, at an impromptu news conference, **President Reagan issued the strikers a firm ultimatum**: return to work within 48 hours or face permanent dismissal. The government moved swiftly on three fronts -- civil, criminal, and administrative -- to bring the full force of the law to bear on the strikers. In a series of legal steps, Federal officials:

* Asked the Federal Labor Relations Authority (FLRA) to decertify PATCO as the bargaining agent for the 17,200 controllers and controller staff members.
* Moved to impound the union's $3.5 million strike fund.
* Filed criminal complaints in Federal courts in eleven cities against twenty-two PATCO officials.
* Sought restraining orders against the strikers in thirty-three courts.

Even before the 7 a.m. walkout, a U.S. District Court for the District of Columbia signed an order directing the controllers to return to work. Late in the evening on Aug 3, another judge of the same court found the union in contempt for failing to obey the first order and imposed an accelerating schedule of fines totaling $4.7 million if the controllers failed to report to work ($250,000 for Tuesday, August 4; $500,000 for Wednesday; $1 million a day for the next four days). That judge also fined PATCO President Robert Poli $1,000 a day for each day the strike continued, through Sunday, Aug 9. Approximately 875 controllers returned to work during the 48 hour grace period granted. After expiration of the grace period, about 11,400 controllers were dismissed. Most of those fired appealed the action, and 440 were eventually reinstated as a result of their appeals.

The strike and dismissals drastically curtailed FAA's controller workforce. According to DOT's FY1982 annual report, the firings reduced the number of controllers at the full performance or developmental level from about 16,375 to about 4,200. To keep the airways open, approximately 3,000 ATC supervisory personnel worked at controlling traffic. FAA assigned assistants to support the controllers, and accelerated the hiring and training of new air traffic personnel. Military controllers arrived at FAA facilities soon after the strike began, and about 800 were ultimately assigned to the agency. The combined force was sufficiently large to handle traffic without activating the National Air Traffic Control Contingency Plan, which called for FAA itself to establish rigid, severely curtailed airline schedules and to prescribe routes and altitudes.

The day the strike began, FAA adopted Special Federal Aviation Regulation (SFAR) 44, establishing provisions for implementing an **interim air traffic control operations plan** (see Feb 18, 1982). That plan allowed FAA, among others things, to limit the number of aircraft in the national airspace system. Hence, on Aug 5, the agency implemented a plan dubbed "Flow Control 50," whereby air carriers were required to cancel approximately 50 percent of their scheduled peak-hour flights at 22 major airports. FAA maintained an en route horizontal spacing between aircraft under instrument flight rules of up to 30 miles. Aircraft were kept on the ground, as necessary, to maintain this spacing. FAA gave priority to medical emergency flights, Presidential flights, flights transporting critical FAA employees, and flights dictated by military necessity. General aviation flights operated under the severest restrictions. Aircraft with a gross takeoff weight of 12,500 pounds or less were prohibited from flying under instrument flight rules; moreover, aircraft flying under visual flight rules were prohibited from entering terminal control areas. Other general aviation aircraft were served, as conditons permitted, on a first-come-first-served basis. (See Jul 2, 1981, and Sep 4, 1981.)

Aug 6, 1981: The Civil Aeronautics Board approved **acquisition of Continental Airlines by Texas International**, a subsidiary of Frank Lorenzo's holding company, Texas Air. The transaction was consumated in Oct 1981. **A year later, Lorenzo merged Texas International's operations into those of the much larger Continental**. (See Sep 24, 1983)

Aug 13, 1981: President Reagan signed the Fiscal Year 1981 Airport Development Authorization Act (Title XI of P.L. 97-35) which **briefly renewed the Airport Development Aid Program**. The law authorized $450 million in grants from the Airport and Airway Trust Fund for airport development, planning, and noise compatibility projects during fiscal 1981. It also specified that at least $25 million be used for noise compatibility grants, and forbade future authorization in excess of $600 million for fiscal 1982.

FAA had only until the end of Sep 30, 1981, to allocate the $450 million, plus another $9 million resulting from adjustments to prior year's grants. The agency approved 622 new grants and 181 amendments to previous grants, for a total of $450.4 million. FAA was unable to allocate the whole amount because one airport sponsor did not use all the money specifically set aside for it in the legislation. (See Sep 3, 1982).

Sep 4, 1981: FAA announced a **revised regional consolidation plan** under which the number of regions would be reduced from eleven to nine. The original plan would have resulted in only six regions (see Jun 12, 1981), but FAA stated that this had been modified due to the more pressing need to rebuild the air traffic control system in the wake of the PATCO controllers strike (see Aug 3, 1981). The consolidation was detailed in a notice issued on Sep 29. Under the new plan, FAA combined the existing Pacific-Asia and Western Regions into a new Western-Pacific Region with headquarters in Los Angeles, and closed the Honolulu regional office. The agency also combined the existing Rocky Mountain and Northwest Regions into a new Northwest Mountain Region with headquarters in Seattle, and closed the Denver regional office. It also reassigned the states of North and South Dakota from the Rocky Mountain to the Great Lakes Region. Operations under the new concept began on Oct 1, and all physical relocation was scheduled for completion by the end of Aug 1982.

Sep 4, 1981: FAA announced it would hire approximately **1,500 temporary employees, including furloughed airline pilots, to assist in replacing air traffic controllers** fired for striking. The temporary employees would not control traffic, but would perform duties related to flight strip distribution and other controller support functions. (See Aug 3, 1981, and Oct 2, 1981.)

Sep 11, 1981: Federal Aviation Regulation Part 108, a **new rule on airline security**, went into effect. The regulation levied airline security requirements according to the perceived threat facing different types of operations and sizes of aircraft, and established security safeguards appropriate to the various types of commercial passenger operations. Also on this date, FAA approved a new concept allowing airport operators to position law enforcement officers farther from passenger screening checkpoints provided certain conditions were fulfilled (see Mar 29, 1979).

Sep 26, 1981: The twin-engine **Boeing 767 made its first flight**. On Jul 30, 1982, FAA certificated the aircraft, the first entirely new U.S. commercial transport design in more than a decade. The 767 began its first revenue service on Sep 8 of that year with United Air Lines. On Jul 14, 1978, United Airlines had placed the largest order to date for a single commercial airplane, when it made a $1.2 billion order for the airliner.

Sep 30, 1981: During fiscal year 1981, which ended on this date, FAA added two major **new capabilities to the en route air traffic control system: minimum safe altitude warning (MSAW)**, already a feature of the ARTS III terminal system (see Oct 28, 1977); **and arrival metering**, a function that provided the controller with computer advisories to help in managing the flow of traffic into congested terminal areas.

Oct 2, 1981: FAA announced the award of two contracts to E-Systems for **computer systems for 61 automated flight service stations (AFSS)**. The agency planned that the existing network of over 300 stations would eventually be consolidated into the 61 automated facilities. The equipment to be produced by E-Systems would provide flight service specialists with rapid retrieval of data needed to brief pilots, presenting the information on television-like displays. Production was to be in two stages. Model 1, with capability of displaying weather and aeronautical alphanumeric data, would be implemented at 41 sites. Later, all 61 sites would get Model 2, which would add a second display for weather radar, charts, and other graphics. Model 2 would also include the capability for demonstrating direct access by pilots to the computer data base from remote computer terminals. The computers for both models were to be installed at air route traffic control centers and connected by leased telephone lines to the flight service stations. (See May 28, 1981, and Nov 1982.)

Oct 2, 1981: FAA announced a $10 million contract with the University of Oklahoma to help **train new air traffic controllers** to replace those fired for participating in the illegal strike. The University would provide FAA-certificated instructors as supplemental staffing for the FAA Academy. The agreement proved to be the first in a series of controller training contracts with the University. (See Sep 4, 1981, and Oct 22, 1981.)

Oct 6, 1981: **Blanche W. Noyes died**. One of the nation's early female pilots, she was probably the **first woman pilot to have a career in the U.S. government**. Noyes was known for her work in the air marking program during 35 years with FAA and its predecessors. She participated in many aviation events and races, winning the 1936 Bendix Air Race, was a founder of the Ninety-Nines, Inc., an organization established to encourage women in aviation. Her many awards included the Department of Commerce's gold medal for exceptional service in 1956, and induction into the Aviation Hall of Fame in 1970.

Oct 19, 1981: FAA placed a **General Aviation Reservation (GAR) plan** in effect, because the number of private aircraft flying in the sytem increased substantially after the controllers' strike. General aviation pilots who wished to fly under air traffic control were required to make reservations under a quota based on the percentage of flights that aircraft in their category had flown prior to the PATCO strike of Aug 3, 1981 (see that date). The restriction became necessary as non-airline pilots, some of whom had refrained from using the air traffic control system at the strike's beginning, began to increase operations. After two weeks under the GAR plan, FAA announced that the number of private aircraft flying in the system had been reduced to approximately the pre-strike level, and that the plan had helped to cut delays for both airline and private flights. (See Dec 31, 1983.)

Oct 22, 1981: The Federal Labor Relations Authority **decertified the Professional Air Traffic Controllers Association**, depriving the union of the right to represent its members. Following a temporary stay by a Federal Appeals Court, the decertification became effective on Oct 27. (See Oct 2, 1981, and Dec 31, 1981.)

Nov 1, 1981: Effective this date, Administrator Helms designated **four aircraft certification directorates**. The directorates assumed the certification responsibilities previously assigned to the lead and certificating regions under the lead region concept (see Jan 1, 1980). They also received additional responsibilities to strengthen and streamline the certification process. The directorates were managed by the directors of the following regions: Central (for aircraft under 12,500 lbs.); Northwest Mountain (for transport aircraft); Southwest (for rotorcraft); and New England (for engines and propellers). The authority of the directorates extended beyond regional boundaries. For example, aircraft certification offices in the Central, Southern, and Great Lakes regions reported directly to the Small Airplane Certification Directorate at the Central Region headquarters. FAA formally established the directorates by an order dated Feb 1, 1982, and on Mar 9 issued a news release stating that the directorate system had become operational.

Nov 2, 1981: Effective this date, **FAA reestablished 12 inches as the required height for registration marks** (N-numbers) on fixed-wing aircraft. This size requirement had originally been established by a rule published on Jan 6, 1961. In 1977, however, the size of the N-numbers was reduced to 3 inches for small airplanes with speeds not greater than 180 knots. The agency permitted this reduction in response to the Experimental Aircraft Association's concern to improve the aesthetic appearance of small aircraft. FAA reestablished the 12 inch height after complaints from citizens, law enforcement agencies, and the Defense Department demonstrated that timely and positive visual identification was compromised by the smaller markings. To avoid undue cost, however, FAA allowed owners of existing and certain newly-manufactured aircraft to display the smaller N-numbers until the aircraft was repainted or its marks were restored, repainted, or changed. The new requirement for 12 inch numbers did not affect existing rules on special marking procedures for certain aircraft that were amateur-built, unusually configured, over 30 years old, or operated for exhibition.

Nov 9-12, 1981: Ben L. Abruzzo, Larry Newman, Ron Clark, and Rocky Aoki made the **first balloon crossing of the Pacific**, a trip from Nagashima, Japan, to near Covelo, Calif., in Double Eagel V.

Nov 20, 1981: Effective this date, FAA **permitted blind airline passengers to use certain approved methods of storing their canes at their seats**. The agency had declined to permit this in an earlier rule (see May 16, 1977), deciding instead that the long utility canes should be handed over to flight attendants to be secured during takeoff and landing. This policy aroused considerable opposition, particularly from the National Federation of the Blind (NFB). The NFB petitioned FAA on the issue, and filed suit when the

petition was denied. Meanwhile, more than 100 blind persons and their supporters picketed FAA's national headquarters on Jul 5, 1978, to protest the cane policy. In Jan 1979, a U.S. court granted FAA's request for time to reconsider the issue. After testing by the agency's Civil Aeromedical Institute (CAMI), FAA in Nov 1980 proposed a rule permitting accesible storage of the canes. The agency announced the final rule on Jul 24, 1981.

Nov 30, 1981: FAA "decombined" the **last domestic combined station/tower (CS/T)**. Located at Valdez, Alaska, the CS/T had been the final survivor of a program begun by the Civil Aeronautics Administration under which air traffic control towers were consolidated with airway communication stations, the forerunners of flight service stations (see Aug 8, 1950). The number of CS/T's had been declining since 1958.

Dec 6, 1981: A new **Metropolitan Washington Airports Policy** became effective. In the making since 1978 (see Mar 23, 1978), the new policy differed only in a few respects with the policy proposed by the Carter Administration in 1980. The overall objectives of both the Carter and Reagan policies were to reduce the noise impact of operations at Washington National, maintain National's longstanding status as a short-haul airport, and promote better utilization of Dulles. The policy placed no restrictions on Dulles, while putting the following limitations on National:

* A 16 million cap on the number of passengers enplaning and deplaning per year (compared to 17 million under the Carter plan).
* A maximum of 60 landing slots per hour distributed as follows: Part 121 air carriers, 37; Part 135 commuter air carriers and air taxis, 11; general aviation, 12. (Compared to the Carter plan, this gave Part 121 operators one more slot and Part 135 operators one less.)
* Extension of the nonstop service perimeter rule from a radius of 650 to 1,000 miles (see Oct 30, 1986).

Whereas the Carter plan would have lifted the ban on 2- and 3-engine widebody jets at National, the Reagan plan retained the ban. Moreover, the new administration eliminated the Carter plan's restrictions on night-time arrivals and departures; instead, it limited operations at National between 10:00 p.m. and 7:00 a.m. to aircraft that generated no more noise than 73 dBA on takeoff and 85 dBA on approach. The noise limitations, which become effective on Mar 1, 1982, initially had the effect of excluding jet operations at the airport during the specified hours. (See Aug 31, 1983.)

Dec 9, 1981: President Reagan **rescinded a three-year prohibition of any Federal employment of controllers dismissed for participation in the PATCO strike** (see Aug 3, 1981); however, the fired controllers were still barred from employment with FAA.

Dec 29, 1981: **President Reagan suspended the U.S. landing rights of the Soviet airline Aeroflot** as part of sanctions enacted in response to repression in Poland. The action came soon after a temporary one-week suspension of Aeroflot's U.S. operations imposed during November because of violations of the prescribed routes. (See Jun 19, 1973, and Apr 29, 1986)

Dec 31:, 1981 The Federal Labor Relations Authority certified the **Professional Airway Systems Specialists (PASS)** as the exclusive representative of FAA's electronics technicians. In a July election, PASS had defeated the Federal Aviation Science and Technological Association, known as FASTA (see Oct 5, 1976); however, PASS's certification was delayed by objections filed by FASTA. FAA and PASS concluded a national labor agreement during fiscal 1984. (See May 1, 1991.)

Dec 31, 1981: Robert E. **Poli resigned as president of PATCO**. (See Oct 22, 1981, and Jul 2, 1982.)

Dec 31, 1981: The end of this day marked the completion of the **second consecutive calendar year with no fatal airplane crashes by scheduled air carriers operating under Federal Aviation Regulations Part 121**--an unprecedented two-year record. Despite the absence of fatal crashes, however, Part 121 operations involved four varied mishaps in and around aircraft that each claimed one life in 1981. (See Dec 31, 1980, and Dec 31, 1993.)

***1982**

Jan 13, 1982: **A Boeing 737 operated by Air Florida crashed near Washington National Airport** shortly after taking off during snowfall. The aircraft hit a bridge, killing 4 persons in vehicles, and plunged

into the icy Potomac River. Of the 79 persons aboard the jet, only four passengers and one flight attendant survived. The National Transportation Safety Board determined that the probable cause of the crash was the crew's failure to use the engine anti-icing system during ground operation and takeoff, their decision to take off with snow/ice on the airfoil surfaces, and the captain's failure to abort takeoff when his attention was called to anolomous engine instrument readings. Contributing to the accident were: prolonged delay between deicing by ground crew and takeoff, during which the aircraft was exposed to continual snowfall; the known pitchup characteristics of the 737 when the leading edge was contaminated by even small amounts of snow or ice; and the crew's limited experience in jet transport winter operations. As a result of the accident, FAA and the aviation industry took a number of actions to increase awareness of cold weather hazards and the proper response to them. (See Dec 12, 1985.)

Jan 23, 1982: In a night landing too far down an icy runway at Boston's Logan airport, a **World Airways DC-10 slid over the edge of a seawall and into shallow harbor water**. The nose section separated from the fuselage, and two passengers seated at the separation point were later found to be missing and presumed drowned. In its original report on the accident, the National Transportation Safety Board listed pilot error as a contributory factor, but found the probable cause to be the pilot's lack of information on the slippery runway conditions. The Board blamed this lack on the airport management and on FAA, citing inadequate regulation and air traffic controllers' failure to relay runway condition reports. After protests from FAA and the airport authority, the Board issued a revised finding that placed somewhat more emphasis on pilot error.

Jan 28, 1982: FAA released a **National Airspace System Plan** (NAS Plan or NASP), a comprehensive 20-year blueprint for modernizing the nation's air traffic control and air navigation system. The 450-page document had been printed the previous month and bore the date Dec 1981. It spelled out specific improvements to be made to facilities and equipment to meet the projected demands of air transportation. Key elements of the plan included:

* **Computers**: FAA would first replace the IBM 9020 computers at the air route traffic control centers with more powerful computers that could use the existing programs or "software packages." The agency would then proceed with development of new software as well as new consoles and displays known as "sector suites." (See Aug 30, 1982.)

* **Facility consolidation**: air route traffic control centers and terminal radar control rooms would be consolidated from approximately 200 into about 60 by the year 2,000 (see Mar 22, 1983). Flight service stations would be consolidated from about 300 into 61 automated facilities. (See Oct 2, 1981.)

* **Radars**: a new secondary radar system would interrogate aircraft transponders on an individual basis, paving the way for automatic "data link" air-ground communications. This **Mode S equipment** ("S" for "selective address"), in combination with a new generation of Doppler weather radar, would also permit the replacement of the existing primary en route radar system. Primary radar would be retained in terminal areas, however, and be improved with the addition of a separate weather channel. (See Oct 5, 1984.)

* **Weather services**: were to be upgraded by such means as direct pilot access to computer weather data via remote terminals or touchtone telephones (see Mar 14, 1984). Automated sensors at airports would generate radio broadcasts on surface conditions, improving safety and allowing lower weather minimums for landing (see Jan 26, 1983).

* The **Microwave Landing System (MLS)**: full production procurement was to be initiated in fiscal 1983, with over 1,250 to be in place before century's end (see Apr 19, 1978 and Jan 12, 1984). FAA expected the new equipment to provide precision guidance over a much broader area than the existing Instrument Landing Systems, thus allowing greater operational flexibility.

Following the publication of this initial NAS Plan, FAA issued updated editions annually (see Feb 8, 1991).

Feb 18, 1982: A special rule issued this date amended the **Interim Operations Plan for air traffic control** (see Aug 3, 1981). The new rule provided procedures to be used Apr 25-Oct 30 in scheduling and in allocating airport landing reservations ("slots") at the 22 airports at which operations were limited due to the PATCO strike. New entrants were more clearly defined, and a system initiated that accorded such carriers high priority in awarding such additional capacity as became available. A random draw was implemented for determining the order in which carriers' requests for more slots were processed. (See Mar 6, 1984.)

Feb 19, 1982: The **Boeing 757 first flew**. On Dec 21, 1982, FAA certificated the first version of the Boeing 757, a narrow-body jet capable of carrying up to 219 passengers in short/medium range flights and

designed to replace the Boeing 727, the single most popular jetliner model produced to date, but obsolescent in terms of noise, fuel efficiency, and flight crew productivity. Powered by two Rolls-Royce 535C engines, the 757 was the first Boeing airliner launched with foreign-made engines. Eastern Air Lines and British Airways had placed orders for the medium-range airliner on Aug 31, 1978.

Mar 15, 1982: The Safety Regulations Staff in FAA's Office of the Associate Administrator for Aviation Standards was abolished and its functions were transferred to a **new Safety Regulations Division** established in the Office of Aviation Safety.

Mar 17, 1982: FAA announced that it had received the first of 950 **new radio navigation aids (VORs and VORTACs) with solid state construction** and other advanced features for installation during the next three years. The National Airspace System Plan called for replacement of all vacuum tube radio navigation aids with the reliable solid state equipment over the next 20 years. (See Sep 5, 1974 and Aug 3, 1982.)

Apr 22, 1982: **Tighter rules for aircraft entering the south Florida area through off-shore Air Defense Identification Zones (ADIZs)** became effective. Previously, aircraft flying at less than 180 knots had not been required to file flight plans and make regular position reports in any ADIZ off the coast of the continental U.S. Now all aircraft entering an ADIZ south of the 30th parallel and east of the 86th meridian had to comply with these requirements, regardless of their airspeed. In addition, FAA now required pilots flying into any ADIZ to report if their aircraft carried a transponder--and if so, what kind. The agency mandated changes in response to increased flights by drug smugglers. (See Sep 1, 1987.)

May 10, 1982: FAA began an **experimental program of allowing airlines to buy, sell, and transfer airport landing "slots"** among themselves. The program included a "use or lose" provision and restrictions on transfer by carriers allotted slots on the basis of essential air service. On Jul 6, FAA announced that it was suspending the buy-sell policy, but would continue to allowed the exchange or trade of slots. On Aug 5, the agency announced that it was easing certain restrictions on this slot trading. (See Mar 6, 1984, and Dec 20, 1985.)

May 12, 1982: **Braniff International Airways suspended operations**, quickly filing for protection under Chapter 11 of the bankruptcy code. (See Mar 1, 1984.)

May 15-Aug 13, 1982: The National Center for Atmospheric Research and the University of Chicago conducted a field experiment in the vicinity of Denver as part of the **Joint Airport Weather Studies (JAWS)** Project. FAA and many other agencies and research groups participated in JAWS, which employed Doppler radars and a variety of other data sources. The project resulted in new understanding of **wind shear microbursts**, yielding information on their formation, duration, decay, severity, and movement. (See Jun 24, 1975, and Jul 9, 1982.)

Jun 7, 1982: The **National Airspace Review (NAR)** program convened the first two of 16 task groups organized to study various aspects of the airspace system. FAA had introduced the NAR concept in Apr 1981 with the announcement of a meeting to allow airspace users to participate in formulating the program, and had published a proposed plan for the review on Aug 10, 1981. Composed of representatives of FAA, the military, and the civil aviation community, the task groups submitted a host of recommended improvements, such as the Airport Radar Service Area (ARSA) concept (see Dec 22, 1983), for the FAA Administrator's consideration. By the Dec 4, 1984, final meeting of the Executive Committee that had guided the NAR during its initial stage, the NAR had generated 850 recommendations, over 500 of which had already been implemented or approved for implementation. During its next phase, the NAR focused on the future rather than the present system, and the Office of Management Systems assumed responsibility for guiding the program.

Jul 2, 1982: The **Professional Air Traffic Controllers Organization filed a request for liquidation under Chapter 7 of the Federal Bankruptcy Act**. According to Gary Eads, who had become PATCO's president on Jan 1, 1982, the union had about $5 million in assets but owed $40 million, including $33.4 million to the airlines for violating a 1970 Federal court anti-strike injunction. Last Nov 25, PATCO had filed a motion in Federal court seeking to freeze its assets while it reorganized under Chapter 13 of the Bankruptcy Act. After filing to liquidate under Chapter 7, Eads declared, "It is over for PATCO. The union is gone." (See Dec 31, 1981, and Jun 19, 1987.)

Jul 2, 1982: Truck driver Larry Walters reached a reported 16,000 ft. over Long Beach, Calif., during a 45-minute **flight in a lawn chair tied to balloons**, crashing into a power line on descent but alighting unharmed. FAA fined Walters $1,500 for the escapade.

Jul 4, 1982: Following a ten-month interagency review, President Reagan issued a **decision directive stating that expansion of U.S. private sector involvement in civil space activities** was a national goal. As the government phased out certain expendable launch vehicles (ELVs), private interest in commercial operation of these systems was rising. On Nov 16, 1983, the President chose DOT as the lead organization for ELV commercialization. **On Feb 24, 1984, Executive Order 12465 formally designated DOT as the lead agency** for encouraging, facilitating, and licensing commercial ELV activities. DOT entrusted these duties to a new **Office of Commercial Space Transportation** that it had begun to organize during 1983 (see Aug 7, 1995). Congress affirmed and expanded these actions through the Commercial Space Launch Act, enacted on Oct 30, 1984. This legislation made DOT responsible for enumerated activities to encourage and regulate U.S. commercial space launches.

Jul 9, 1982: A **Pan American 727 crashed** shortly after takeoff from New Orleans International Airport, killing all 145 aboard and 8 persons on the ground. The National Transportation Safety Board listed the accident's probable cause as the airplane's encounter with **microburst-induced wind shear**, which imposed a downdraft and a decreasing headwind. As a contributory factor, the Board listed the limited ability of the current Low Level Wind Shear Alert System (LLWAS) to provide definitive guidance for controllers and pilots in avoiding the hazard (see Sep 1978). Although the pilot was aware that LLWAS alerts were occurring periodically around the airport, the system did not detect the wind shear that affected the Pan Am flight until after takeoff began.

Concerned over the accident, Congress in Dec 1982 passed legislation requiring FAA to contract with the National Academy of Sciences for a study of the wind shear hazard. The resulting report, completed by the Academy's National Research Council in Sep 1983, urged that FAA establish an integrated wind shear program to address all aspects of the problem. The report's recommendations included the improvement and wider use of LLWAS, which it considered the only detection system available in the near term for operational use. In Oct 1983, FAA announced that it had ordered another 51 of the systems. (See Aug 2, 1985.)

Jul 9, 1982: In City of Houston v. Federal Aviation Administration, the United States Court of Appeals for the Fifth Circuit held that the **perimeter rule prohibiting air carriers from operating nonstop flights to and from Washington National** beyond a 1,000-mile radius was neither arbitrary nor capricious and, therefore, a valid exercise of power. (See Apr 24, 1966, Dec 6, 1981, and Oct 30, 1986).

Jul 29, 1982: FAA certificated the **Bell 222B**, the first transport category helicopter certificated for single-pilot instrument flight rules (IFR) operation without stabilization equipment.

Aug 3, 1982: FAA commissioned the first of a **new generation of very high frequency omnidirectional radio range (VOR) navigational aids** at the North Philadelphia, Pa., Airport. The new installation was the first in FAA's program to replace VORs using vacuum tubes with more reliable solid-state equipment. (See Mar 17, 1982.)

Aug 23, 1982: **United Parcel Service began "Next Day Air" package delivery** between Los Angeles and San Francisco. The service was extended to 24 metropolitan areas during the following month, and by Jun 1985 it covered all the states except Alaska. UPS air freight had traveled primarily in the cargo holds of passenger aircraft through 1980, but thereafter the company relied increasingly on its growing fleet of cargo aircraft.

Aug 30, 1982: FAA established an **Advanced Automation Program Office**, which reported directly to the Administrator. The office had responsibility for the Advanced Automation Program, that element of National Airspace System modernization concerned with developing a replacement for NAS En Route Stage A and ARTS air traffic control systems. (See Jan 28, 1982 and Jul 25, 1983.)

Sep 2, 1982: FAA published a **rule covering two types of recreational equipment** that had emerged during the 1970s: unpowered hang gliders (see May 29, 1974), and powered airplanes of extremely light weight. For regulatory purposes, FAA defined machines of both these types as **"ultralight vehicles"** rather than aircraft; therefore, they were not subject to the agency's requirements on registration, airworthiness certification, and pilot licensing. To qualify for the new category, a hang glider must weigh less than 155

lbs., and a powered vehicle less than 254 lbs. In addition, a powered ultralight must not exceed: a fuel capacity of 5 gal.; a top speed of 55 knots; and a power-off stall speed of 24 knots. The agency limited both powered and unpowered ultralights to a single occupant.

The new regulation subjected ultralights to certain operating restrictions, including right-of-way and minimum visibility requirements. Ultralight operators were responsible for maintaining separation from other aircraft on a "see and avoid" basis. FAA banned flights over congested areas, and permitted operations in certain controlled airspace only with the prior approval of the appropriate air traffic control facility. The new rule also authorized on-the-spot safety inspections by FAA personnel.

The question of whether ultralights required further regulation remained controversial. During 1984, Congress heard testimony on the subject, and FAA held a series of meetings to obtain public comment. On Feb 5, 1985, the National Transportation Safety Board urged stronger safety regulation, citing its investigation of 88 fatal ultralight accidents that occurred between between Mar 1983 and Sep 1984. FAA subsequently drafted a rulemaking proposal on the registration and marking of powered ultralights, as well as the licensing of their pilots. The proposal was not published, however, because of objections by the Office of Management and Budget.

Sep 3, 1982: President Reagan signed the Tax Equity and Fiscal Responsibility Act (P.L. 97-248), general tax legislation that **increased aviation user taxes**. The act: raised the airline passenger ticket tax from 5 to 8 percent; increased the general aviation gasoline tax from 4 to 12 cents per gallon; levied a jet fuel tax of 14 cents per gallon; and reimposed the 5 percent air cargo tax and the $3 international departure fee. These taxes were earmarked as **renewed funding for the Airport and Airway Trust Fund**, which had received no tax revenues since Sep 30, 1980 (see that date).

Title V of the tax bill, designated the **Airport and Airway Improvement Act of 1982, reestablished FAA's airport grants program** for development and noise compatibility projects. Formerly known as the Airport Development Aid Program (ADAP), this function had been inactive since the end of fiscal 1981 (see entry for Aug 13, 1981). It was now renamed the **Airport Improvement Program (AIP)**, and authorized to draw on the Trust Fund in the following amounts: $450 million for fiscal 1982; $600 million, 1983; $793.5 million, 1984; $912 million, 1985; $1.017 billion, 1986; and $1.017 billion, 1987. Unused authorizations could be carried over to succeeding years. (An additional $475 million was authorized for airport projects in 1983-85 as part of P.L. 97-429, the Surface Transportation Assistance Act of 1982.)

The Airport and Airway Improvement Act stipulated formulas for apportioning airport development funds between primary, commuter, reliever, and general aviation airports, including a guarantee that reliever airports receive at least 10 percent of available funds. For the first time, privately owned airports in the reliever and commercial categories became eligible to receive grants. Other provisions of the law specified that not less than 1 percent of available funds be set aside for airports system planning grants, and directed FAA to publish a national plan of integrated airport systems (see Aug 2, 1985).

The Airport and Airway Improvement Act also authorized FAA to use a total of 6.327 billion from the Trust Fund for airway facilities and equipment over the six years beginning with fiscal 1982. This funding helped to finance the planned modernization of the National Airspace System (see Jan 28, 1982). In addition, $1.169 billion from the Trust Fund was authorized for the agency's research, engineering, and development activities during the same six years. The law also significantly increased the amount that FAA could draw from the Trust Fund for operations and maintenance. It authorized $800 million in 1982, and established formulas for the succeeding five years based on the level of funds made available for airport development. (See Dec 30, 1987.)

Sep 8, 1982: FAA retitled the Associate Administrator for Policy and International Aviation Affairs the **Associate Administrator for Policy and International Aviation**. The agency also retitled the Office of International Aviation Affairs as the **Office of International Aviation**.

Sep 20, 1982: FAA published a proposal to implement **"Regulation by Objective" (RBO)** in regulating airlines. Under this concept, "how to do it" regulations would be replaced by broadly stated objectives, and the airlines would be allowed the flexibility to meet these objectives in the most efficient and cost-effective manner possible. FAA would pass judgement on new methods of compliance, however, and the agency would use a computer system to track the requirements that applied to each airline. A single Federal Aviation Regulation Part 120 would replace two existing operating regulations, Part 121 for operators of large aircraft and Part 135 for commuter and air taxi operators. Response to the proposal included many negative comments on RBO's practicality, cost, and consistency with FAA's mandate. The agency

withdrew the proposal on Jun 16, 1983, stating that to pursue the concept would be less productive than to proceed with a review of Parts 121 and 135.

Sep 15, 1982: **Glen A. Gilbert died** at age 69. An important pioneer in the conceptual development of air traffic control, Gilbert was manager of the airlines' Chicago air traffic control center at the time that it came under the control of the Commerce Department (see Jul 6, 1936). He subsequently became Chief of the Airway Traffic Control Section and later held other Federal aviation positions before joining the staff of the International Civil Aviation Organization in 1951. Gilbert worked as an aviation consultant from 1957 until his death. He also authored several books on air traffic control.

Sep 30, 1982: H. Ross Perot, Jr., and Jay Coburn landed their Bell 206L-1 LongRanger II in Dallas, Tex., after completing the **first helicopter flight around the world** in 29 days, 3 hours, 8 minutes. On Aug 5, 1982, meanwhile, Dick Smith had departed from Fort Worth, Tex. in a Bell 206B JetRanger III on the **first solo helicopter flight around the world**. Smith, an Australian businessman, completed his unhurried trip on Jul 22, 1983.

Oct 26, 1982: FAA announced a contract with Burroughs Corp. to equip the agency's district safety offices with a computerized information processing system that would allow safety inspectors to spend more of their time on field work rather than on preparing and analyzing reports. This **Work Program Management Subsystem (WPMS)** was implemented during 1983. WPMS was part of an **Aviation Safety Analysis System (ASAS)** being developed to apply computer technology to the support of a variety of FAA tasks and decisions. ASAS continued to grow in scope and complexity during succeeding years.

Oct 29, 1982: **Changes in the FAA headquarters organization** became officially effective. The position of Associate Administrator for Air Traffic and Airway Facilities was abolished, and the Air Traffic Service now reported directly to the FAA Administrator. (The title of this service's Director was later changed to Associate Administrator for Air Traffic, effective Dec 25, 1983.) The Airway Facilities Service was abolished, as were the Associate Administrator for Engineering and Development position and its subordinate services, the Systems Research and Development Service and Office of Systems Engineering Management. The abolished elements were replaced by an organization under a new Associate Administrator for Development and Logistics. Reporting to this Associate Administrator were a new Systems Engineering Service, headed by the former director of the abolished Airway Facilities Service, and a new Program Engineering and Maintenance Service. The Logistics Service was retitled the Acquisition and Materiel Service and remained under the Associate Administrator for Administration.

Nov 5, 1982: FAA announced that it would accept **applications for air traffic controller positions** from certain categories of specially qualified persons from 31 to 35 years old. Previously, all controller applicants had to be less than 31 years old at the time of appointment. The change would apply during the Nov 8-30 application period, and any future application periods before the end of 1984.

Nov 1982: FAA commisssioned its **first Automated Flight Service Station (AFSS) building** at Denver. Although the agency planned to link groups of AFSS sites into "family" units linked by an automated central data processing system, the Denver facility and other early AFSS buildings were commissioned individually without the new equipment. The Denver site was FAA-owned and not part of the lease program begun on May 28, 1981 (see that date). The **first AFSS building commissioned under the lease program took place at Bridgeport, Conn., on Mar 3, 1984**. (See Oct 2, 1981, and Feb 12, 1986.)

Dec 7, 1982: FAA announced the creation of a **Rotorcraft Program Office** to oversee the agency's activities affecting helicopters. The agency formally established the new office, which reported directly to the Associate Administrator for Aviation Standards, on Apr 28, 1983. (See Oct 31, 1986.)

Dec 28, 1982: Secretary of Transportation **Drew Lewis announced his resignation**, effective Feb 1, 1983. Lewis, who stated that he had originally planned to remain as Secretary only two years before returning to private life, became chief executive of a cable television company.

Dec 28, 1982: Witnesses reported that a **737 flew dangerously close to a tall building in Rosslyn, Va.**, as it approached Washington National Airport. On Mar 24, 1983, the National Transportation Safety Board (NTSB) reported that the aircraft had flown nearer the building than normally should occur, and that low-flying aircraft were not unusual in the locality. NTSB recommended that FAA change the approach path and take certain other actions. FAA rejected these recommendations, but on Nov 21, 1983, NTSB asked

the agency to reconsider. On Dec 21, FAA responded that it would institute a **new instrument approach course farther from Rosslyn**, upgrade electronic equipment on the approach already in use, and place an additional limit on how low pilots using a third approach course could descend before sighting the airport. FAA also tested new lead-in lights and later installed them on Potomac River bridges. (See Mar 8, 1984.)

***1983**

Jan 4, 1983: Effective this date, FAA **increased the minimum qualifications for air traffic controllers who provide on-the-job training (OJT)**. As before, FAA required such controllers to be certificated on the position for which they served as an OJT instructor. In addition, they were now required to have operated in the position for a minimum of 30 solo hours after certification, and to have received certification as an OJT instructor based on a supervisor's observation of actual performance at the position.

Jan 26, 1983: FAA announced that a year-long demonstration of the **Automated Weather Observing System (AWOS)** would begin at selected airports later in the year. The demonstration was a step toward FAA's goal of developing an unmanned weather station that would employ standard weather sensors working in tandem with data processing equipment to produce weather observations for dissemination to pilots, controllers, and other users. The agency had begun testing a prototype in 1978, and awarded contracts for demonstration systems in 1982. The airport demonstration program was completed in 1984. On Apr 11, 1986, FAA issued an advisory circular containing standards for AWOS systems for non-Federal acquisition. The agency also planned to acquire AWOS systems for Federal use. (See Feb 28, 1989.)

Jan 31, 1983: FAA published **new airworthiness standards for the certification of newly designed helicopters**, effective Mar 2. One important provision required helicopters carrying ten or more passengers to be multi-engine aircraft capable of continued safe flight if one engine failed during climb, cruise, or descent. For helicopters carrying less than ten passengers, the new standards permitted greater flexibility of use. This was achieved by relaxing "height velocity" provisions that had required, in effect, that these aircraft maintain enough altitude and airspeed to allow them to land safety by auto-rotating (the helicopter equivalent of gliding). Other changes dealt with certification for instrument flight rule operations and for flight in icing conditions. The new standards resulted from FAA's continuing **Rotorcraft Regulatory Review Program**, begun with a Jan 5, 1979, invitation for proposals which were subsequently considered at a series of public conferences.

Feb 7, 1983: **Elizabeth Hanford Dole became Secretary of Transportation**. Dole had directed the President's Committee for Consumer Interests under the Johnson Administration. She remained at that post after Nixon succeeded Johnson in 1969, then moved to other posts, including a seat on the Federal Trade Commission. Originally a Democrat, she registered as an independent on taking the FTC post in 1973, and became a Republican about the time of her marriage to Senator Robert Dole (R-Kan.) in Dec 1975. She resigned from the FTC in Mar 1979 to campaign for her husband in his unsuccessful bid for the Republican presidential nomination, then participated in the Reagan campaign. In 1981, she became Assistant to the President for Public Liaison, and remained in that position until accepting the cabinet post. (See Oct 1, 1987.)

Mar 22, 1983: In congressional testimony, Administrator Helms outlined a **new approach to facility consolidation** which was to be reflected in a revised National Airspace System (NAS) Plan published the following month. The original plan had called for a reduction in the number of Air Route Traffic Control Centers (ARTCCs) in the continental U.S. from 20 to 16. It had also envisioned the consolidation of the 188 existing TRACON (terminal radar approach control) and TRACAB (terminal radar approach control in the tower cab) facilities. These 188 facilities were to have been consolidated into about 30 regional or hub TRACONs. In the revised plan, all 20 ARTCCs would be retained, redesignated **Area Control Facilities (ACFs)**, and given the added responsibility of providing terminal radar services for virtually the entire nation (see Apr 19, 1993). Individual airport towers would continue to direct takeoffs and landings, but TRACONs and TRACABs would be consolidated into the ACFs. The existing ARTCC sites would be augmented as necessary to perform their new responsibilities as ACFs. Three additional ACFs (one in Alaska, one in Hawaii, and one in the continental U.S.) would bring the total number of these sites to 23. Evolution of the ACF concept was dependent upon the development and acquisition of such air traffic control technology as the advanced automation system (see Jul 26, 1985) and the voice switching and control system (Oct 21, 1986).

Mar 28, 1983: The U.S. launched a weather satellite carrying **Search and Rescue Satellite-Aided Tracking (SARSAT)** as part of its equipment, making it the **first American satellite capable of receiving Emergency Locator Transmitter (ELT) signals.** SARSAT was developed as a joint project of the U.S., Canada, and France. In parallel with this effort, the U.S.S.R. developed a compatible capability, called COSPAS, incorporated in satellites that they launched in June 1982 and the spring of 1983. The U.S. placed a second satellite with with SARSAT capability in orbit in Dec 1984, providing an optimum system to minimize alerting time from the occurence of an accident. The ELT signals relayed via satellite to the ground allowed the approximate position of the ELT to be determined. Additional satellites with COSPAS/SARSAT were periodically launched to ensure adequate system capability. In 1984, the sponsors of COSPAS and SARSAT signed the first agreement on maintaining the system beyond the 1980s.

May 1, 1983: A hijacker succeeded in reaching Havana by locking himself in a lavatory during an airline flight and issuing notes threatening to blow up the aircraft. The incident began a **renewed upsurge of hijackings to Cuba**, many perpetuated by Mariel boat lift refugees (see Jul 22, 1980). By Sep 22, hijackers had diverted 10 additional airliners to Cuba, prompting FAA to increase security measures at airports in selected areas. Hijackings to Cuba began to decline in the last quarter of 1983, although three such diversions took place in 1984. No hijackers succeeded in reaching Cuba from the U.S. during 1985 or 1986.

May 23, 1983: The first aircraft to navigate across the Atlantic entirely by use of the **Global Positioning System (GPS)** landed at Paris. The Rockwell International Saberliner had made en route stopovers due to the lack of continuous satellite coverage by the experimental system, which the Defense Department had been developing since the 1970s. In the Apr 1984 edition of the National Airspace System (NAS) Plan, FAA noted that GPS would serve as a future supplemental navigation system for civil aviation, in addition to its primary military role. The Plan therefore included FAA deployment of GPS signal monitors. (See Apr 1, 1991.)

May 5, 1983: **All three engines of an Eastern Air Lines L-1011 failed over the Atlantic**, but the pilot restarted one engine and landed safely at Miami. The cause of the incident was oil loss due to mechanics' failure to install O-ring seals.

Jun 1983: The **first Integrated Communications Switching System (ICSS) became operational** at Houma, La. ICSS, a flexible voice communications control and switching system, included three versions: Type I (like the Houma system), for small air traffic control towers and terminal radar approach control facilities (TRACONs); Type II, for larger towers and TRACONs; and Type III, for Automated Flight Service Stations. By the end of fiscal 1986, FAA had installed 86 Type I, 15 Type II, and 30 Type III systems.

Jun 2, 1983: An **in-flight fire aboard an Air Canada DC-9** filled the cabin with smoke and prompted an emergency landing at Greater Cincinnati airport in Covington, Ky. A flash fire enveloped the aircraft interior about 60 to 90 seconds after the exits were opened, killing 23 of the 46 persons aboard. The National Transportation Safety Board was unable to determine the cause of the fire, which originated in the aft lavatory. The Board concluded that an underestimate of the seriousness of the fire and misleading reports of its progress delayed the captain's decision to land and contributed to the accident's severity. (See Mar 29, 1985.)

Jun 8-14, 1983: A Joint System Program Office (JSPO) representing the National Weather Service, FAA, and the Air Force awarded two competitive contracts to develop pre-production models of the **Next Generation Weather Radar (NEXRAD)**. The contracts would remain in effect until July 1986, after which one of the firms would be selected for production. NEXRAD would have the ability to "see" inside storms and measure the velocity and direction of wind-driven precipitation and other particles suspended in the air. The system was based on the Doppler effect, which permits an object's speed and direction to be determined by the lengths or frequency of the light, sound, or radio waves it emits.

The U.S. government had been investigating the potential of Doppler radar since the 1950s. In Apr 1977, joint NEXRAD testing was begun by the Air Force and the Commerce Department's National Weather Service. FAA formally joined the program in Dec 1977, due to the tests' success and perhaps also the crash of a DC-9 in a thunderstorm (see Apr 4, 1977). In Aug 1979, the Departments of Commerce, Transportation, and Defense formed a Joint System Program Office with the goal of developing a national

network of NEXRAD radars and processing equipment. The Commerce Department, which planned to buy and operate most of the radars, was given the lead role (see Feb 28, 1994).

Initially, NEXRAD had been intended to cover both en route and airport needs, but Project JAWS (see May 15-Aug 13, 1982) produced data on wind shear microbursts that prompted FAA to conclude that separate airport systems would be needed. To learn more about how Doppler radar could by applied to the low-level wind shear hazard, FAA conducted **Project CLAWS** (for classify, locate, and avoid wind shear) in the Denver area from Jul 7 to Aug 13, 1984. FAA contracted with the National Center for Atmospheric Research to provide daily microburst forecasts, Doppler radar surveillance, and real-time advisories of microburst activities. During CLAWS, pilots gave detailed feedback on the effectiveness of the system. On Sep 16, 1985, FAA signed an agreement with the Commerce Department under which FAA would contract with the Sperry and Raytheon corporations to identify how NEXRAD systems would need to be modified to develop terminal Doppler radar. (See Aug 2, 1985.)

Jul 7, 1983: The Office of Personnel Management gave FAA final approval to proceed with its **Airway Science Curriculum program** on a five-year demonstration basis, effective after a 90-day congressional review period ending on Oct 10, 1983. FAA had first submitted a proposal for such a project in 1978. In early 1981, Administrator Helms began discussions with selected colleges to explore the possibility of their offering courses to help provide the agency with better-trained candidates for certain occupations. In 1982, he wrote to a list of colleges and universities asking them to consider such courses, and many of the schools expressed interest. The program established a curriculum, leading to a bachelor's degree, that provided a broad foundation in mathematics, science, and management topics, as well as in aviation. Major areas of specialization included aviation management, computer science, aircraft operations and flight technology, and the installation and operation of aviation facilities. Institutions recognized as offering such a curriculum became eligible to apply for airway science grants.

Jul 13, 1983: FAA announced that its program to improve aircraft braking and direction control on wet runways through grooving the runway surface and other techniques had resulted in the **upgrading of nearly 500 runways at 360 airports** in the last six years. (See Apr 23, 1967.)

Jul 25, 1983: FAA placed the **Advanced Automation Program Office** under the executive direction of the Associate Administrator for Development and Logistics. (See Aug 30, 1982.)

Jul 1983: After testing in the areas of the Jacksonville and Miami Air Route Traffic Control Centers, FAA adopted the **Hazardous Inflight Weather Advisory Service (HIWAS)** for national implementation. HIWAS was designed to provide continuous broadcast of information on dangerous weather. FAA first implemented the system in the area where it had been tested, and in Sep 1985 expanded it to the Houston center's airspace. By Sep 1989, the agency had completed nationwide delivery of sufficient HIWAS equipment to provide coverage at or above 4,000 feet.

Aug 24, 1983: In **United States v. The County of Westchester**, the U.S. District Court for the Southern District of New York struck down an all-night curfew instituted by Westchester County at its airport. Citing the Concorde case (see Oct 17, 1977), the court said that local airport proprietors were "vested only with the power to promulgate reasonable, nonarbitrary and non-discriminatory regulations that establish acceptable noise levels." In instituting its curfew, however, Westchester County had failed to conduct any study to determine the location of noise-impacted areas or to quantify the level of noise from any source. Moreover, the curfew banned all flights at the Westchester County Airport between the hours of midnight and 7 a.m.--regardless of the degree of noise produced by individual aircraft. As a result, in the opinion of the Court, the curfew did not pass the test of reasonableness and was an "over-broad exercise of power." (See Nov 5, 1990.)

Aug 31, 1983: An American Airlines DC-9 Super 80 became the **first scheduled jet airliner to arrive after 10:00 p.m. at Washington National Airport since the imposition of nightime noise limits** (see Dec 6, 1981). The Super 80 landed without violating the limit of 85 decibels.

Sep 1, 1983: **A Soviet interceptor shot down Korean Air Lines flight 007,** a 747 that penetrated the Soviet Union's airspace during a flight bound for Japan from Alaska. All 269 persons aboard, including Rep. Larry P. McDonald (D-Ga.) and 60 other Americans, were killed. An International Civil Aviation Organization (ICAO) report issued in June 1993 concluded: that the Korean crew unknowlingly flew into Soviet airspace because they improperly operated their naviation equipment; and that the Soviets assumed that the 747 was an intelligence aircraft and did not make exhaustive efforts to identify it.

On Mar 6, 1984, the governing council of ICAO condemned the destruction of KAL 007, and on May 10 the ICAO assembly amended the Convention on International Civil Aviation to ban the use of weapons against civil aircraft. The KAL tragedy also led to negotiations between the U.S., U.S.S.R., and Japan aimed at enhancing the safety of civil aircraft on Northern Pacific routes. The three nations signed a Memorandum of Understanding on Jul 29, 1985, followed by an implementing agreement on Nov 19 of that year. In addition to procedures for correcting the course of straying aircraft and for emergency landings in Soviet territory, the agreement included improved communications between air traffic controllers. The **new communications link** became operational on Aug 15, 1986, providing a dedicated voice circuit between air traffic control centers in Tokyo and Khabarovsk, U.S.S.R. American controllers at Anchorage could also communicate with Khabarovsk by patching through the Tokyo center.

Sep 22, 1983: FAA announced the award of two competitive contracts for design of a **new mainframe computers** to replace the IBM 9020 computers at Air Route Traffic Control Towers as part of the agency's Advanced Automation Program. (See Jan 28, 1982 and Jul 26, 1985.)

Sep 24, 1983: **Continental Airlines filed for bankruptcy protection under Chapter 11 and suspended flights**. Frank Lorenzo (chairman of the airline and its parent company, Texas Air) announced on Sep 26 that a "new Continental" was resuming operations, on a discount-fare basis, to about a third of the cities formerly served. He offered to rehire 4,200 of the firm's 12,000 employees at salaries below those paid under their union contracts. **Continental's pilots and flight attendants began a strike** on Oct 1, but failed to shut down the airline. By the end of 1983, the company employed approximately 700 pilots and 800 flight attendants. (See Feb 6, 1984.)

Sep 30, 1983: FAA awarded a contract for a **new generation of solid-state Airport Surveillance Radars, designated ASR-9**, to replace vaccum-tube radars in use at U.S. airports. (See Jun 1975 and May 2, 1989.)

Sep 30, 1983: During the fiscal year that ended on this date, key equipment was installed for the **National Airspace Data Exchange Network (NADIN)**, a new interfacility communication system being established under a contract awarded in 1980. Under the NADIN system, messages originating at an air traffic control facility would go to the nearest of some 20 regional concentrators (computerized communication equipment sites). The message would then go to one of two major switching centers, located at Atlanta and Salt Lake City. These switches would disseminate the data, bypassing failed or saturated areas when required. Each switch would handle messages for half the country, but would possess the ability to manage the entire system if necessary. During FY 1982, the first of the switches was installed at Salt Lake City, and the first of the concentrators was installed at the FAA Technical Center. The Atlanta switch and the remaining 20 concentrators were installed in FY 1983, moving NADIN closer to commissioning. (See May 5, 1989.)

Oct 7, 1983: A Wall Street Journal article accused FAA Administrator Helms and his associate, Vincent Roggio, of questionable practices in their private business dealings during the past 8 years. The article proved the beginning of highly publicized **difficulties for Helms**, who in Mar 1984 filed a damage suit against Roggio and other business associates, then petitioned for bankruptcy. In 1987, Roggio received a prison sentence for fraud. (See Dec 23, 1983.)

Oct 11, 1983: **An Air Illinois commuter flight crashed** near Pinckneyville, Ill., killing all ten persons aboard. The National Transportation Safety Board later reported that the accident was caused by the pilot's decision to continue the flight after loss of electrical power from both generators of his Hawker-Siddley 748. As contributory factors, the Safety Board cited inadequate aircrew training and FAA failure to prevent this inadequacy. Following the crash, FAA made changes designed to improve in its inspection procedures and inspector training.

On Dec 2, 1983, FAA announced a special surveillance of Air Illinois, and grounded the airline's two largest aircraft on Dec 14. The next day, Air Illinois voluntarily ceased operations. FAA enforcement activity subsequently resulted in a series of other groundings of commuter and charter air carriers, some as a result of the National Air Transportation Inspection (see Mar 4, 1984).

Oct 24, 1983: FAA began testing a **"scatter plan" aimed at more equitable distribution of noise** from operations at Washington National Airport. Implemented at the request of the Metropolitan Council of Governments, the plan resulted in a high level of complaints from areas that had previously experienced little noise. Even after the test's end on Jan 7, 1984, some citizens claimed that the flights had not returned to their normal routes along the Potomac River.

Dec 22, 1983: FAA established the **first Airport Radar Service Area (ARSA)** at Austin, Tex., followed on Jan 19, 1984, by the second at Columbus, Ohio. A recommendation of the National Airspace Review (see Jun 7, 1982), the ARSA concept was developed for airports with insufficient traffic to warrant a Terminal Control Area (TCA). Within ARSAs, air traffic control provided: separation between IFR aircraft; traffic advisories and conflict resolution for IFR and VFR traffic so that targets do not merge at the same altitude; and traffic advisory service to all participating aircraft as well as arrival sequencing at the primary airport. ARSAs were intended to replace Terminal Radar Service Areas (TRSAs) nationwide, and differed from TRSAs in that their shape was standardized to the maximum extent possible. Radio contact with air traffic control was mandatory for all aircraft in an ARSA, whereas participation was voluntary in a TRSA. Controllers were required to provide traffic advisories to all pilots in an ARSA. In a TRSA, by contrast, controllers provided traffic advisories concerning non-participating VFR aircraft on a workload-permitting basis. After validating the ARSA concept at Austin and Columbus, FAA began establishing additional ARSAs in 1985. There were 121 ARSAs in operation in Sep 1993, when FAA began using its new airspace classifications (see Dec 17, 1991), at which point TRSAs and ARSAs were no longer separate airspace classifications.

Dec 23, 1983: In response to clean air standards adopted by the Environmental Protection Agency, FAA published **revised rules on aircraft engine exhaust emissions**. Beginning Jan 1, 1984, FAA extended smoke limitations already in effect for some classes of engines to cover all civil aircraft jet engines. As of the same date, the agency also required all commercial aircraft jet engines manufactured for use in the United States and rated at 6,000 lb. of thrust or more to meet new regulations on unburned carbons, a contributor to regional air pollution problems. (See Jul 6, 1973.)

Dec 23, 1983: Attempting to takeoff at Anchorage, a Korean Airlines cargo **DC-10 collided on the ground with a Piper Navajo** operated as a commuter by SouthCentral Air. Disoriented in heavy fog, the DC-10 captain had selected the wrong runway. The accident caused no fatalities, but seriously injured three persons and destroyed both aircraft. To Donald D. Engen, who headed the National Transportation Safety Board's investigation team, the collision illustrated the need for better surface control. Soon after becoming FAA Administrator (see Apr 10, 1984), Engen ordered that **Airport Surface Detection Equipment (ASDE)** being used for research at FAA's Technical Center be transferred to Anchorage (see Aug 1979). In addition, he directed the agency to speed its procurement of the more advanced ASDE-3 system. On Oct 10, 1985, FAA announced a contract for 17 ASDE-3 units, with an option for 13 more. (See Dec 3, 1993.)

Dec 23, 1983: **J. Lynn Helms resigned as FAA Administrator**, effective Jan 31, 1984. Helms stated that his objectives as Administrator were largely accomplished and he wished to return to the private sector. Deputy Administrator Michael J. Fenello became Acting Administrator. (See Apr 10, 1984.)

Dec 31, 1983: The **General Aviation Reservation (GAR) system came to an end**. FAA had imposed the GAR as part of the air traffic restrictions resulting from the air traffic controllers' strike (see Oct 19, 1981). Initially, all general aviation pilots who wished to fly under Instrument Flight Rules had to obtain reservations. In June and July of 1982, FAA had lifted this requirement between airports within airspace controlled by the Seattle, Salt Lake City, and Alburquerque air route traffic control centers. Later, FAA grouped the centers into four geographic areas and allowed pilots to fly without reservation between airports in the same group. On Oct 1, 1983, the agency permitted unrestricted flights between the two western groups, and on Oct 31 the southeastern group was included with the western groups. During the final two months of 1983, the reservation system remained in effect only for pilots who wished to enter the northeastern group, which included the New York, Boston, Minneapolis, Chicago, Indianapolis, and Cleveland centers.

Dec 31, 1983: **Operational use of an IBM 4341 computer began at the Central Flow Control facility** at FAA's Washington headquarters. Physically located at the agency's Technical Center in Atlantic City, N.J., the new computer was connected by landline to terminals used by Central Flow personnel at headquarters. The IBM 4341 had 14 times more memory and was 70 percent faster than the IBM 9020A that it replaced. In addition, it allowed two-way data communication between the Flow Control facility and en route control centers (previously, this type of communication had been one-way from the en route centers). The computer was used to monitor the number of aircraft in flight, as well as their destinations and times of arrival, as part of Central Flow's mission of keeping air traffic running smoothly. (See Apr 27, 1970, and May 17, 1987.)

Jan 12, 1984: The Federal Aviation Administration awarded a contract to Hazeltine Corporation for 178 **Microwave Landing Systems (MLSs)**. (See Jan 28, 1982, and May 20, 1987.)

Feb 4, 1984: FAA transferred the **aviation education program** from the Office of Aviation Policy and Plans to the Office of Public Affairs. Later, the program was reassigned to the Office of Training and Higher Education, which was under the Assistant Administrator for Human Resource Management, effective Oct 4, 1992.

Feb 6, 1984: FAA conducted an intensive **inspection of Continental Airlines**, lasting through Mar 9. The Air Line Pilots Association (ALPA) was on strike against Continental (see Sep 24, 1983), and accused it of unsafe practices. The FAA report cited discrepancies but concluded that overall safety was adequate. (Two members of the inspection team later charged that higher officials had altered their report to make it more favorable to the airline; however, an FBI investigation found no basis to prosecute for impropriety.) In Jun 1984 congressional hearings, ALPA charged that FAA was covering up safety violations by Continental, while FAA testified that the airline was safe. (See Mar 18, 1985.)

Feb 13, 1984: In a speech to the National Press Club, **Secretary of Transportation Elizabeth Dole outlined an agenda for aviation** that included a safety review such as she had ordered for the other transportation modes. Dole announced that FAA would step up surveillance of airlines and other elements of aviation (see Mar 4, 1984), and that the agency's inspector workforce would be increased by 25 percent. She also stated that she had recommended Donald D. Engen as FAA's next Administrator (see Apr 10, 1984).

Mar 1, 1984: **Braniff resumed commercial flights**. Now known as **Braniff, Inc.**, the company operated on a smaller scale than before its suspension of flights (see May 12, 1982). To assist the airline's recovery, FAA allocated it landing reservations at five airports where operations were limited by the high density rule and/or restrictions imposed due to the air traffic controllers' strike. (See Sep 28, 1989.)

Mar 4, 1984: FAA began a 90-day **National Air Transportation Inspection (NATI)** of 237 major and commuter airlines and 25 air transportation support organizations (see Feb 13, 1984). NATI began with "white glove" examinations to identify deificiencies that became the focus of in-depth inspections during the second phase of the program, which ran April 7-Jun 5. On Dec 12, 1984, the Department of Transportation announced that NATI had shown 95 percent of the airlines to be in compliance with safety rules. Sixteen airlines had deficiencies sufficient to warrant revocation or voluntary surrender of their certificates, suspension or curtailment of their operations, aircraft groundings, or withdrawal of pilots from service for a period of time.

In addition to NATI, FAA undertook a **Safety Activity Functional Evaluation (Project SAFE)**, a review of the agency's safety inspection program. During the course of SAFE, the project's scope broadened from an initial focus on inspectors to a comprehensive review of the Flight Standards function. The findings of the review, announced on Nov 6, 1985, included a plan for revamping the safety inspection program. The plan, portions of which had already been implemented, included: increased standardization of inspection practices and interpretation of rules; a high-priority effort to update safety regulations; increased use of the automated Aviation Safety Analysis System (see Oct 26, 1982); and strong management oversight. (See Jun 19, 1984, and Aug 16, 1985.)

Mar 1984: Sperry Corporation received a contract to **upgrade the En Route Automated Radar Tracking System (EARTS)** at the Anchorage, Honolulu, and San Juan Centers, as well as at Nellis Air Force Base (see Aug 4, 1980). The contractor would provide radar mosaic to allow EARTS controllers to view the best data from multiple radars on a single screen, a capability similar to that available at Centers with NAS En Route Stage A systems. In Apr 1985, Sperry received another contract to enhance the EARTS facilities by providing confilict alert (see Jan 9, 1976) and minimum safe altitude warning (MSAW) capabilities (see Nov 5, 1976). FAA accepted delivery of the combined conflict alert/MSAW software package in Aug 1987. By fiscal year 1991, all the upgraded operational EARTS had been commissioned.

Mar 6, 1984: FAA published an **amendment to the High Density Rule** under which four of the nation's busiest airports had long been subject to flight quotas during certain hours (see Jun 1, 1969). Effective Apr

1, the new rule increased the hours that limitations at Chicago's O'Hare were applicable, yet increased the number of operations permitted at the airport. It also slightly increased the operations allowed at New York's La Guardia and Kennedy, while restrictions at Washington National remained unchanged. Hourly quotas on IFR operations were: O'Hare, 155; La Guardia, 68; and Washington National, 60. At Kennedy, hourly quotas varied between 77 and 93. (See Dec 20, 1985.)

As of this date, only four of the nation's airports remained subject to strike-related restrictions imposed under the Interim Operations Plan: O'Hare, La Guardia, Denver's Stapleton, and Los Angeles International. On Apr 1, 1984, these limitations ended at Stapleton, La Guardia, and O'Hare, although the latter two remained subject to the High Density Rule. The nation's **last strike-related landing restrictions** ended on Aug 26, 1984, at Los Angeles, where runway repairs and Olympic Games traffic had delayed return to normal operations.

Mar 8, 1984: Several **aircraft descended too low while approaching Washington National airport** in snowy conditions, according to the National Transportation Safety Board. Seven days later, Transportation Secretary Dole announced an acceleration of planned steps to improve the safety of the approach. Later, on Apr 17, Dole stated further that a new electronic landing aid would be installed in Anacostia to permit pilots to follow a bad-weather approach path that was less difficult and further from tall buildings in Rosslyn, Va. (See Dec 28, 1982.)

Mar 14, 1984: FAA announced the award of a contract for the **Interim Voice Response System (IVRS)**. The system provided a computerized voice message giving weather information to pilots who called their local IVRS number on a touch-tone telephone. This was expected to reduce the time required for flight service stations to provide complete preflight weather briefings. In October 1985, FAA announced that IVRS was available to pilots in 24 cities. Meanwhile, FAA was also developing the **Direct User Access Terminal Service (DUATS)**. This system allowed pilots to obtain weather information and file a domestic flight plan using computers equipped with a modem for communication via telephone lines. The agency's Technical Center began developing DUATS in 1983, and a test of the system began at ten sites during the following year. (See Feb 13, 1990.)

Mar 30, 1984: **FAA withdrew an advance notice of proposed rulemaking relating to the Age-60 rule** (see Mar 15, 1960). The agency had issued the notice on Jun 23, 1982, partly in response to a recommendation made to Congress by the National Institute on Aging (see Dec 29, 1979). The notice solicited information on whether to establish a program to determine if persons age 60 or older could safely serve as pilots of major airplanes. It also asked for views on whether the age-60 rule should be extended to apply to flight engineers, an action advocated by United Air Lines. In withdrawing the notice, FAA noted that it agreed with experts who contended that "there are currently no methods to obtain medical and performance data on older pilots that would provide significantly meaningful data to consider relaxing the age-60 rule." The agency also stated that there was insufficient data available to support the extension of the rule to flight engineers. (See Apr 8, 1993.)

Apr 10, 1984: **Vice Admiral Donald D. Engen (USN, Ret.) became the ninth FAA Administrator**, succeeding J. Lynn Helms (see Apr 22, 1981). The Senate had received the nomination on Mar 12 and confirmed it on Apr 5. Congress enacted Public Law 98-256 to exempt Engen from the statute prohibiting military officers from serving as FAA Administrator.

Engen was born in 1924 in Pomona, Calif. He held a B.A. from George Washington University, and had graduated with distinction from the Naval War College. Engen began flying with the Navy during World War II and participated in the air and sea battles that accompanied the recapture of the Philippines and attacks on Iwo Jima, Okinawa, and other Pacific Islands. Among his 29 wartime decorations was the Navy Cross, the Navy's highest award for valor. After a brief return to civilian status following the war, Engen rejoined the Navy in 1946. He flew combat missions in the Korean War, became an engineering test pilot, and served in positions that included command of an aircraft carrier. He was Deputy Commander-in-Chief of the U.S. Atlantic Command and U.S. Atlantic Fleet at the time of his retirement from the Navy in 1978. Engen was General Manager of the Piper Aircraft Corporation plant in Lakeland, Fla., 1978-80, and then became a Senior Associate with Kentron, a consulting firm in Alexandria, Va. He was appointed a member of the National Transportation Safety Board in June 1982, and remained in that position until joining FAA. During his military and civilian career, Engen had flown more than 220 different aircraft, including the Navy's first jets. He served as FAA Administrator for three years and two months. (See Mar 18, 1987.)

May 20, 1984: Former Federal aviation official **Oscar Bakke died** at age 64. Bakke joined the Civil Aeronautics Board in 1946, became Director of its Bureau of Safety in 1956, and was influential in establishing area positive control (see May 28, 1958). He transferred to FAA in 1960 as Director of the Flight Standards Service, and became Eastern Region Director the following year. Appointed Associate Administrator for Plans in 1967, he led a task force that produced recommendations that influenced subsequent legislation on airport and airway development. In 1971, Bakke went to Brussels as Assistant Administrator for the Europe, Africa, and Middle East Region. After returning to Washington, he headed an FAA panel to investigate the DC-10 crash of Mar 14, 1974 (see that date). Bakke retired from the agency during that same year, following the failure of plans to place him in charge of all safety programs (see Jun 11, 1974). He became executive director of the Newark Transportation Council and later of a charitable foundation.

May 24, 1984: In a move intended to sharpen FAA's focus on safety, **Administrator Engen announced that the Office of Aviation Safety would now report directly to him** instead of to the Associate Administrator for Aviation Standards. A directive dated Aug 6, 1984, formally implemented the change. (See Nov 26, 1991.)

Jun 8, 1984: Transportation Secretary **Dole proposed that Washington National and Dulles International airports be transferred from the Federal government**. She announced the appointment of an advisory commission to make recommendations on the establishment of a state, local, or interstate body to assume operation of the airports. On Dec 18, 1984, the commission recommended leasing the airports to a regional authority. On Apr 22, 1985, Dole submitted a bill reflecting these recommendations to Congress. (See Oct 30, 1986.)

Jun 19, 1984: The **Supreme Court reversed an appeals court decision holding FAA liable for negligence** in its certification and inspection program. The case grew out of the Varig Airlines in-flight fire (see Jul 11, 1973), and a 1968 fire aboard a DeHaviland Dove. The respondents charged that FAA had negligently determined that the aircraft met fire-protection standards. In deciding against the respondents, the Court ruled that "the duty to ensure that an aircraft conforms to FAA safety regulations lies with the manufacturer and operator, while FAA retains the responsibility for policing compliance." The Court noted that the law allowing suites against the government makes an exception for such regulatory policing and other activities that involve broad exercise of administrative discretion. (See Dec 31, 1972.)

Jun 19, 1984: Transportation Secretary Dole announced that FAA would conduct a **General Aviation Safety Audit**. The inspections, which began on Jul 22, focused on: pilot schools, instructors, and examiners; repair stations; non-airline operators of large aircraft; older large jet aircraft scheduled to be phased out because of failure to meet the new noise standards (see Dec 23, 1976); and on-demand air taxis. During the program, a number of operators voluntarily surrendered their certificates. FAA submitted the results of the audit to DOT between Aug 1985 and Feb 1986. Four percent of the detailed findings prepared reported significant unsatisfactory conditions, many of which involved air taxis. As a result of the safety audit, FAA revised its guidelines to include stepped-up inspections of air taxis, repair stations, and such operators of large aircraft as travel clubs, contract cargo carriers, and corporations with executive fleets.

Jun 20, 1984: The Civil Aeronautics Board published **additional rules regulating smoking on aircraft** (see May 10, 1973). The provisions included a ban on smoking in air carrier aircraft with fewer than 30 passenger seats, except for on-demand air taxis, and a total ban on smoking in airliners while on the ground. After the Board ceased to exist at the end of 1984, the Office of the Secretary of Transportation administered these rules. (See Aug 13, 1986.)

Jul 1984: FAA conducted an agency-wide **Employee Attitude Survey as part of a drive for improvements in employee/management relations**. Some 26,000 persons responded to the questionnaire, which a Civil Aeromedical Institute research team prepared and analyzed. Preliminary results announced on Nov 27 showed most employees to be generally challenged by their work, satisfied by their pay and job security, but less than positive about FAA's human relations skills and certain related issues. Four questions addressed to air traffic control personnel helped to identify groups more prone to "burnout."

The survey became a tool to evaluate **Human Resources Program steps** that included: on-site reviews by Secretarial panels of management experts; Employee Involvement Groups intended to give employees a greater voice in developing policy and procedures; a new Office of Human Resource

Management, headed by an Associate Administrator reporting directly to the Administrator (see Mar 19, 1985); and a "hotline" linking employees with the Administrator's staff, beginning on Aug 6, 1984. Measures to combat burnout included stress management counseling and a June 1984 policy to allow more air traffic controllers to achieve full performance level, thus sharing difficult work more widely among the workforce.

In a continuing effort to evaluate improvement actions, FAA conducted a follow-up survey of all employees in 1986, and followed this with Job Satisfaction Surveys administered to a randomly selected 15 percent of the workforce. The survey series revealed the following overall job satisfaction percentages: 53 (1984); 56 (1986); 67 (1988); 65 (1990); 72 (1993); and 69 (1995).

Aug 23, 1984: FAA issued an advisory circular establishing an acceptable means of obtaining airworthiness approval of airborne **LORAN-C** equipment for use as an area navigation system under instrument flight rules (IFR) as well as visual flight rules (VFR). Derived from the LORAN (Long Range Navigation) system developed during World War II, LORAN-C used radio signals from ground transmitting stations spaced several hundred miles apart. It had been developed primarily for marine users, but in the early 1980s many general aviation pilots had begun to adopt the system for VFR navigation. (See Jun 2, 1986.)

Sep 12, 1984: Airline representatives reached **agreement on rescheduling flights to avoid congestion during peak hours** at six major airports: New York's La Guardia and Kennedy; Newark International; Chicago O'Hare; Atlanta Hartsfield; and Denver Stapleton. The representatives forged the agreement in eight days of intense negotiations with FAA participation and with the understanding that FAA might impose new regulations if no voluntary solution was found. The Civil Aeronautics Board granted immunity from anti-trust laws to those engaged in the talks, and later approved the agreement. Writing to the Air Transport Association on Mar 12, 1985, FAA Administrator Engen cited steps taken to reduce delays and indications that the airlines would not return to excess peak-time operations. Engen therefore stated that the scheduling agreement need not continue beyond Apr 1.

Sep 15, 1984: **FAA centralized responsibility for the operational control and technical direction of the air traffic control system** under the Associate Admininstrator for Air Traffic. (On an organizational level, however, the regional air traffic division managers continued to report to the Regional Directors: see Jun 16, 1988.) A directive issued on Feb 8, 1985, reorganized the Associate Administrator's office to include an **Air Traffic Operations Service** and an **Air Traffic Plans and Requirements Service**. On Oct 31, 1986, another directive also established an **Air Traffic Evaluations and Analysis Office** under the Associate Administrator. (See Oct 2, 1989.)

Sep 26, 1984: FAA announced the award of a construction contract to expand the Seattle Air Route Traffic Control Center, the first in a **program to expand all 20 en route centers** in the contiguous states. The construction would allow the facilities to accommodate more sophisticated computers and radar displays being developed under the Advanced Automation Program (see Jul 26, 1985). The Seattle groundbreaking ceremony took place on Nov 5, 1984. (See Apr 1987.)

Sep 28, 1984: A DOT Inspector General **report on drug and alcohol abuse among FAA employees** concluded that the problem was more widespread than management realized and recommended stronger action on the issue. In a memorandum to FAA managers at year's end, Administrator Engen stated that he had established a policy under which employees who abused drugs or alcohol must enter a treatment program or face penalties that might include dismissal. Employees with safety-related duties would be assigned other tasks while receiving treatment. The Administrator also stated that he had taken steps to establish a substance abuse screening procedure for employees in safety-related positions. In a general notice on Feb 16, 1985, Engen stated that occasional incidents suggested that FAA was not totally immune to drug/alcohol abuse, and informed employees that a new policy was under development. (See Aug 16, 1985.)

Oct 1984: FAA awarded a contract for design of the **Oceanic Display and Planning System (ODAPS)** with features that would include visual displays of oceanic air traffic. ODAPS would automatically provide controllers with flight data for aircraft flying in oceanic sectors, thus eliminating time-consuming procedures involving use of flight strips and repeated voice communications. A planned second phase of the contract would include delivery of ODAPS equipment to FAA's Technical Center and two air route traffic control centers. (See Dec 14, 1989.)

Oct 5, 1984: FAA announced a contract for ground stations for the new **Mode S radar beacon system**, a secondary radar system employing advanced ground sensors and radar beacon transponders aboard aircraft. Two corporations participated in the joint contract to produce 78 of the stations, with an option for another 59 units. The Mode S system was designed to replace the existing air traffic control radar beacon system, know as ATCRBS (see Jun 23, 1981). The discrete address capability of the new system would enable controllers to interrogate aircraft individually and selectively to determine their position, identity, and altitude, without having to use voice communications. This would eliminate the overlapping and garbled signals that were sometimes a problem in busy terminal areas. Mode S would also make possible the development of a capability for controllers to transmit data to properly equipped aircraft directly without using voice communications. (See Jan 29, 1987, and May 9, 1993.)

Oct 18, 1984: **Vice President George Bush was involved in a near midair collision** (NMAC) near Seattle when the crew of Air Force Two was forced to take evasive action due to their failure to sight an aircraft flying under visual flight rules. On Sep 30, 1984, Air Force Two had been involved in a less serious incident when a controller in Ohio allowed it to come too close to another aircraft. (See Jan 11, 1985.)

Oct 26, 1984: FAA published **two rules to increase the survival chances of airline passengers encountering fire and smoke**. Both were based on findings of the Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee (see Sep 10, 1980) as well as on subsequent research. One rule called for the installation, within three years, of **seat cushions possessing an outer layer of highly fire-resistant material**. Research showed that the cushions would provide as much as 40 additional seconds before "flashover," the deadly ignition of accumulated vapors. The requirement applied to operators of aircraft weighing 12,500 pounds or more and having over 29 seats. The second rule required **emergency escape path marking at or near floor level** that would provide evacuation guidance even when all sources of illumination more than four feet above the cabin aisle floor were totally obscured by smoke. With the exception of aircraft type-certificated before 1958, all airliners operated by major lines were required to have such marking within two years. (See Jul 21, 1986.)

Nov 10, 1984: **FAA revoked the operating certificate of Provincetown-Boston Airlines (PBA)**, a large commuter carrier. The revocation was probably the most publicized of numerous operational curtailments enforced by FAA during the year, many as a result of the NATI program (see Mar 4, 1984). Critics charged that FAA inspections had failed to uncover PBA's violations before information from a former pilot of the airline triggered the investigation that led to the grounding. After assisting PBA to correct deficiencies, FAA on Nov 24, 1984, recertificated the airline for that part of its operations involving smaller aircraft.

On Dec 6, 1984, the **crash of a PBA Embraer Bandeirante** (EMB-110) shortly after takeoff from Jacksonville killed all 13 persons aboard. On Dec 9, FAA issued an emergency Airworthiness Directive requiring owners to inspect key parts of certain Bandeirante models. The agency also dispatched a team to Brazil to work with authorities and the manufacturer to insure the safety of the aircraft type. On Jan 8, 1985, the National Transportation Safety Board (NTSB) recommended that FAA ground many of the approximately 90 Bandeirantes in the U.S. pending further inspection and/or modification. FAA ordered the inspections, but allowed 18 hours of flying time prior to compliance. In its final report on the accident, NTSB listed the probable cause as a control system malfunction. The crew's reaction to the problem resulted in overstress that caused failure of the horizontal stabilizer attachment structure.

New incidents and allegations in late 1984 and early 1985 resulted in further FAA surveillance of PBA. By May 1985, however, the agency was ready to recertificate the carrier for operation of its largest aircraft.

Nov 14, 1984: Effective this date, the Civil Aeronautics Board (CAB) adopted a **rule regulating air carrier-owned computer reservations systems (CRSs)**, which set forth requirements designed to prevent unfair, deceptive, and anticompetitive practices among the airlines who controlled those systems. CAB mandated a future review of this regulation, and on Sep 16, 1992, DOT announcd a final rule on CRS, which strengthened and extended the existing regulations through 1997. Among other things, the revised rule prohibited a vendor from requiring its subscribers to make a specified minimum number of bookings; reduced the maximum subscriber contract term from five to three years; and readopted the existing requirements that information be organized in an objective and unbiased manner, and that participation in a CRS be open to all carriers on a nondiscriminatory basis.

Dec 1, 1984: FAA and the National Aeronautics and Space Administration conducted a **Controlled Impact Demonstration (CID)** in which a Boeing 720 was remotely piloted to a prepared crash site at Edwards Air Force Base, Calif. The aircraft carried instrumented test dummies, high-speed cameras, and more than 350 sensors to transmit data to ground recorders. The project involved numerous experiments on the crash behavior of the aircraft's structure and of internal features such as seats, seat belts and harnesses, storage compartments, and galleys. Among the other items tested were fire-blocking seat cushion layers, fire-resistant windows, cockpit voice recorders, and flight data recorders. Most importantly, the aircraft's tanks carried **anti-misting kerosene (AMK)**, an experimental fuel designed to prevent or minimize the fireball that may result when spillage from a ruptured tank forms a volatile mist and ignites. Devices known as degraders converted the AMK back to normal kerosene before it entered the engines.

Preparations at the impact site included eight steel wing cutters installed to ensure that fuel would spill from the tanks. Touching down 300 feet short of the cutters with its left wing low, the aircraft slid forward at an angle so that the first cutter slashed into the right inboard engine before ripping open the wing tank. In consequence, the spill began with non-AMK fuel from the engine, which ignited instantly and touched off the AMK fuel gushing from the tank. A spectacular fireball resulted. The use of AMK reduced the heat of the fire, and an estimated 20 percent of the passengers would probably have escaped had the aircraft contained real occupants. The AMK test was disappointing, however, and in Sept 1985 the FAA announced that it had dropped plans to require airline use of the special fuel. Despite this, other experiments conducted as part of the CID produced a wealth of useful information.

Dec 4, 1984: Four Arab **hijackers diverted a Kuwait Air A-310 to Iran, where they murdered two American passengers** and committed other brutalities while demanding the release of prisoners held in Kuwait. The hijackers released 153 of their hostages in several groups, and Iranian forces freed the remainder when they stormed the aircraft on Dec 9. The hijacking was part of an increase in terrorist seizures of foreign airliners that began in Jun 1984.

Dec 11, 1984: **FAA grounded about 180 Sikorsky S-76A helicopters** pending installation of a replacement part being developed by the engine builder, a division of General Motors. The action followed an Oct 31 accident in the South China Sea.

Dec 13, 1984: **Richard H. Jones became Deputy Administrator** of FAA, succeeding Michael J. Fenello (see Aug 1, 1981). A native of Portsmouth, Va., Jones served as a Marine Corps pilot during 1953-57, received his B.S. from Virginia Polytechnic Institute in 1958, and began flying for Eastern Air Lines in 1959. He served a second tour with the Marines, 1960-1966, leaving active duty as a reserve Lieutenant Colonel. Jones then returned to Eastern, becoming a captain in 1967 and continuing in this capacity until joining FAA. He also practiced law with the firm of Lewis, Wilson, Lewis & Jones, having received an L.L.B. from American University in 1964. Jones was Secretary and Treasurer of the Airline Pilots Association, International, 1969-70, and ran unsuccessfully for president of the union in 1970. He was Chairman of the Washington-based Eastern Air Lines Pilots Association, 1970-72, and served on numerous other groups and committees devoted to legal and aviation issues.

On Jun 4, 1986, Jones announced his resignation from FAA, effective Jul 15, 1986, to return to the private sector. (See Apr 1, 1988.)

Dec 31, 1984: In accordance with the Airline Deregulation Act (see Oct 24, 1978), **the Civil Aeronautics Board (CAB) ceased to exist** at the end of this day, having operated for 44 years and 7 months. Originally entrusted with airline economic regulation, accident investigation, and safety rulemaking, CAB lost the latter responsibility with the Federal Aviation Act of 1958. The Department of Transportation Act of 1966 later deprived the Board of its accident investigation role, leaving economic regulation as its principal mission. After 1984, the Department of Transportation (DOT) assumed those CAB duties that had not been abolished by deregulation. Functions assigned to elements of the Office of the Secretary of Transportation included: international aviation responsibilities such as bilateral treaty negotiation, carrier selection, and tariff filing and review; the Essential Air Service Program, which protected service to small communities; consumer protection for airline passengers; antitrust review and immunity authority; and certification of the economic fitness of carriers. DOT's Research and Special Projects Administration assumed responsibility for collection and dissemination of air carrier economic data.

***1985**

Jan 11, 1985: Ralph Nader's Aviation Consumer Action Project made public a study claiming that FAA had underreported **near midair collisions** (NMACs) for 1983 and 1984 (see Oct 18, 1984). FAA acknowledged that discrepancies existed and stated that procedural changes would ensure more accurate NMAC statistics in the future. On Apr 19, 1985, FAA released data showing a rise in NMACs for the first quarter of 1985. The agency stated that the increase reflected improved statistical procedures and renewed emphasis on pilot reporting of the incidents. In June, Georgetown University Dean Ronald L. Smith began an audit of the new NMAC reporting system. In findings announced by FAA on Dec 3, Dean Smith judged the system to be working well and found no evidence of earlier deliberate suppression of NMAC reports.

Meanwhile, media attention to the NMAC issue heightened due to two such incidents in the national capital area on Jun 9 and Sep 24, 1985. In Oct 1985, NTSB Chairman James Burnett told Congress that the Board was very concerned about a trend toward increased NMACs. On Apr 14, 1986, FAA stated that reported NMACs for 1985 had totaled 777 (a figure later revised to 758), as compared to 589 for 1984. Commenting that the 1985 statistics were based on improved methods, FAA Administrator Engen pointed to the agency's efforts to reduce NMACs, including the establishment of Airport Radar Service Areas (see Dec 22, 1983) and the "Back to Basics" program (see Oct 10, 1985). Engen also stated that special working groups were studying the problem of potential collisions on the ground, termed "runway incursions." FAA later issued the following statistics: 840 NMAC reports in 1986; 1058 in 1987; 710 in 1988; 550 in 1989; 454 in 1990; 348 in 1991; 311 in 1992; and 293 in 1993.

Feb 8, 1985: FAA established a policy that the **Precision Approach Path Indicator (PAPI)** would be the standard visual glideslope indicator for new, Federally-funded installations at fixed-wing airports. PAPI was an improved version of VASI, the Visual Approach Slope Indicator (see Oct 12, 1970). The PAPI system featured four bars of light and was able to give pilots an indication of the extent of their deviation from the desired glide path, rather than merely warning that they were too high or too low. In 1982, the International Civil Aviation Organization had adopted PAPI to replace VASI, which would cease to be the international standard on Jan 1, 1995. In May 1983, FAA had changed its longstanding policy of funding only VASI to one permitting funding of various different systems, with the exception that only PAPI was funded for international airports. The agency's Feb 1985 shift to exclusive funding of PAPI reflected a desire to promote safety through standardization. In response to congressional action, however, FAA modified this policy to permit funding of systems other than PAPI at general aviation airports not certificated for air carrier use.

Feb 26, 1985: FAA published Advisory Circular 91-62 stating a **new policy on child restraint systems (CRSs)**. The background of this issue included the formation of an FAA Task force to evaluate the use on aircraft of CRSs, also known as child safety seats. On Jun 1, 1979, the task force had recommended that the agency adopt the Federal Motor Vehicle Safety Standard for CRSs, with additional provisions for aircraft use. FAA developed performance standards which it published as a Technical Standard Order on May 28, 1982. Subsequently, the National Highway Traffic Safety Administration (NHTSA) and FAA had worked toward a common standard.

Advisory Circular 91-62 declared that a CRS manufactured after Feb 25, 1985, was suitable for aviation if it bore a NHTSA label certifying it for use in both motor vehicles and aircraft. In addition, a CRS made between Jan 1, 1981, and Feb 25, 1985, was suitable for use in aircraft provided it bore a NHTSA label indicating that it met Federal motor vehicle standards. The new FAA policy made an additional 6 million child seats acceptable for use aloft. FAA encouraged but did not require use of the devices, and airlines could decide whether to permit them (see Sep 15, 1992). Children under the age of two might still be held in an adult's lap during takeoff and landing.

Mar 18, 1985: FAA began an in-depth **inspection of Continental Airlines** that lasted through Apr 26. This was the second special inspection of Continental (see Feb 6, 1984) since the Air Line Pilots Association began a strike against it. On Jun 11, 1985, FAA announced that the airline continued to operate in basic accordance with safety regulations. In Mar 1986, however, Continental paid a $402,000 penalty for violations uncovered by FAA during its 1984 and 1985 inspections.

Meanwhile, the flight attendants and mechanics **ended their strike** against Continental in Apr 1985, and a bankruptcy court resolved the pilots strike during that October by ordering a back-to-work plan. On Jun 30, 1986, the court approved a **plan allowing Continental to end its bankruptcy** within sixty days. (See Sep 24, 1983 and Dec 3, 1990.)

Mar 19, 1985: The appointment of Charles E. Weithoner as the first **Associate Administrator for Human Resource Management** became effective. Weithoner had served in the post on an acting basis since the previous October. On Sep 4, 1985, an FAA directive formally created the position and placed four offices

under its control: Human Resource Planning and Evaluation; Labor and Employee Relations; Organizational Effectiveness; and Personnel and Technical Training. At the same time, FAA abolished the former Office of Labor Relations and Office of Personnel and Training, and assigned their functions to offices under the new Associate Administrator. This structural change was part of a program of increased emphasis upon human relations (see Jul 1984.)

Mar 26, 1985: A directive issued on this date established a new **Office of Program and Regulations Management** under the Associate Administrator for Aviation Standards. The office was **later retitled the Office of Program and Resource Management**, and subsequently abolished by a directive issued on Apr 24, 1992.

Mar 29, 1985: FAA published a **rule to improve cabin fire protection** for passengers aboard aircraft operated by major airlines under Federal Aviation Regulations Part 121. The rule required that each lavatory be equipped with a smoke detector, or equivalent, and that each lavatory trash receptacle be equipped with an automatic fire extinguisher. It also increased the number of hand fire extinguishers required in the cabins of aircraft with more than 60 seats, and specified that at least two of these use Halon 1211 or an equivalent extinguishing agent. The new rule resulted from investigation of two aircraft cabin fires and an inspection survey conducted in their wake. One of these fires involved an Air Canada flight (see Jun 2, 1983) and the other was a non-fatal blaze at Tampa on Jun 25, 1983. (See May 26, 1987, and Apr 4, 1991.)

Apr 17, 1985: FAA published a rule establishing a **blood alcohol standard** (.04 percent by weight) for determining when drinking had impaired the ability of aircrew members to perform their duties. The new regulation strengthened the existing rule prohibiting anyone from acting as an aircrew member within eight hours of alcohol consumption or while under the influence of alcohol or any drug adversely affecting performance (see Dec 5, 1970). **A related rule published on Jan 9, 1986, made airmen subject to possible loss or suspension of their licenses if they refused to submit to tests for alcohol** given by law enforcement officers under certain conditions. (See Feb 17, 1987, and Mar 8, 1990.)

Apr 29, 1985: Astronauts aboard the space shuttle *Challenger* placed the **Northern Utah Satellite (NUSAT)** in orbit. The 105 lb. aluminum polyhedron satellite was an experiment aimed at developing a new means of calibrating the vertical tilt of FAA beacon radar antennas. Before reentering the atmosphere on Dec 15, 1986, NUSAT transmitted important information on the radar signal environment as perceived from low earth orbit. The project was accomplished by a volunteer coalition of FAA, NASA, Utah's Weber State College, and numerous aerospace companies.

May 5, 1985: Administrator Engen and other FAA officials arrived in Beijing on a mission to foster closer **cooperation between the U.S. and China** in aviation matters. On Aug 28, 1985, Transportation Secretary Dole announced that the two countries were working together for a mutual exchange of information, research, and experts for further development of their transportation systems. The Secretary made the announcement in Beijing during a trip to China with her husband, Senator Robert Dole (R-Kan.). (See Mar 15, 1986)

May 17, 1985: **United Airlines pilots went on strike** over the company's plan for a two-tiered pay structure with lower pay for new pilots. The union and management soon reached an economic agreement that permitted such a two-tier system, but back-to-work issues delayed settlement until Jun 14. During the strike, FAA increased safety surveillance of United operations, and used electronic equipment to help identify those harassing non-striking pilots with illegal radio transmissions on air traffic control frequencies.

May 9, 1985: The first of four heliports selected in 1983 for development under FAA's **National Prototype Demonstration Instrument Flight Rules Heliport Program** was dedicated in Indianapolis. A $2.5 million Airport Improvement Program grant had assisted the establishment of the facility.

May 31, 1985: FAA announced **new criteria on extended range (ER) flights**. Previously, FAA had generally prohibited a two-engine aircraft from flying a route that at any point was more than one hour flying time (in still air at normal cruising speed with one engine inoperative) from a usable airport. Under the new criteria, the diversion time was increased to two hours, provided that at least half of each extended-range route segment was less than 90 minutes of one-engine flying time from an airport. The change meant that some two-engine aircraft would be able to fly North Atlantic routes without veering far to the north.

As experience with extended two-engine operations increased, FAA further increased permitted diversion times. In 1989, the agency approved a three-hour diversion time, long enough to permit two-engine operations between Hawaii and the U.S. mainland.

Jun 3, 1985: A directive issued on this date established the **Airport Capacity Program Office** under the Associate Administrator for Airports. (See Feb 21, 1990.)

Jun 6, 1985: The Professional Airway Systems Specialists (PASS), the bargaining agent for Airway Facilities technicians, agreed with FAA on a **joint labor-management employee involvement (E-I) pilot program**. A steering committee composed of five FAA and five union representatives agreed upon an eighteen-month test of E-I, a concept involving cooperative efforts to solve operational problems affecting employees. The program was first implemented at facilities in Baltimore and New York, and subsequently expanded to all FAA regions. (See Aug 31, 1991.)

Jun 7, 1985: Effective this date, **FAA reduced the total flight hours required for a pilot to be eligible to obtain an instrument rating** from 200 to 125. A contract study had indicated that the change would have no effect on pilots' ability to learn instrument flying skills, but would encourage them to acquire the rating earlier.

Jun 14, 1985: **Two Lebanese Shiite Moslems hijacked a TWA 727** departing Athens and diverted it to Beirut, where additional hijackers joined them. During a **two-week confrontation**, they demanded the release of Shiite prisoners held by Israel. The hijackers murdered one passenger, a U.S. Navy diver. They released the other 155 hostages (including 39 Americans) in stages, the last being freed on Jun 30. Lebanese authorities held the aircraft in Beirut until Aug 16.

The TWA hijacking and an upsurge in Middle East terrorism prompted a series of U.S. actions. Events included:

* On Jun 18, President Reagan warned travelers of inadequate security measures at Athens airport. This advisory was lifted on Jul 22, after an FAA inspection found improvements.
* On Jun 23, an Air India jet crashed under mysterious circumstances (see entry for this date below).
* On Jun 27, Transportation Secretary Dole urged the International Civil Aviation Organization (ICAO) to act immediately to enhance airport security. The ICAO Council met on an accelerated schedule, and on Dec 19 adopted amendments strengthening international security standards and recommended practices.
* On Jul 1, the President suspended airline travel between U.S. and Lebanon.
* During July, FAA issued an emergency regulatory amendment requiring airlines to carry Federal Air Marshals on certain flights. Eight days later, the agency issued another emergency rule that required airlines to expand security training for crew members and to provide a ground security coordinator and an in-flight security coordinator for every flight.
* Between mid-Aug and early Nov, FAA personnel assisted by law enforcement officers from other agencies inspected U.S. air carrier security procedures at 79 foreign airports.
* FAA also issued a number of emergency amendments to the agency-approved security programs of both airlines and airport operators.

On Aug 8, the President signed the **International Security and Development Cooperation Act of 1985**. The Act authorized the use of $5 million from the Airport and Airway Trust Fund for research on and development of airport security devices and explosives detection techniques. It also mandated a system for conducting security assessments at foreign airports, and authorized Federal Air Marshals as a permanent FAA workforce. The agency began hiring additional security inspectors and training them to serve as Air Marshals. FAA also reorganized its Office of Civil Aviation Security to reflect its expanded responsibilities under the Act, creating an International Civil Aviation Security Division and an Intelligence Division. (See Aug 5, 1986.)

Jun 23, 1985: **An Air India 747 crashed** into the North Atlantic during a flight from Montreal to London, killing all 329 persons aboard (see Jun 14, 1985). Circumstances made it appear that Sikh separatists might have been responsible for the tragedy and for a near-simultaneous bombing that killed two airport baggage handlers in Tokyo. Indian and Canadian government reports released the following year concluded that that the 747 was destroyed by a bomb in luggage in the forward cargo hold. In Jul 1992, Indian authorities arrested a Sikh extremist who was allegedly involved in the bombing.

Jul 1, 1985: A toll-free **FAA Aviation Safety Hotline** began operations. Coordinated by the Office of Aviation Safety, the hotline was intended primarily for those in the aviation industry with specific knowledge of Federal Aviation Regulations violations. Callers' identities would be held in confidence and protected from disclosure under the Freedom of Information Act. During the following month, an FAA **Consumer Hotline** also opened, initially in one region only but expanding to nationwide operations on Sep 2, 1986. The Consumer Hotline was for use by the public to inquire or lodge complaints about aviation safety issues or FAA user services. The hotline did not handle airline service issues, such as lost luggage or flight cancellations. When such problems were not resolved by the airlines hemselves, consumers were referred to DOT's Office of Community and Consumer Affairs.

Jul 18, 1985: FAA published a rule setting forth **simplified flight and rest time requirements for domestic airline pilots**, effective Oct 1, 1986. The new rule was intended to allow greater flexibility in scheduling while ensuring that pilots had adequate rest. For major airlines, the rule replaced a complex flight duty time regulation that had remained virtually unchanged for over 30 years. The new rule also covered air taxi and commuter air carrier pilots, who previously had only minimal restrictions on the number of hours they could fly. FAA drafted the rule with the aid of an advisory committee composed of representatives of the various groups interested in the outcome. The agency adopted this "Regulatory Negotiation" approach after several years of unsuccessful attempts to update and simplify flight duty time regulations.

Jul 24, 1985: FAA announced the award of a contract to **upgrade the Automated Radar Terminal System (ARTS II)**, giving it certain additional safety features of the more sophisticated ARTS III. Based on development work begun in Mar 1982, this ARTS IIA enhanced system would include conflict alert and Minimum Safe Altitude Warning capabilities. In addition to upgrading the ARTS II systems in service at 87 locations, the contractor would install ARTS IIA's at 33 airports where the outmoded TPX-42 system was in use. (See Dec 12, 1978.)

Jul 26, 1985: FAA announced the award of a contract for replacement of the IBM 9020 computers at the nation's 20 air route traffic control centers (ARTCCs) as part of the agency's **Advanced Automation Program**. IBM won the replacement contract in a competition with Sperry Corp. under a pair of contracts that had been announced on Sept 22, 1983. The new installations were designated the **"Host" Computer Systems (HCSs)** because of their ability to run the existing 9020 software package with minimum modifications. Using the IBM 3083-BX1 computer as its key element, the Host system would provide greater speed, reliability, and storage capacity. Each installation would consist of two units, one serving as the primary processor and the other providing support and backup. (See Mar 22, 1983, and May 29, 1987.)

In addition to installing the Host systems at the ARTCCs, IBM agreed to supply the systems to teams working on the other major element of the Advanced Automation Program, the **Advanced Automation System (AAS)**. Under a pair of contracts announced on Aug 16, 1984, IBM and Hughes Aircraft Co. were engaged in a competition to produce the best AAS design (see Jul 26, 1988). Among the key elements of AAS were controller work stations, called "sector suites," that would incorporate new display, communications and processing capabilities. AAS would also include new computer hardware and software to bring the air traffic control system to higher levels of automation. Once the full AAS system was operational, FAA planned to begin the integration of en route and terminal radar control services at the ARTCCs, which would be renamed **Area Control Facilities (ACFs)** and expanded to handle the new functions (see Apr 19, 1993). Among the planned future enhancements to AAS was Automated En Route Air Traffic Control (AERA), which would automatically examine aircraft flight plans to detect and resolve potential conflicts.

Aug 2, 1985: **A Delta Air Lines L-1011 crashed when it encountered wind shear** during a landing approach to Dallas-Fort Worth International Airport. The accident killed 134 of the 163 persons aboard and one person on the ground. The wind shear did not reach the sensors of the Low Level Wind Shear Alert System (LLWAS) until after the crash, a fact that demonstrated the system's limitations. The National Transportation Safety Board listed the accident's probable cause as: the flightcrew's decision to approach through a cumulonimbus cloud which they observed to contain lightning; lack of specific guidelines, procedures, and training for avoiding and escaping wind shear; and lack of real-time, definitive wind shear information. The report noted that low-altitude wind shear had been a cause or contributory factor in seven fatal air transport crashes since 1970.

On Nov 27, 1985, FAA announced the award of a contract for development of a comprehensive **wind shear training program for pilots.** The agency received the completed program in

February 1987 and distributed it to the industry. On Apr 14, 1986, FAA circulated a draft **Integrated Wind Shear Program plan**. In addition to better pilot training, the plan featured development of: improved ground-based detectors, including: enhanced LLWAS (see Jan 1988); Next-Generation Weather Radar, known as NEXRAD (see Feb 28, 1994); Terminal Doppler Weather Radar, known as TDWR (see Nov 2, 1988); and sensors for airborne detection systems using microwave Doppler, laser, or infrared radiometer technology (see Oct 9, 1986).

Aug 2, 1985: FAA submitted the first **National Plan of Integrated Airport Systems (NPIAS)** to Congress. A successor to the National Airport System Plan (see Sep 7, 1973), the NPIAS was to be published in an updated form every two years as mandated by the Airport and Airway Improvement Act (see Sep 3, 1982). The first NPIAS estimated that Federal, state, and local agencies needed to invest $18.3 billion in airport development over the next decade in order to keep pace with the projected growth of air traffic.

Aug 12, 1985: A **Japan Air Lines 747 crashed** into a mountain about 70 miles northwest of Tokyo after wandering out of control for more than 30 minutes. All but 4 of the 524 persons aboard were killed, a **fatality toll higher than in any previous single-plane accident**. Japanese authorities listed the probable cause as rupture of the aft pressure bulkhead, and the subsequent ruptures of part of the fuselage tail, vertical fin, and hydraulic control system. They attributed the bulkhead rupture to fatigue cracks caused by improper repairs. To avert such accidents in the future, FAA ordered that a cover plate be placed over an access door in the tail section of 747s to control damage in the event of an aft pressure bulkhead failure.

Aug 16, 1985: Transportation Secretary Dole released a **report on FAA's Flight Standards programs by the Safety Review Task Force** that she had created in Dec 1983 to examine the safety programs of all the Department's modal administrations. The report identified four problem areas: difficulty in carrying out timely actions; lack of uniformity in interpreting rules and policies; sometimes ineffective communications within FAA and with the aviation community and general public; and expanded autonomy at FAA regional offices and some headquarters offices that had inhibited the accomplishment of program objectives. (See Feb 20, 1986.)

Aug 16, 1985: FAA announced that it would implement a **new policy on drug and alcohol abuse involving agency employees in safety-related positions**. The agency's pilots, safety inspectors, air traffic controllers, police officers, and firefighters would be given urinalysis tests upon hiring and thereafter during their annual physical examinations. Penalties for using illicit drugs or alcohol abuse either on or off duty ranged from dismissal to reassignment. Employees who completed a treatment program might return to their original positions, but would be subject to random screening. A second offense would result in firing. The testing procedures became effective in February 1987. (See Sep 22, 1984, and Sep 9, 1987.)

Aug 20, 1985: Trans World Airlines' board of directors accepted a stock purchase offer from "corporate raider" Carl C. Icahn, leading to **Icahn's takeover of TWA** before the end of 1985.

Aug 22, 1985: **One engine of a British Airtours charter 737 exploded on takeoff** at Manchester, U.K., engulfing the aircraft in flame and killing 54 of the 137 persons aboard. Both British authorities and FAA ordered inspections of certain **Pratt & Whitney JT8D engines** used on some 727s, 737s, and DC-9s. On **Sep 6, a Midwest Express DC-9 rolled out of control and crashed after one engine failed on takeoff** from Milwaukee. All 31 persons aboard died. The accident's probable cause, according to the National Transportation Safety Board, was the flight crew's improper response to the loss of the engine, an older version of the JT8D than that involved at Manchester. Following the accident, FAA broadened its order on engine inspections to include more models of the JT8D, and in Dec began a special inspection of engine repair facilities (see Dec 12, 1985). Subsequently, FAA issued further directives on JT8D inspections and parts replacement.

Sep 16, 1985: FAA dedicated the last of 800 contractor-installed solid-state **VORTAC air navigation aids**. VORTAC had long been an important element of the airspace system (see Aug 30, 1956). The new solid-state VORTACs were more reliable and energy-efficient than the tube-type equipment they replaced. In addition to installing the 800 units, the contractors delivered 150 VORTACs for FAA to install as sites were readied. The agency's technicians had installed more than 60 of these systems by Sep 1985. The new VORTACs were the first FAA systems to have **Remote Maintenance Monitoring (RMM)**, a feature that greatly reduced the need for site visits.

Sep 18, 1985: DOT issued a **rule prohibiting deceptive airline code-sharing**. The rule required airlines sharing the same two-letter designator code to notify passengers of the arrangement and identify the airline actually providing the transportation.

Sep 25, 1985: **American Airlines agreed to pay a $1.5 million civil penalty**, the largest levied by FAA to that date. Most of the safety violations cited against American had been uncovered in a special inspection that summer.

Oct 1985: As part of its **continued upgrading of automated radar terminal systems**, FAA commissioned the first ARTS IIIA installation to use a new software package designated A3.02 at Ontario International Airport, Calif. An enhanced version of the A3.01 software (see Dec 1979, and Mar 26, 1986), the A3.02 package could be used at facilities employing data from more than one radar sensor. In Nov 1986, the first ARTS IIIA to use the still more advanced A3.03 software was commissioned at Burbank, Calif. This new package included an enhanced conflict alert capability that was less prone to false alarms. Meanwhile, FAA continued to install ARTS IIIA hardware, and had replaced most of the basic ARTS III systems by the end of 1986.

Oct 9, 1985: FAA announced that the agency had signed an agreement with the National Aeronautics and Space Administration and the Department of Defense (DOD) to conduct a **joint study of the benefits of continued development of tiltrotor aircraft**. This type of aircraft is equipped with rotors that tilt to act like a helicopter rotor during takeoff and landing, yet perform like a conventional propeller for cruise flight. The XV-15, a small proof-of-concept aircraft, had been flying successfully since 1977, and the larger V-22 Osprey was under development for DOD. The joint study (published in two phases, in 1987 and 1991) concluded that civil tiltrotors could be both technically and commercially feasible. (See Jun 16, 1988.)

Oct 10, 1985: FAA and general aviation manufacturers gave a preview of a **"Back to Basics" safety program** to a group of pilots at the National Air and Space Museum. Beginning on Jan 1, 1986, the program used presentations and clinics to increase pilot awareness of a different safety topic each quarter for three years. The first year's topics included: takeoff and landing; collision avoidance; weather; and fueling and fuel planning. The program proved successful, and on Jan 1, 1990, FAA began a Back to Basic II program scheduled to run through 1994.

Nov 1, 1985: FAA published a **rule requiring any person flying an aircraft equipped with a radar beacon transponder to operate the transponder (including altitude reporting equipment if installed) while in controlled airspace**. This requirement had previously applied to pilots in Terminal Control Areas (TCAs) and flying en route above 12,500 ft. (see Jun 4, 1973). FAA now extended it to those operating in airport control zones, designated Federal airways, and transition zones. The new rule involved no requirements for installation of additional equipment (see Jan 29, 1987).

Nov 7, 1985: DOT announced final approval for **United Airlines acquisition of Pan American's Pacific Division**. The transaction meant the end of Pan Am's far-flung Pacific operations, except for service between Hawaii and the U.S. mainland. (See Nov 14, 1990.)

Nov 13, 1985: FAA published a **rule requiring shoulder harnesses for all seats in new airplanes with less than ten passenger seats** manufactured after Dec 12, 1986. The rule extended an earlier requirement that had applied only to the front seats of small aircraft (see Jun 16, 1977).

Nov 23, 1985: **An unusually bloody hijacking began when three men seized control of an Egyptair 737** with 98 persons aboard shortly after takeoff from Athens. In a midair gunfight, one hijacker was killed and an Egyptian security guard and two flight attendants were wounded. The hijackers demanded to fly to Libya or Tunisia, but agreed to refuel at Malta. In an attempt to force Maltese authorities to supply the fuel, the hijackers shot five hostages, killing two of them, including an American woman. After 22 hours of negotiation, an Egyptian military force stormed the plane. During the rescue action, 57 persons were killed and about 30 others injured.

Dec 4, 1985: AN FAA **DC-3 (registration number N-34) arrived at Washington National Airport to begin a new career as a flying exhibit**. Manufactured in 1945, N-34 had belonged to the Navy before its transfer to FAA in 1963. With many other DC-3s, it performed quality assurance and facility certification checks on the nation's airways before its retirement from this role on Sep 9, 1982. N-34 was exhibited at air shows until retired from active service as a cost saving measure in early 1994.

Dec 12, 1985: **A chartered DC-8 operated by the U.S. carrier Arrow Air crashed on takeoff from Gander, Newfoundland**. All 256 persons aboard died, including 248 U.S. soldiers returning from the Mideast. Early theories on the tragedy's cause included the possibility that it was part of a series of crashes involving engine failure (see Aug 22, 1985), and FAA conducted a special inspection of jet engine repair facilities following the accident. On Dec 8, 1988, the Canadian Aviation Safety Board released a divided verdict on the crash's probable cause. The majority of five members cited icing on the wings, perhaps combined with the loss of thrust from one engine (see Jan 13, 1982, and Nov 15, 1987). A minority of four concluded that an in-flight explosion was most likely.

FAA increased surveillance of Arrow Air following the Gander crash, and an in-depth inspection of airlines operating under military charter was announced in January 1986. Subsequent actions included the Feb 8 temporary grounding all 10 of Arrow's DC-8s pending replacement of unapproved spare parts. Nine years later, in March 1995, Arrow voluntarily ceased operations for nearly three months following an FAA inspection that revealed safety violations.

Dec 20, 1985: DOT published a new rule on allocation of takeoff and landing reservations ("slots") at the four airports subject to flight quotas under the **High Density Rule** (see Mar 6, 1984). Beginning on April 1, 1986, any person might buy, sell, trade, or lease air carrier or commuter slots (with the exception of international and essential air service slots, which were subject to certain transfer restrictions). A lottery procedure was provided for allocation of new slots, or slots returned under the rule's use-or-lose provision. On Mar 12, 1986, DOT issued a special rule aimed at increasing competition: 5 percent of slots at high density airports would be assigned by lottery to new entrants and incumbent air carriers with fewer than 8 slots. Although the High Density Rule was subsequently amended in certain other respects, its main provisions remained essentially unchanged despite opposition from some parts of the aviation community. On Jun 16, 1995, DOT released a report on the issue and announced its conclusion that, on balance, the rule was currently beneficial.

Dec 27, 1985: Near-simultaneous Arab **terrorist attacks on airports in Rome and Vienna** caused the death of 20 persons, including four of the terrorists, and injured approximately 120. Five of the victims killed were U.S. citizens. The attacks centered on the check-in counters of the Israeli airline El Al. Libyan leader Muammar Qaddafi praised the terrorists, thus contributing to tensions between his nation and the United States. (See Feb 11, 1986.)

***1986**

Jan 7, 1986: The **first helicopter flight simulator certificated by the Federal Aviation Administration was commissioned** at the Bell Helicopter plant in Hurst, Texas, for use in Bell 222 helicopter training and proficiency checks.

Jan 9, 1986: FAA published a **rule requiring passenger-carrying airliners to carry a medical kit** in addition to the basic first aid kits already mandated. The agency estimated that roughly 21 in-flight deaths occurred annually, most involving persons already suffering from terminal illnesses. FAA expected that about 10 percent of the in-flight deaths would be prevented by the new rule, which became effective Aug 1, 1986.

Jan 23, 1986: **Northwest Airlines announced that it would buy Republic Airlines**. DOT approved the merger on Jul 31, 1986.

Jan 28, 1986: The **space shuttle Challenger exploded** shortly after liftoff from Cape Canaveral. The accident killed all seven persons aboard and dealt a severe blow to the U.S. space program. No further shuttle flights took place until Sep 29, 1988.

Feb 10, 1986: FAA formally established the **National Aviation Safety Inspection Program (NASIP)**, a plan to continue on a more systematic basis the kind of in-depth inspections begun under the National Air Transportation Inspection, or NATI (see Mar 4, 1984). An inspection of Eastern Air Lines already begun in Dec 1985 became part of NASIP (see Mar 7, 1986). The program also included inspections targeting airlines operating under military charter, an emphasis that fulfilled a directive issued by the Secretary of Transportation in the wake of a crash in Newfoundland (see Dec 12, 1985). NASIP inspections during fiscal 1986 included 18 carriers providing military charter flights, as well as 20 turbine engine repair

stations. The program was then redefined annually, as were the certificate holders targeted for inspections, and special emphasis inspections were conducted as circumstances warranted.

Feb 11, 1986: The Department of Transportation released an order **suspending commercial aviation relations with Libya**. The action made final a tentative order issued in response to a Jan 7 Presidential directive which declared Libya a threat to U.S. security. Tensions between the two nations continued to grow, fed by events that included naval clashes and a bombing in Germany in which a U.S. soldier was one of the two fatalities. On **Apr 15, the confrontation culminated in a U.S. air raid against Libya**. (See Dec 27, 1985, and Apr 15, 1992.)

Feb 12, 1986: FAA commissioned the **first "family" group of automated flight service stations (AFSSs)**, at airports in Cleveland, Ohio, Dayton, Ohio, and Bridgeport, Conn. The group of stations used the Model 1 Flight Service Automation System (see Oct 2, 1981). They were linked by dedicated communications lines with a Central Flight Service Data Processing System (FSDPS) at the Cleveland Air Route Traffic Control Center. Computer terminals at the three automated stations gave flight service specialists quick access to weather information, flight plans, and other data continually fed into the FSDPS. The commissioning was part of FAA's long-range plan to consolidate all its flight service stations into 61 automated facilities. **On Sep 28, 1987, FAA completed the first phase of the AFSS program** as it commissioned the 37th and final AFSS planned to receive the initial version of the Model 1 system. In Feb 1987, meanwhile, Congress had approved development of the Model 1 Full Capacity system in place of the Model 2 system that FAA had originally planned. (See Nov 1982, and Nov 8, 1991)

Feb 20, 1986: Transportation Secretary Dole announced a comprehensive **review of domestic airport security** to be coordinated by her Safety Review Task Force (see Aug 16, 1985). The Task Force submitted its initial recommendations in August 1986, and FAA responded with a range of actions to improve security training and planning, and to tighten access to secure areas.

Feb 24, 1986: Financially troubled **Eastern Air Lines tentatively accepted a buy-out offer by Texas Air**. The board's decision followed labor negotiations in which Eastern's pilots agreed to make concessions but the union representing machinists and mechanics demanded replacement of chairman Frank Borman. Following the purchase agreement, Borman remained as Eastern's head until his resignation in June. (See Oct 1, 1986.)

Feb 1986: FAA completed acceptance testing for new **Flight Data Input/Output (FDIO) equipment**. FDIO, which provided a modernized method of transmitting and updating flight plan information, was delivered to 11 air route traffic control centers and their associated terminals during fiscal 1986. By the end of FY 1987, FAA had accepted delivery of FDIO equipment to all enroute and terminal control facilities; the first system became operational in Dec 1989.

Mar 1, 1986: **Trans World Airlines acquired Ozark Airlines** under an agreement that received Department of Transportation approval in September. Ozark had begun flying in 1950 and expanded within the Midwest, then grew beyond that region with the introduction of airline deregulation in the late 1970s. The airline had encountered economic difficulties, beginning in 1984. Ozark's operations merged into those of TWA on Oct 26, 1986.

Mar 7, 1986: **FAA proposed a $9.5 million civil penalty against Eastern Air Lines**, by far the largest penalty the agency had proposed to that date, for safety violations revealed during an inspection from Dec 3, 1985, through Feb 20, 1986. Eastern objected to the fine, but in Feb 1987 agreed to pay. Meanwhile, **on Aug 22, 1986, FAA announced that Pan American would pay $1.95 million for safety violations** revealed by an inspection that began in March. This was the largest penalty actually levied by FAA to that date, but smaller than the $3.9 million originally proposed to Pan Am for these violations.

Mar 13, 1986: FAA activated the domestic message portion of a computerized system to collect, process, and distribute notices to airmen (NOTAMs) throughout the U.S. airspace system and abroad. This completed the commissioning of the **Consolidated NOTAM System (CNS)**, culminating a two-year implementation effort that began in Feb 1984 when the international messages subsystem of CNS came on line.

Mar 15, 1986: FAA Administrator Engen and the Chinese Civil Aviation Administration Director signed a **U.S.-Chinese agreement on cooperation in civil aviation**. The agreement covered a wide range of

activities including the exchange of scientific and technical information and personnel, cooperation in research and development, and the provision of training and other technical assistance. (See May 5, 1985, and Mar 31, 1995.)

Mar 14, 1986: FAA announced the choice of Embry Riddle Aeronautical University to provide a **new management training facility** to replace the existing school at Lawton, Okla. (see May 3, 1971). After building the new school at Palm Coast, Fla., Embry Riddle operated the facility for FAA under a 20 year contract, while FAA awarded separate contracts for instructional services. FAA dedicated the new school, named the **Center for Management Development (CMD)**, on Oct 15, 1987, and the first class began four days later.

Mar 26, 1986: FAA announced a contract to **upgrade the New York Radar Approach Control (TRACON) Facility**, which provided radar service to aircraft approaching and departing the major hubs and designated satellite airports in the New York area. The existing facility used a special ARTS IIIA Automated Radar Terminal System capable of tracking 1,200 radar targets at one time. This would be upgraded to a unique ARTS IIIE able to simultaneously track 1,700 targets. The second stage of the enhancement would allow tracking of 2,800 targets, with a capability of expanding to 3,400 targets if needed. (See Jan 10, 1981, and Sep 20, 1991.)

Mar 1986: FAA commissioned the first **second-generation common radar digitizer, known as CD-2**, for operational use (see Apr 6, 1979). The first two CD-2s had been delivered to the FAA Academy on Feb 11, 1983, and the first field delivery took place in May 1984.

Apr 2, 1986: **A bomb hidden under a seat cushion exploded aboard a TWA 727** on approach to Athens, Greece, creating a hole in the fuselage four feet in diameter. The blast killed four passengers and injured nine others, but the aircraft landed safely. The bomb was **similar to one that exploded on Aug 11, 1982**, aboard a Pan American 747 flying from Japan to Hawaii, killing 1 person and injuring 15.

Apr 15, 1986: In a move to consolidate aviation medicine expertise and responsibilities, **FAA transferred direction of the Civil Aeromedical Institute (CAMI)** from the Director of the Aeronautical Center to the Federal Air Surgeon. (See Sep 30, 1966.)

Apr 29, 1986: **Direct airline service between the United States and the Soviet Union resumed** after an interruption of over four years (see Dec 29, 1981). The flights resulted from an agreement announced soon after the Nov 1985 summit meeting of President Reagan and Soviet leader Mikail Gorbachev. (See Feb 16, 1990.)

May 16, 1986: FAA published a rule **upgrading fire safety standards for cargo or baggage compartments** in future transport category aircraft by establishing new fire test requirements. The regulation also limited the volume of Class D compartments (those not readily accessible to crewmembers or equipped with built-in fire extinguishers, but instead designed to control fire by restricting oxygen). The rule stemmed from a testing project undertaken at the FAA Technical Center in the wake of a Saudi Arabian in-flight fire (see Aug 19, 1980) and from a rulemaking proposal published in Aug 1984. (See Feb 10, 1989.)

Jun 2, 1986: FAA and the Coast Guard concluded a Memorandum of Agreement outlining the roles of each agency in developing the **LORAN-C navigation system** for use by civil aviators (see Aug 23, 1984). In an updated edition of the National Airspace System (NAS) Plan issued that same month, FAA included a new project for LORAN-C, an interim, supplemental radio navigation system providing at least single-level coverage for instrument flight rules (IFR) navigation for the contiguous U.S., eventually including the "midcontinent gap" not covered by existing transmitters. FAA would provide procurement funds, while the Coast Guard would operate and maintain the transmitters. Nonprecision LORAN-C approaches would also be supported where signal requirements were met, and FAA therefore planned to acquire and operate equipment to check the quality of LORAN-C signals. In Oct 1986, the agency awarded a contract for the first 112 of these signal monitors. (See May 14, 1991.)

Jun 18, 1986: A Bell 206B helicopter and a DHC-6 Twin Otter airplane **collided while conducting air tours over the Grand Canyon National Park**, killing all 25 persons aboard the two aircraft. The National Transportation Safety Board listed the probable cause as the failure of both flightcrews to see and avoid each other for undetermined reasons. As contributory factors, the Board listed: failure of FAA oversight

regarding Grand Canyon flights; National Park Service influence over route selection by air tour operators; and modification of helicopter routes to intersect those used by fixed-wing aircraft. On Dec 9, 1986, FAA published a proposal to establish special temporary flight restrictions above the Canyon, to be followed by a permanent rule addressing the safety and noise issues associated with operations over the park. (See Mar 26, 1987.)

Jun 20, 1986: A directive issued this date established a new **Office of Science and Advanced Technology** reporting directly to the Administrator. The office was later abolished by a directive issued on Aug 29, 1988.

Jul 6, 1986: President Reagan proclaimed this to be National Air Traffic Control Day in honor of the **50th anniversary of Federal involvement in controlling air traffic** (see Jul 6, 1936). FAA personnel throughout the nation observed the occasion with ceremonies and celebrations.

Jul 21, 1986: FAA published a rule setting **stricter flammability standards for materials used in cabins** of existing and future airliners with 20 or more passenger seats. The new standards required use of fire resistant and slower-burning materials for cabin sidewalls, ceilings, partitions, storage bins, galleys, and other interior structures. Establishment of such standards had been one of the recommendations of the Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee (see Sep 10, 1980). The necessary research had been conducted primarily at the FAA Technical Center, and further toxicity studies had been carried out at the agency's Civil Aeromedical Institute (CAMI). The new rule was effective on Aug 20, 1986, but prescribed a phased compliance schedule stretching over four years.

Aug 5, 1986: In an example of action under the International Security Development and Cooperation Act (see entry for Jun 14, 1985), **the Department of Transportation announced that Manila airport in the Philippines did not maintain effective security standards**. Airlines were required to inform passengers buying tickets for Manila of this determination. Following an FAA team's inspection, the Department on Sep 2 announced that the airport now met international security standards.

Aug 13, 1986: The National Academy of Sciences issued a **report on airliner cabin air quality and related safey issues**. The report had been mandated by Congress in 1984. Its most controversial recommendation was a ban on smoking on all domestic commercial flights (see Apr 23, 1988). The authors cited four major reasons: to lessen discomfort to passengers and crew; to reduce potential health hazards to cabin crewmembers from environmental tobacco smoke; to eliminate possible fires; and to align cabin air quality with standards for other closed environments. Further recommendations included an FAA review of carbon dioxide standards, which eventually resulted in a 1996 rule lowering the allowable concentration of this gas for occupied areas of transport aircraft from 3.0 to 0.5 percent. The report's other suggestions included FAA consideration of requiring additional protective breathing equipment for use during in-flight fires aboard airliners (see May 26, 1987).

Aug 21, 1986: FAA's Air Route Traffic Control Centers handled 112,467 en route operations, the **highest single-day traffic** to that date. Record operations levels at many facilities in fiscal 1986 helped to create a 19.85 percent **increase in delays** as compared to the previous year. During the fiscal year, FAA proceeded with implementation of a **Traffic Management System** integrating certain air traffic control functions to create a more orderly traffic flow. Work also continued on the **Expanded East Coast Plan**, the first phase of which was scheduled for implementation in 1987 (see Feb 12, 1987). Under development since 1982, the plan was designed to alleviate congestion in the New York area and associated airspace through the use of additional departure routes and other techniques. During fiscal 1986, FAA also deployed mobile "tiger teams" of personnel with expertise in a variety of air traffic control disciplines to improve traffic management in areas experiencing delays.

Aug 31, 1986: **A Mexican DC-9 and a Piper PA-28 collided in clear sky over Cerritos, Calif.** The Piper had inadvertently made an unauthorized entry into the Los Angeles Terminal Control Area (TCA), and its radar return was not observed by the controller providing service to the Mexican flight. The accident killed 82 persons--all 64 aboard the DC-9, all 3 aboard the Piper, and 15 on the ground. The National Transportation Safety Board later listed the probable cause as the limitations of the air traffic control system to provide collision protection, through both air traffic control procedures and automated redundancy.

The Cerritos accident was the first midair collision to occur within a TCA. On Sep 15, FAA Administrator Engen appointed a special task force to study **actions to improve the TCAs**. On Oct 27, the

agency announced plans to implement the group's 40 recommendations, including: a minimum 60-day license suspension for pilots violating TCA boundaries (see Oct 10, 1986); expanded requirements for altitude encoding transponders (see Jan 29, 1987); and action to simplify and standardize the design of TCAs (see Jan 12, 1989).

Sep 5, 1986: **At Karachi, Pakistan, four men dressed as security guards stormed a Pan American 747**. The flight crew escaped, but the four terrorists demanded a crew to fly them to Cyprus. They killed an American passenger during the ensuing 17 hour negotiations. When the lights aboard the aircraft failed, the terrorists began a massacre, killing 22 persons and injuring 125 before being arrested.

Sep 1986: AN FAA/Air Force review board endorsed specifications for a **new long-range Air Route Surveillance Radar, designated ARSR-4**, for use at joint surveillance sites. On Jul 25, 1988, FAA announced that it had awarded Westinghouse a $271.6 million contract for 34 ARSR-4s. The new three-dimensional, solid state equipment would replace the 25- to 30-year-old Joint Surveillance radars, improving detection and reducing the clutter from terrain, weather, and other sources. The Air Force and FAA shared the cost of all but one of the ARSR-4s, which the Navy purchased. FAA began initial testing of the new radar during fiscal 1992. (See Jun 25, 1979, and Apr 12, 1996.)

Oct 1, 1986: **DOT gave final approval for Frank Lorenzo's Texas Air holding company to acquire Eastern Air Lines** (see Feb 24, 1986), with Lorenzo becoming Eastern's chairman on Oct 15. The Department had earlier rejected the merger on Aug 26, but reversed itself following an agreement safeguarding Pan American's role as a competitor on the Boston/New York/Washington shuttle routes. **On Oct 24, DOT gave final sanction to Texas Air's acquisition of People Express** and most of the assets of People's bankrupt subsidiary, Frontier Airlines. A no-frills airline, People Express had grown rapidly after staring operations on Apr 30, 1981, but had begun to experience heavy losses in 1985. (See Feb 1, 1987.)

Oct 9, 1986: FAA announced an agreement with the National Aeronautics and Space Administration for a joint program to develop basic requirements for an **airborne wind shear detection and avoidance system**. The program's goal was a predictive alert system that could "look ahead" of the aircraft, as distinguished from already-available systems that reacted when wind shear was encountered. (See Aug 2, 1985, and Sep 22, 1988.)

Oct 10, 1986: FAA issued an enforcement bulletin implementing a **60-day suspension of the certificate of any unauthorized pilot who entered a Terminal Control Area (TCA)**. The agency could seek harsher actions, including a $1,000 civil penalty, if there were aggravating circumstances, such as causing a near midair collision while illegally within a TCA. (See Aug 31, 1986, and Mar 5, 1990.)

Oct 21, 1986: FAA announced the award of two contracts to develop competing prototypes of the **Voice Switching and Control System (VSCS)**. The system would provide controllers at air route traffic control centers with computer-controlled voice switching for air-ground communications and well as intercom and interphone communications within and between FAA facilities. Compared to the existing electromechanical system, the new electronic VSCS would be faster, more reliable, and cheaper to maintain. Harris Corporation received the production contract on Dec 31, 1991. (See Jun 30, 1995.)

Oct 23, 1986: FAA announced the purchase of 19 turboprop Beech Super King Air Model 300 aircraft for its **flight inspection fleet** used to check the accuracy of air navigation and landing aids. Expected to be more fuel efficient and easier to maintain, the new aircraft were to replace a number of Saberliner Model 80s and all five of the agency's Jet Commander Model 1121 aircraft. Delivery began in Apr 1988. The purchase was part of a modernization process that was reducing the number and types of aircraft that FAA used for flight inspection and for other purposes. At its peak in FY 1964, the agency's total fleet had consisted of 116 aircraft of 24 different types. In FY 1987, the fleet would be reduced to 50 aircraft of 16 types. (See Jul 8, 1973 and Oct 1, 1991.)

Oct 30, 1986: President Reagan signed the Public Law 99-591, including Title VI, the **Metropolitan Washington Airports Act of 1986** authorizing the transfer of control of Washington National and Dulles International Airports to an independent regional authority under a 50-year lease (see Jun 8, 1984, and Jun 7, 1987). The authority was to be created by agreement between Virginia and the District of Columbia. It would be governed by a board of 11 members appointed by the Governor of Virginia (5), the Mayor of the District of Columbia (3), the Governor of Maryland (2), and the President (1). The law also prohibited

airlines from operating non-stop flights between Washington National and any airport more than 1,250 miles distant, a wider non-stop service perimeter than previously set by policy (see Dec 6, 1981).

Title V of P.L. 99-591, the **Aviation Safety Commission Act of 1986**, established for 18 months a commission of seven Presidentially appointed members to study how FAA might most effectively fulfill its functions. In April 1988, the commission released its final report, concluding that overall the nation's air transportation system was safe, but that the regulatory structure was inadequate to deal with future growth and technological change. The commission's recommendations included: the creation of an independent federal aviation authority with a separate safety director; increased safety inspections; tighter regulation of commuter aircraft operations; mandatory use of Mode C transponders for general aviation aircraft flying near hub airports; and a set term for the FAA administrator.

Oct 31, 1986: In a restructuring of the organizational complex under the Associate Administrator for Aviation Standards, the **Office of Flight Operations was retitled the Office of Flight Standards**. The **Rotorcraft Program Office, which had been disbanded on Mar 7, was formally abolished** and its functions divided between the Office of Flight Standards and the Office of Airworthiness. Certain other adjustments in the responsibilities of these two offices also took effect.

Nov 16, 1986: Effective this date, **a Department of Transportation order ended air service between the U.S. and South Africa**, as required by the Comprehensive Anti-Apartheid Act of 1986. (See Aug 8, 1991.)

Dec 23, 1986: Dick Rutan and Jeana Yeager became the **first aircraft pilots to circle the globe without landing or refueling** when their experimental airplane Voyager touched down at Edwards Air Force Base, Calif., after covering 25,000 miles in nine days. The aircraft had a propeller at each end of its fuselage, and was equipped with a main wing nearly 111 feet long as well as a smaller forward wing. Voyager took off on Dec 14 with 1,200 gallons of fuel and landed with only eight gallons of usable fuel remaining.

*1987

Jan 28, 1987: Secretary of Transportation Elizabeth Hanford Dole announced a three-part **effort to help reduce airline delays**. The initiative included: a proposal to grant immunity to the airlines to permit them to conduct joint discussion aimed at adjusting schedules; an investigation to determine if and how airline scheduling processes contributed to delays; and a series of FAA actions to increase system capacity and efficiency. Those FAA steps included the use of computer traffic models to help airlines adjust schedules, a realignment of the air traffic control sectors in the New York/Boston corridor, a review of air traffic procedures on a facility-by-facility basis, and the transfer of additional controllers to the busiest facilities.

Jan 29, 1987: FAA issued a **rule establishing requirements pertaining to the use, installation, inspection, and testing of transponders** in U.S.-registered civil aircraft. The rule continued the requirement that aircraft be equipped with a transponder for operation in Terminal Control Areas (TCAs) and in the airspace of the 48 contiguous states above 12,500 feet above ground level (see Nov 1, 1985). The requirement for automatic pressure altitude reporting (Mode C) equipment, currently mandatory in all of the above airspace except Group II TCAs, was extended to include Group II TCAs, effective Dec 1, 1987 (see Jun 21, 1988). The rule also contained provisions intended to provide for **transition from Air Traffic Control Radar Beacon System (ATCRBS) transponders to Mode S transponders** (see Oct 5, 1984). All transponders newly installed in U.S.-registered aircraft were required to be Mode S transponders after Jan 1, 1992, a deadline that was subsequently extended to Jul 1, 1992. (See Jul 30, 1992.)

Feb 1, 1987: **The Texas Air holding corporation merged New York Air and People Express into Continental Airlines**.

Feb 2, 1987: FAA's Federal Air Surgeon resigned and was reassigned at his own request to help end a **controversy over airmen certification**. Critics had charged that the Federal Air Surgeon had granted waivers to commercial pilots whom they considered medically unfit to fly.

Feb 12, 1987: FAA initiated Phase 1 of the **Expanded East Coast Plan (EECP)** to help increase the capacity of the National Airspace System (see Aug 21, 1986). The plan had been originally intended to relieve traffic congestion in the New York and Washington, D.C., areas through the more effective use of

airspace, but was expanded to cover the airspace from Maine to Florida and west to Chicago. The EECP: created new departure and arrival routes; established separate paths and altitudes for jets and slower propeller aircraft; set up new city-pair routes; and used new traffic management techniques to increase airport departure flows and reduce holding procedures. The agency initiated Phase II of plan on Nov 19. That phase involved a realignment of the northwest departure quadrant from the New York Metropolitan area. The agency also increased the number of westbound high-altitude, routes from one to four to expedite traffic flows to Chicago, Detroit, and the west coast. The final phase of the EECP, implemented on Mar 10, 1988, was designed to improve traffic flow from the New York area to the northeast, and involved changes affecting the airspace in New England, New York, Philadelphia, Baltimore, and Washington, D.C. (See Aug 25, 1988.)

Feb 17, 1987: FAA added a **new commuter category of aircraft** and set forth the airworthiness and operating rules, certification procedures, and noise rules for that additional category of propeller-driven, multi-engine airplane, with a seating capacity of no more than 19, and a takeoff weight of no more than 19,000 pounds.

Feb 17, 1987: DOT announced a **program designed to identify and prosecute pilots who failed to declare drug or alcohol-related convictions** on medical certificate applications. (See Apr 17, 1985, and Jul 26, 1990.)

Feb 23, 1987: In the wake of a series of fatal accidents, FAA began a 60-day **surveillance of civilian air ambulance programs**. Agency inspectors investigated equipment, maintenance, training, and pilots' hours. The program was followed by publication of new safety guidelines for emergency medical service helicopters.

Feb 28, 1987: **General William F. McKee died** in San Antonio, Tex. After serving as FAA's third Administrator (see Jul 1, 1965), McKee had been a partner in a consulting firm before retiring.

Mar 18, 1987: **Donald D. Engen announced his resignation as FAA Administrator**, effective in July (the exact date became July 2). On Engen's departure, the position of Acting Administrator was filled by Robert Whittington, Director of the New England Region. (See Jul 22, 1987.)

Mar 18, 1987: The first revenue flight of an airplane equipped with an operational **TCAS II version of the Traffic Alert and Collision Avoidance System** occurred (see Jun 23, 1981). Two airliners began an in-service evaluation of the system on **Jan 31, 1988, marking the start of FAA's TCAS II Limited Installation Program**. Three airlines participated in the program, which was designed to resolve any outstanding technical and operational questions about the system's use in regularly scheduled service. (See Jan 10, 1989.)

Mar 25, 1987: FAA published a **rule requiring Cockpit Voice Recorders on new jet and turboprop commuter aircraft** manufactured after May 26, 1989 (see Jun 26, 1964). The rule also mandated the installation of **more sophisticated digital Flight Data Recorders on about 2,000 older large commercial jets**, with compliance also by May 26, 1989. (See Aug 12, 1970, and Jun 30, 1988.)

Mar 26, 1987: FAA published a special rule addressing **aviation safety and noise concerns at the Grand Canyon** (see Jun 18, 1986). Provisions included: a temporary Special Flight Rule Area limiting operations below 9,000 feet mean sea level above the Canyon; prohibition of flights below the Canyon rim, with some exceptions; and requirements aimed at reducing the risk of midair collisions and terrain impact. Another rule, published on Jun 15, 1987, modified and extended these temporary provisions. **On Aug 18, 1987, enactment of Public Law 100-91 mandated a study of aircraft noise impacts at a number of national parks and required flight restrictions at three parks**: Grand Canyon, Yosemite, and Haleakala. The law specified that FAA would prepare and issue a final plan for air traffic management above the Grand Canyon, based on recommendations from the Interior Department. On Jun 2, 1988, FAA published a rule implementing Interior's preliminary recommendations, with some modifications. Among other provisions, this rule: raised the ceiling of the Special Flight Rule Area to 14,500 feet mean sea level; established flight-free zones from the surface to 14,500 feet above large areas of the park; and provided routes for commercial tour operators and transient operators through the canyon area. The rule was to expire after Jun 15, 1992, but was given two extensions totaling five years to allow for completion and review of National Park Service studies of the Canyon noise issue. On Jun 19, 1992, meanwhile, a crash claiming 10

lives continued a series of fatal accidents in the Canyon vicinity. The accidents prompted FAA to establish a new geographical unit to help oversee the area's air tourism. (See Mar 17, 1994.)

Apr 1, 1987: **Western Airlines merged into Delta Air Lines**.

Apr 1987: Completion of a construction project at the Miami Air Route Traffic Control Center early this month marked the **conclusion of a nationwide ARTCC expansion program**. (See Sep 26, 1984).

May 14, 1987: President Reagan announced his **nomination of Lawrence M. Hecker as FAA's Deputy Administrator**. The nominee was a former pilot and vice president of flight operations for Western Airlines. **Hecker withdrew his candidacy in September** because the Senate failed to act on the nomination.

May 17, 1987: FAA began using the **Aircraft Situation Display (ASD)** at its Central Flow Control Facility at Washington Headquarters. ASD provided traffic managers with a near real-time visual display of en route aircraft operating under instrument flight rules nationally, regionally, or to a specific airport terminal area. The information was provided by more than 100 long-range radars across the country. On July 25, 1988, FAA announced the addition of **Monitor Alert** to ASD. Monitor Alert was a computer system designed to analyze flight plans and project when and where airspace congestion was likely. By May 1994, FAA had installed ASD at 41 en route and terminal facilities. (See Dec 31, 1983, and Nov 15, 1990.)

May 19, 1987: **USAir absorbed Pacific Southwest Airlines. On Oct 30, DOT announced its approval for USAir's proposed acquisition of Piedmont Airlines**. Formal merger of the two airlines' parent companies occurred on Aug 5, 1989, and full integration of Piedmont Airlines into USAir was not completed until Feb 1, 1990.

May 20, 1987: FAA Administrator Donald Engen announced that the agency had formally adopted a new policy that permitted **instrument landing systems (ILS)** to be installed at some hub and reliever airports. FAA had earlier imposed a freeze on installation of ILS in favor of **microwave landing systems (MLS)**, but Engen said that more ILSs would help address the problem of limited airport capacity in the short run. (See Jan 12, 1984, and Apr 6, 1989.)

May 26, 1987: A new FAA regulation required airline operators to equip all large passenger aircraft with **protective breathing equipment (PBE) for flight attendants** to use in fighting in-flight fires, and to provide training in PBE use. The rule applied the same performance standards to this equipment as to the PBEs already required for cockpit crew members. FAA had proposed the rule in Oct 1985 in response to National Transportation Safety Board recommendations and to several in-flight fires. FAA originally gave airlines two years to comply with the regulation, but subsequently granted extensions to Jan 31, 1991, for PBE installation and to Jul 31, 1992 for training. (See Mar 29, 1985.)

May 29, 1987: **FAA commissioned the first of its Host Computer Systems** at the Seattle air route traffic control center (ARTCC). **On Jun 23, 1988, the agency commissioned the last of the systems** at the Salt Lake City ARTCC, completing the Host implementation program at all 20 continental ARTCCs. (See Jul 26, 1985.)

Jun 5, 1987: FAA published a rule requiring airlines to develop and use approved **programs to control the amount and size of carry-on baggage**, with compliance by Jan 1, 1988. The agency specified that airlines must ensure that passengers did not bring excessive luggage aboard, and that all luggage was safely stowed prior to closing the last cabin door when preparing for takeoff. FAA's regulation of carry-on bags had begun with a Sep 1967 requirement that passengers could take to their seats only items that could be securely stowed under a seat. The rules had subsequently evolved as cabin interiors changed.

Jun 7, 1987: The **Metropolitan Washington Airport Authority (MWAA) took over management of National and Dulles airports from FAA**. The MWAA had been created by the Metropolitan Washington Airports Act (see Oct 30, 1986). Under the terms of a lease agreement with the Federal government, the new authority would operate the two airports for 50 years and would pay the government a total of $150 million for the lease period. Almost 700 FAA employees left the agency to join the MWAA, and a directive issued on Oct 26, 1987, abolished FAA's Metropolitan Washington Airports organization.

Jun 12, 1987: FAA commissioned its new **National Concepts Development and Demonstration Heliport** at the Technical Center. The research heliport was fully equipped with such items as a microwave landing system, an automated weather observing system, precision approach path indication lights, and reconfigurable landing lights.

Jun 19, 1987: The Federal Labor Relations Authority **certified the National Air Traffic Controllers Association (NATCA)** as the exclusive representative of all GS-2152 series terminal and center controllers whose primary duty was separation of aircraft. The controllers had voted for representation by a margin of 7,494 to 3,275, using mail ballots sent to them on May 6. The Authority had announced the outcome on Jun 11. (See Jul 2, 1982, and May 1, 1989.)

Jul 1, 1987 **AirCal merged into American Airlines**. AirCal had begun flying in Jan 1967 as an intrastate carrier called Air California, then expanded to destinations outside the state in 1978. The airline had adopted the name AirCal in 1981.

Jul 22, 1987: **T. Allan McArtor became the tenth FAA Administrator**, succeeding Donald D. Engen (see Apr 10, 1984). McArtor took the oath a second time in a public ceremony on Jul 27. President Reagan had announced the new Administrator's appointment on Jun 5, and the Senate had confirmed it on Jul 17.

Born in 1942 in St. Louis, Mo., McArtor received a B.S.E. from the U.S. Air Force Academy in 1964 and a M.S.E. in engineering mechanics from Arizona State University in 1971. He served as a fighter pilot in Vietnam, logging 200 combat missions and winning the Silver Star and Distinguished Flying Cross. McArtor flew with the Air Force Thunderbirds precision flying team from 1972 to 1974. He joined the Federal Express Corporation in 1979, and was senior vice president for telecommunications at the time of his selection to head FAA. He had also chaired the Department of Transportation Commercial Space Transportation Advisory Committee from June 1986 to June 1987. McArtor served as FAA Administrator for over 18 months, resigning during the first month of the Bush Administration. (See Feb 17, 1989.)

Jul 27, 1987: During a public ceremony in which he took the oath as FAA Administrator a second time, Allan McArtor described his **plan to restore public confidence in the aviation system through a set of initiatives later dubbed Impact 88**. In a speech on Sep 15, McArtor outlined these eight initiatives, which were to be revealed in more detail during the succeeding weeks. Focusing on fiscal 1988, the program was to enhance aviation safety in the areas of airline accountability, aircrew performance, airspace capacity, advanced technology, aviation awareness, air transportation security, airport development, and agency effectiveness. Among the elements of Impact 88 were reviews of training for pilots and air traffic controllers, and an inspection of the aircraft manufacturing industry (see Sep 21, 1987).

Aug 16, 1987: **A Northwest Airlines MD-80 crashed on takeoff at Detroit**, killing all but one of the 157 persons aboard as well as two persons on the ground. The National Transportation Safety Board (NTSB) cited the probable cause as the crew's failure to use the taxi checklist to ensure that the flaps and slates were extended for takeoff. A contributory factor was an unexplained absence of power to the airplane takeoff warning system. FAA actions in response to the accident and to NTSB recommendations included required changes to MD-80 warning systems and steps aimed at improving flightcrew performance.

Aug 19, 1987: Effective this date, a **Special Federal Aviation Administration Rule (SFAR) altered the Los Angeles, Calif., terminal control area (TCA)**. The rule raised the upper limits of the TCA from 7,000 to 12,500 feet above mean sea level to enable air traffic control to provide terminal air traffic control service to arriving and departing aircraft in the TCA. The action also eliminated the visual flight rule (VFR) corridor in one area of the TCA to minimize the mix of controlled and uncontrolled operations in the vicinity of Los Angeles (see Aug 31, 1986, and Mar 10, 1988).

Sep 1, 1987: AN FAA rule issued this date required: that 12-inch high nationality and registration marks be displayed on all aircraft that penetrate and Air Defense Identification Zone (ADIZ) or Defense Early Warning Identification Zone (DEWIZ); that an identification data plate be displayed on the exterior of each U.S.-registered civil aircraft; and that operators of aircraft modified to carry fuel tanks within the passenger or baggage compartment keep a copy of the form authorizing that modification on board. A related rule, issued Oct 5, 1988, required transponder-equipped aircraft to have their transponders turned on during flights into or out of the United States penetrating an ADIZ. The rule also established flight plan and position report requirements for operations penetrating the ADIZ around the contiguous 48 states. Both rules were a response to concerns raised by the U.S. Customs Service in 1985, and FAA stated that they

were **actions to combat hazards resulting from airborne drug smuggling**. (See Apr 22, 1982, and Mar 6, 1990.)

Sep 2, 1987: DOT announced a rule directing all **major air carriers to file regular monthly reports on their delay and baggage-handling records**.

Sep 9, 1987: DOT announced that within the current week it would begin **random urinalysis testing to detect drug abuse among departmental employees** in jobs directly affecting safety and security. (FAA already had a drug testing program for such employees, but it did not involve random tests: see Aug 16, 1985.) DOT's initiative was the first such program to be implemented department-wide under President Reagan's Executive Order of Sep 15, 1986, calling for a drug-free Federal workplace. (See Nov 21, 1988.)

Sep 21, 1987: Administrator McArtor announced that FAA would begin a **special inspection of the U.S. aircraft manufacturing industry** to ensure that the companies were following proper procedures and had updated their techniques to keep up with technology (see Jul 27, 1987). On Jan 13, 1989, the agency completed these **Operation Snapshot** inspections of 88 manufacturers.

Sep 27, 1987: **California became the first state to ban smoking on all intrastate trips by airline, bus, or train.** In addition, the bill required that at least 75 percent of the space in airports and public transit centers be set aside for nonsmokers. The bill became effective Jan 1, 1988. (See Apr 23, 1988.)

Oct 1, 1987: **Elizabeth Hanford Dole resigned as Secretary of Transportation** and Deputy Secretary James H. Burnley became Acting Secretary. Before becoming Deputy Secretary, Burnley had been the Department's General Counsel and had previously been an Associate Deputy Attorney General at the Justice Department. President Reagan nominated him for the top post at Transportation shortly after Dole's resignation. **On December 3, Burnley became Secretary of Transportation**. He served the remainder of the Reagan Administration, resigning effective Jan 20, 1989.

Oct 20, 1987: Intercom announced that New England Region Director **Robert Whittington had been designated Executive Director, a new position at FAA's national headquarters**. The departure of Deputy Administrator-designate Lawrence M. Hecker (see May 14, 1987) had created a void that the new position was intended to help fill. The new Executive Director, who reported to the Administrator, provided direction and guidance to the operating elements and to the regions and centers. The position was formally established by a directive issued on Feb 29, 1988. (See Jun 16, 1988.)

Oct 28-30, 1987: Administrator McArtor met a group of air traffic controllers in Atlanta in the **first of a series of Employee Focus Group meetings**, an approach to problem solving in which personnel in various specialties met directly with top managers.

Nov 9, 1987: FAA issued a major **revision of its airport certification regulations** for airports served by air carriers with aircraft having a seating capacity of more than 30 passengers. The new regulations, designed to improve safety standards, included: strengthening fuel handling and storage requirements; making airport tenants responsible for quality control of aircraft fueling operations; requiring that firefighting and rescue vehicles be equipped with two-way radios; mandating that at least one firefighting employee trained in emergency medical care be on duty during air carrier operations; and increasing restrictions on access of ground vehicle traffic to operational areas.

Nov 15, 1987: **A Continental Airlines DC-9 crashed on takeoff at Denver Stapleton airport**, killing 28 of the 82 persons on board. The National Transportation Safety Board cited the probable cause of the crash as the captain's failure to have the airplane deiced a second time after a delay before takeoff. Contributing factors listed by the Board included the absence of regulatory or management controls governing operations by newly qualified flightcrew members and the confusion that existed between the flightcrew and air traffic controllers that led to the delay in departure. (See Dec 12, 1985 and Mar 22, 1992.)

Dec 7, 1987: **A Pacific Southwest BAe 146 jet crashed near Paso Robles, Calif.**, killing all 43 on board. Gunfire was heard on the cockpit recorder, and the authorities later determined that a vengeful former employee caused the crash. **On Dec 21, FAA ordered all airlines operating at U.S. airports to screen all their employees entering secure areas** with the same metal detectors and baggage x-ray equipment used for passengers.

Dec 19, 1987: Effective this date, FAA **required a positive baggage/passenger match on all international flights by U.S. airlines**. FAA had placed the same requirement on selected international flights since the summer of 1985.

Dec 30, 1987: President Ronald **Reagan signed the Airport and Airway Safety and Capacity Expansion Act, extending the authority for the Airport Improvement Program** (AIP) for an additional five years. The legislation authorized $1.7 billion each fiscal year through 1990 and $1.8 billion each year for fiscal years 1991 and 1992 (see Nov 5, 1990, and Oct 31, 1992). Other provisions of the act included: authorization for a **State Block Grant Pilot Program** (see Nov 24, 1976, and Oct 1, 1989); a requirement that ten percent of the funds available under AIP be expended with the Disadvantaged Business Enterprise Program; a redefinition of primary airports to include all airports emplaning more than 10,000 passengers annually; expenditures for soundproofing public schools and hospitals without a noise compatibility study; and establishment of a discretionary fund set-aside for projects to enhance systemwide capacity, safety, security, and noise compatibility.

The act **increased the maximum civil penalty** for each safety violation by an airline or other commercial operator from $1,000 to $10,000. The legislation also authorized a **two-year civil penalty demonstration program**, which began on this day, permitting FAA to adjudicate civil penalty cases not to exceed $50,000. Subsequent legislation granted the program two extensions, ending on Jul 31, 1990 (see Apr 13, 1990).

Dec 31, 1987: At the end of this day, **FAA completed its phased ban on all large transport and turbojet aircraft at the Phase I noise level**, with the exception of non-revenue flights permitted under certain circumstances through the end of 1989. (See Feb 18, 1980, and Nov 5, 1990.)

***1988**

Jan 1988: FAA commissioned its **first expanded network version of the Low Level Wind Shear Alert System (LLWAS)** at Denver Stapleton airport (see Aug 2, 1985). A second of the expanded-network systems was commissioned at New Orleans in Nov 1988. **In addition, the agency continued upgrading the standard six-sensor LLWAS units** to a version with full microburst detection capability and other improved features. **On Oct 11, 1991, a ceremony at Lexington, Ky., marked the completion of this upgraded LLWAS** at all 110 airports designated to receive it.

Feb 5, 1988: Effective this date, FAA issued the **first noise certification standards for new helicopter types** and banned modifications to current helicopters types that would increase noise levels.

Feb 8, 1988: FAA announced that it had **retired airplane registration number N16020, used by Amelia Earhart** when she disappeared on a flight over the Pacific Ocean (see Jul 2, 1937). The number had been recently held by Continental Air Lines, which had agreed to its retirement.

Mar 9, 1988 Secretary of Transportation James H. Burnley announced the creation of a **Secretary's Task Force on Internal Reforms of the FAA**, co-chaired by FAA Administrator McArtor and DOT's Assistant Secretary for Administration. The task force was charged with examining ways to eliminate marginal, non-safety expenditures and to improve the procurement process. It was instructed to place a high priority on reviewing FAA's regional structure, which Burnley described as outdated and a cause of inconsistency in interpreting national standards. On Apr 28, DOT and FAA announced that the task force's recommendations would include a variety of improvements in practices and procedures, including **"straightlining" of reporting relationships**. Under this arrangement, regional division managers in key programs would report to to Associate Administrators at national headquarters rather than to the Regional Directors. (See Sep 15, 1984, and Jun 16, 1988.)

Mar 10, 1988: Effective this date, FAA established a **special flight route through the Los Angeles terminal control area** (TCA) to accommodate general aviation aircraft wishing to transit the area. The action allowed small aircraft operating under visual flight rules (VFR) and carrying a Mode C transponder to follow the designated route through the TCA without the prior approval of Los Angeles approach control. The corridor was similar to one that had been closed effective Aug 19, 1987 (see that date).

Mar 16, 1988: Effective this date, FAA **included free-standing heliports in regulations on airport noise compatibility planning** that had previously applied only to heliports on public airports used by

fixed-wing aircraft. When their plans were approved, the free-standing heliports would be eligible to apply for benefits under the Airport Improvement Program.

Apr 1, 1988: **Barbara McConnell Barrett became FAA's Deputy Administrator**, succeeding Richard H. Jones (see Dec 13, 1984). A previous nominee, Lawrence M. Hecker, had withdrawn in September (see May 14, 1987).

Born in Indiana County, Pa., Barrett earned three degrees from Arizona State University (B.S., 1972; M.B.A, 1975; J.D., 1978). She held positions with Greyhound Corp. and Southwest Forest Industries, Inc., and in 1982 became Executive Assistant to the Chairman of the Civil Aeronautics Board. Barrett served as the Board's Vice Chairman, 1983-84. She then practiced law as a partner at the firm of Evans, Kitchel, and Jenckes in Phoenix, Ariz., until becoming the first woman to occupy the FAA's Deputy position. Barrett served the remainder of the Reagan Administration, and resigned effective Jan 20, 1989. (See Mar 12, 1990.)

Apr 5, 1988: FAA **decommissioned the last radar bright display equipment** being used at a domestic air route traffic control center when it shut down the unit at the Los Angeles Center. (See Apr 27, 1960.) On the same day, FAA **terminated the last broadband radar service**, when it stopped that service at the Paso Robles, Calif., long-range radar facility. FAA had gradually replaced the broadband with the Direct Access Radar Channel (see Feb 2, 1981).

Apr 15, 1988: Effective this date, FAA required **large air carriers to report each failure, malfunction, or defect of their emergency evacuation systems and components**.

Apr 23, 1988: Effective this date, FAA placed a **two-year ban on smoking on all domestic scheduled airline flights of two hours or less**. The rule, published ten days previously, responded to legislation that had been enacted in Dec 1987. The same legislation also imposed a $2,000 fine for tampering with smoke detectors in airliner lavatories, and FAA's rule required the posting of signs warning passengers of this penalty. (See Aug 13, 1986, and Feb 25, 1990.)

Apr 28, 1988: An 18-foot **gap opened in flight in the fuselage of a Boeing 737** operated by Aloha Airlines. Decompression swept a flight attendant through the opening, and 8 other persons were seriously injured. The plane made an emergency landing on the Hawaian island of Maui. In the immediate aftermath of the accident, FAA ordered inspections of 737-100 and 737-200 jets logging more than 55,000 landings and restricted those planes to 23,000-foot altitude until inspected. On May 23, 1989, the National Transportation Safety Board cited the probable cause of the accident as the Aloha maintenance program's failure to detect disbonding and fatigue damage. Contributary factors listed included Aloha management failings, FAA regulatory deficiencies, and Boeing's failure to ensure correction of certain 737 construction problems. The near disaster aboard the high-service, 19-year-old Aloha plane focused attention on the **issue of the airworthiness of aging airliners**. (See May 6, 1981, and Jun 1, 1988.)

May 8, 1988: A fire at an Illinois Bell Telephone Co. switching center drastically limited communications between the towers at Chicago's Midway and O'Hare airports, the Aurora air route traffic control center, and aircraft. The 56 hour **outage resulted in major air traffic delays** throughout the country (see Jan 4, 1991.)

May 17, 1988: Voters in Colorado approved a **measure that allowed the city of Denver to annex land for a new airport**, which would occupy 45 square miles. One year later, on May 16, 1989, the voters approved a referendum authorizing construction of the facility, which would be the country's first new major airport since Dallas-Fort Worth opened in 1974. FAA approved a $60 million grant for construction on Sep 27, 1989, and site preparation began the following day. Construction officially started on Nov 22, 1989. FAA announced it had approved an additional grant of $90 million on Mar 27, 1990, and on Apr 29, 1992, approved the collection of passenger facility charges at Stapleton International Airport to help finance construction of the new facility. The airport was originally scheduled to open in Oct 1993, but encountered a series of delays due to difficulties that included problems with the baggage handling system. (See Feb 28, 1995.)

Jun 1, 1988 FAA opened a three-day **international conference on the problems of aging airliners** attended by more than 400 participants. Concerns about the continued airworthiness of the many high-service aircraft in the air carrier fleet had been heightened by a recent accident (see Apr 28, 1988). The gathering led to the establishment of a government-industry task force on the issue, and to FAA actions that

included: increased research and development in the aging aircraft field; acquisition of expertise in non-destructive inspection techniques; consideration of new structural inspection programs for older commuter aircraft; the use of FAA teams to monitor maintenance checks on older aircraft; and rulemaking projects aimed at improving the safety of high-service airliners (see Mar 7, 1990). The conference became the first in a series of such meetings.

Jun 2, 1988: After a six week **review of Texas Air Corp. and its subsidiaries, Eastern and Continental Airlines**, Secretary of Transportation James Burnley announced that the airlines were currently operating safely. He noted however, that **labor-management hostility at Eastern** was at an unprecedented level. To prevent this tension from threatening Eastern's future safety, Burnley had asked former Secretary of Labor William E. Brock to mediate the situation. (See Mar 4, 1989.)

Jun 14, 1988: FAA issued its **first certificate to a major all-composite aircraft, the Beech Starship,** a business-class turboprop seating between seven and ten.

Jun 16, 1988: Administrator McArtor announced a **reorganization of FAA's senior management structure**, building upon recommendations by the Secretary's Task Force on Internal FAA Reform (see Mar 9, 1988). The reorganization's aims were to: improve communications, coordination, and management oversight of FAA's technical modernization and other activities; reduce unnecessary reporting relationships; and allow Washington headquarters to handle increased authority over field operations. Effective Jul 1, 1988, **FAA increased the number of Executive Director positions from one to four** (see Oct 20, 1987, and Feb 21, 1990). The Executive Directors reported directly to the Administrator, and most of the agency's functions were consolidated under them. As described in a new directive issued on Feb 6, 1989, the four Executive Directors were responsible for the following organizational elements:

(1) **Executive Director for Policy, Plans, and Resource Management** (the new title of the former single Executive Director position). Reporting to this position were the:

(a) Associate Administrator for Policy, Planning, and International Aviation (responsible for the Europe, Africa, and Middle East Office and three other Offices: International Aviation; Aviation Policy and Plans; and Environment, later redesignated Environment and Energy);

(b) Associate Administrator for Human Resource Management (responsible for four Offices: Human Resource Development; Labor and Employee Relations; Personnel; and Training and Higher Education);

(c) Associate Administrator for Administration (responsible for the Acquisition and Materiel Service and three Offices: Accounting; Budget; and Management Systems);

(d) **Regional Directors, now retitled Regional Administrators** to reflect their role as representatives of the Administrator; and the

(e) Director, Aeronautical Center.

(2) **Executive Director for Systems Operations**, to whom reported the:

(a) Associate Administrator for Air Traffic (responsible for the Office of Air Traffic Evaluations and Analysis and two Services: Air Traffic Plans and Requirements; and Air Traffic Operations);

(b) Associate Administrator for Airway Facilities (responsible for two Services: Program Engineering and Systems Maintenance);

(c) Director of Operations Planning and Policy; and the

(d) Director of Operations Resource Management.

(3) **Executive Director for Regulatory Standards and Compliance**, to whom reported the:

(a) Associate Administrator for Regulation and Certification (responsible for the Office of Rulemaking and two Services: Aircraft Certification and Flight Standards);

(b) Associate Administrator for Aviation Standards (responsible for the Aviation Standards National Field Office and three other Offices: Aviation Medicine; Civil Aviation Security; and Accident Investigation); and the

(c) Director of Program and Resource Management.

(4) **Executive Director for System Development**, to whom reported the:

(a) Associate Administrator for Advanced Design and Management Control (responsible for the Operations Research Office and two Services: Advanced System Design; and Management Control)

(b) Associate Administrator for NAS (National Airspace System) Development (responsible for the System Engineering and Program Management Office and three Services: Automation; Advanced System Acquisition; and NAS Transition);

(c) Associate Administrator for Airports (responsible for the Airport Capacity Program Office and two other Offices: Airport Planning and Programming; and Airport Standards); and the

(d) Director, FAA Technical Center.

In addition to the Executive Directors, the positions reporting to the Administrator were: the former Director, Aviation Safety, now retitled an Associate Administrator (responsible for two Offices: Aviation Safety Analysis and Aviation Safety Oversight); the Chief Counsel; and three Assistant Administrators for: Public Affairs, Civil Rights; and Government and Industry Affairs.

Also effective on Jul 1, 1988, **FAA implemented a straightline reporting system** under which regional division program managers in the following functions reported to Associate Administrators at national headquarters instead of to the former Regional Directors: air traffic, airway facilities, aircraft certification, flight standards, civil aviation security, medical, and airports. Under the new arrangement, the Regional and Center Counsels also reported to the Chief Counsel.

Jun 16, 1988: Administrator McArtor announced a five point **program to assist development of tiltrotor aviation**, including: (1) negotiations with the Defense Department for FAA access to engineering and test data; (2) accelerated efforts in such areas as tiltrotor airspace review, criteria for flight tests and pilot training, and final aircraft certification standards; (3) establishment of a tiltrotor program organization that reported to the Administrator during McArtor's tenure; (4) expanded research and development; and (5) stepped-up planning and development of vertiports.

Jun 21, 1988: FAA published a rule setting **new requirements for aircraft to carry the Mode C transponder**, an altitude-reporting radar beacon (see Jan 29, 1987). Effective Jul 1, 1989, the rule mandated Mode C carriage en route above 10,000 feet, instead of the 12,500 feet previously specified. With certain exclusions, the rule also required aircraft to carry and operate Mode C transponders within 30 miles of a primary airport in terminal control areas (TCAs). (On Dec 5, 1990, however, FAA suspended certain aspects of this provision, thus allowing aircraft without Mode C to have access to about 300 specified outlying airports within 30 miles of a TCA primary airport.) In addition, the rule required Mode C in Airport Radar Service Areas (ARSAs), effective Dec 30, 1990.

Jun 30, 1988: In response to legislation, FAA issued a **rule expanding requirements for Flight Data Recorders (FDRs) and Cockpit Voice Recorders (CVRs)**, with compliance by Oct 11, 1991. The rule required CVRs on all multi-engine, turbine-powered commuter and air taxi aircraft that were able to seat six or more persons and were required to have a two-pilot crew. It mandated FDRs on certain existing and newly manufactured large commuter aircraft. The rule also required large air carriers to upgrade FDRs in certain aircraft possessing the digitial capability to accomodate more advanced devices. In addition, the rule contained CVR/FDR requirements for certain general aviation aircraft with multiple turbine engines. (See Jul 16, 1996.)

Jul 3, 1988: **U.S.S. Vincennes mistakenly shot down an Iran Air A-300 Airbus** over the Persian Gulf, killing all 290 persons aboard. The Navy ship fired two missiles, seven minutes after the flight took off from Bandar Abbas. Before firing, Vincennes had sent electronic identification requests and voice warnings to the plane over civilian and military radio channels.

Jul 26, 1988: FAA announced it had awarded IBM a $3.55 billion **contract to develop, deploy, and service the Advanced Automation System (AAS)**. The announcement ended almost four years of competition between IBM and Hughes Aircraft Corp. (See Jul 26, 1985, and Oct 1, 1991.)

Aug 5, 1988: FAA created a **new general aviation staff** to improve liaison between the agency and private and business flyers. The new staff, which operated within the Office of Flight Standards, was later abolished on Oct 13, 1992, and its functions assigned to the General Aviation and Commercial Division.

Aug 8, 1988: FAA began **System Safety and Efficiency Reviews (SSERs)**, programs in which interdisciplinary teams from the agency, other public officials, and industry conducted thorough evaluations of all activities that affected aviation safety in and near a facility. The investigations included air traffic control towers and centers, flight service stations, airway facilities, aviation security, and inspector functions. The first SSER began at Chicago O'Hare airport.

Aug 23, 1988: United Airlines became the first major U.S. carrier to get **Operations Specifications produced by a new automated FAA system** designed to increase standardization. With the new system, FAA assumed responsibility for initial preparation of the "Ops Specs," which spelled out in detail the rules

that an airline must follow to comply with safety requirements. Previously, the carriers had prepared the document and submitted it to FAA for approval.

Aug 25, 1988: FAA published a **rule further upgrading fire safety standards for cabin interiors** in transport aircraft by establishing refined fire test procedures and apparatus as well as a new requirement for smoke emmission testing. The agency expected that the new flammability standards would also lessen the problem of toxic gas release during fire. FAA prescribed a phased compliance schedule for new and existing aircraft. The rule was based on a continuing research program recommended by the SAFER committee. (See Jul 21, 1986.)

Aug 25, 1988: FAA announced **changes to the Expanded East Coast Plan** because of numerous complaints of increased noise by New Jersey residents. Changes to the EECP included rerouting Newark westbound departures from 11 p.m. to 7 a.m. (See Feb 12, 1987, and Mar 11, 1991.)

Aug 31, 1988: **A Delta Airlines Boeing 727 crashed** on takeoff at Dallas-Fort Worth International Airport, killing 13 of the 108 on board. The National Transportation Safety Board listed the probable cause of the accident as inadequate cockpit disciple resulting in an attempt to takeoff without the wing flaps and slats properly configured, and a failure in the warning takeoff system. As a contributory factors, the Board cited: Delta's slow implementation of safety steps necessitated by the airline's rapid growth; a lack of accountability in FAA's inspection process; and insufficiently aggressive action by the agency to correct known deficiencies at Delta, which had been the subject of a special inspection in 1987 following a series of incidents. FAA's response to the Board's recommendations included certain actions concerning inspections, required modifications to the 727 takeoff warning system, and a variety of other measures.

Aug 1988: FAA began a **test and demonstration of the Precision Runway Monitor (PRM)** at the Memphis airport, followed in May 1989 by a year-long test at the Raleigh-Durham airport. The radar greatly reduced the update rate of aircraft movements as depicted on an air traffic control screen. The demonstration proved successful, determining that the new radar, in conjunction with automated alarms and high-resolution color displays, helped controllers prevent or resolve aircraft conflicts in the airspace between closely spaced parallel and converging runways. On Apr 15, 1992, FAA announced award of a contract to the Bendix Division of Allied-Signal Aerospace Co. for five Precision Runway Monitoring radars. The following year, **on Jul 20, 1993, FAA commissioned the first PRM** in the United States at Raleigh/Durham.

Sep 22, 1988: FAA issued a rule requiring that all turbine-powered airliners seating 30 passengers or more carry **equipment to warn pilots when they encounter low-altitude wind shear** and provide them with information needed to escape safely (see Oct 9, 1986). The rule also mandated wind shear training for flight crewmembers. FAA allowed until Jan 2, 1991, to complete the training requirements and permitted the airlines to phase in the equipment in accordance with an approved schedule by Jan 4, 1993. On Apr 9, 1990, the agency published rule extending this deadline to Dec 30, 1993, making certain exemptions for older aircraft, and allowing the substitution of more advanced "predictive" warning systems when available.

Oct 3, 1988: Citing increasing congestion and a rash of air traffic control operation errors, FAA indefinitely **reduced the maximum number of arrivals permitted at Chicago O'Hare** from 96 an hour to 80.

Nov 2, 1988: FAA announced it had awarded a contract to Raytheon for 47 **Terminal Doppler Weather Radar (TDWR) systems** which would be able to warn of hazardous wind shear conditions and microbursts. The contract followed operational evaluation of a TDWR at Denver Stapleton airport, and further operational evaluations of test units continued. (See Aug 2, 1985, and Jul 2, 1994.)

Nov 2, 1988: AN FAA **Jet Commander 21 crashed** near Latrobe, Pa., after both engines lost power. The accident claimed the lives of all three personnel aboard.

Nov 3, 1988: The **Aviation Safety Research Act** broadened FAA's role in aircraft-related research, which had previously focused on testing and developing existing devices and materials. The act authorized the agency to develop new technologies and conduct data analyses in such fields as the effects of wear and fatigue on aircraft structures, aircraft maintenance, materials resistent to smoke and fire, low flammability fuels, and methods of containing in-flight and post-crash fires. (See Nov 5, 1990 and May 6, 1996.)

Nov 7, 1988: FAA announced award of a contract for five operational models of a new **Thermal Neutron Activation (TNA) explosives detection system**. The TNA device measured the gamma rays produced by energy neutrons passed through luggage and cargo and triggered an alarm when components of explosives were detected. FAA had first become involved in TNA research in 1976 in the wake of the La Guardia bombing (see Dec 29, 1975). After testing a "breadboard" TNA device at several airports, the agency awarded competitive design contracts in Sep 1985 and began testing a prototype system at San Francisco airport in Jun 1987. (See Dec 29, 1988.)

Nov 21, 1988: DOT published an interim rule on testing procedures for a series of new **rules requiring employers in the transportation sector to have an anti-drug program for personnel with responsibilities affecting safety or security**. The programs generally included five kinds of drug-abuse testing: pre-employment, random, periodic, post-accident, and for reasonable cause. (DOT had already established a similar program for its own employees: see Sep 9, 1987.) Also on Nov 21, FAA published a rule applying the DOT testing guidelines to the aviation industry by requiring an anti-drug program for domestic and supplemental air carriers, air taxi and commuter operators, certain commercial operators, certain contractors, and air traffic control facilities not operated by FAA or the U.S. military. (Subsequent amendments to this rule included an exemption for some types of operations, such as student instruction.) DOT published a final rule on testing procedures on Dec 1, 1989. **The program began within the aviation industry on Dec 18, 1989**, when large airlines and regionals with 51 or more employees began testing. (See Jul 10, 1990.)

Nov 18, 1988: After receiving information eight days earlier from West German authorities, FAA issued an **aviation security bulletin**, describing a cassette recorder containing a barometric detonating device that could be set to explode when an airliner reached a certain altitude. Such a device had been discovered by German authorities in an Oct 26 anti-terrorist sweep. On Dec 7, FAA issued another bulletin to airlines advising them of a telephone warning that had been received Dec 5 by the U.S. Embassy in Helsinki. The anonymous caller claimed that a bomb was to be placed aboard a Pan Am plane in Frankfurt. (See Dec 21, 1988.)

Dec 15, 1988: FAA issued a **type certificate for the Airbus A-320**. The aircraft had received its certification in Europe in February 1988. The A-320 was a short-to-medium range, twin turbo-fan transport with a seating capacity of 120-179 passengers. It was the first civilian transport to incorporate "fly-by-wire" controls for elevators, ailerons, spoilers, tailplane trim, slats, flaps, and speed brakes.

Dec 21, 1988: **An explosion destroyed Pan American World Airways Flight 103** near Lockerbie, Scotland, killing all 259 persons aboard and 11 on the ground (see Nov 18, 1988). The Boeing 747 had been bound for New York Kennedy from London Heathrow. Investigators later discovered that the tragedy was the result of a bomb concealed inside a radio-cassette player that had been loaded into a forward luggage compartment in Frankfurt (see Nov 14, 1991). FAA quickly began an inspection of Pan American's security procedures at Heathrow and Frankfurt airports, and later proposed $630,000 in civil penalties against the airline for alleged violations of security regulations.

On Dec 29, FAA revealed **new security measures** to go into effect within 48 hours for U.S. carriers at all airports in Europe and the Middle East. These included requirements that the airlines x-ray or physically search all checked baggage, conduct additional random checks of passengers and baggage, and achieve a positive match of passengers and their baggage to keep unaccompanied bags off airplanes. FAA also ordered a sixth thermal neutron analysis (TNA) device (see Nov 7, 1988) and accelerated the TNA delivery schedule. (See Jan 3, 1989.)

Dec 27, 1988: A presidential **proclamation extended U.S. territorial jurisdiction** from three to twelve nautical miles from the nation's coasts, and FAA at the same time extended certain controlled airspace and air traffic rules to coincide with the new limits.

***1989**

Jan 3, 1989: As part of a **series of security measures** following the Lockerbie bombing (see Dec 21, 1988), the Federal Aviation Administration issued a rule requiring airport operators to supplement their procedures for limiting entry into secure areas by installing a computer-controlled access system, or a similar approved system. On Mar 13, FAA issued a rule requiring foreign air carriers that land or takeoff in

the U.S. to submit a written security program to the agency. Two days later, the agency adopted a mandatory minimum fine of $1,000 for passengers trying to take guns through airport screening positions. On Jul 6, FAA issued a rule strengthening its system for providing security information to airlines by requiring compliance with prescribed countermeasures and making disclosure of information in security alerts a violation subject to penalty.

On Sep 5, FAA published a rule giving the agency authority to require airlines to install **explosives detection systems (EDS)** to screen passengers' checked baggage for international flights, with about 40 U.S. and foreign airports targeted for initial implementation. Also on Sep 5, operational testing of the first of six FAA-funded **Thermal Neutron Activation (TNA) explosive detection systems** began at New York Kennedy airport (see Nov 7, 1988). Subsequently, operational demonstrations of TNA units were conducted at several other airports, but the devices were not adopted for permanent use.

Other security-related events during 1989 included the establishment on Aug 4 of the **President's Commission on Aviation Security and Terrorism** to review security policy (see May 15, 1990). Effective on Oct 10, FAA established an **Aviation Security Advisory Committee** including representatives of 16 Federal agencies and aviation organizations. (See Mar 3, 1990.)

Jan 10, 1989: FAA published a **rule requiring the Traffic Alert and Collision Avoidance System (TCAS II) on all airliners with more than 30 passenger seats** operating in U.S. airspace (see Mar 18, 1987). The airlines were to phase in TCAS II by Dec 30, 1991. On Apr 9, 1990, however, FAA extended the TCAS II compliance schedule completion date to Dec 30, 1993 (an extension that also applied to wind shear warning equipment: see Sep 22, 1988). The Jan 10, 1989, rule also required turbine-powered **commuter aircraft with 10 to 30 passenger seats to install the simpler TCAS I** by Feb 9, 1995, a deadline later extended to Dec 31, 1995.

Jan 12, 1989: FAA **revised the pilot and equipment requirements for conducting operations in terminal control areas and established a single class of terminal control area (TCA)** instead of the two classes which previously existed. (See Aug 31, 1986.) In addition, pilots needed at least a private certificate to fly in a TCA. Student pilots were permitted to conduct certain operations with specified training and logbook endorsements from a certified flight instructor except at 12 TCA primary airports, where student pilot operations were prohibited. In addition, helicopters operating within a TCA had to install a VOR or TACAN reciever by Jul 1, 1989.

Jan 15, 1989: The Surface Movement Guidance and Control System (SMGCS), a **red-and-green traffic light system for runways and taxiways**, began a one-year test at New York Kennedy airport. The red lights, called **"stop bars,"** warned pilots not to enter runways until controllers issued clearance and switched on green lights leading to the runway center line. An improved version received further testing at Kennedy during 1991, and on Dec 10, 1992, Seattle-Tacoma International Airport became a demonstration airport for the first FAA-approved stop bar system. Seattle's system, developed by the Port of Seattle's airport management team, FAA, and airport users, served as the prototype for development of national standards for low visibility operations under FAA's Runway Incursion Plan. (See Feb 7, 1991.) On Jun 1, 1993, Hartsfield-Atlanta International Airport became the second airport in the Untied States to begin using the SMGCS plan.

Jan 20, 1989: **George Bush became President**, succeeding Ronald Reagan.

Jan 24, 1989: FAA Administrator T. Allan McArtor **reestablished the Administrator's Executive Committee, or EXCOM** (see Feb 5, 1973). The four executive directors and the general counsel made up the membership of the reconstituted committee, with the Executive Director for Policy, Plans, and Resource Management serving as permanent chair. The committee's primary function was to review and evaluate the recommendations of the Administrator's Review Committee on the budget, policy, and other critical issues. The **EXCOM was replaced on Nov 24, 1989, by the Executive Board**. The Deputy Administrator served as the permanent chair of the board, with the Executive Director for Policy, Plans, and Resource Management serving as alternate chair. (See Mar 10, 1994.)

Jan 30, 1989: Effective this date, FAA established a **Research, Engineering, and Development Advisory Committee**.

Feb 6, 1989: **Samuel K. Skinner became Secretary of Transportation**, succeeding James H. Burnley with the change of administrations. A lawyer from Illinois, Skinner had been chairman of a regional

transportation authority and had managed the Bush Presidential campaign in the state. He served as Secretary until becoming President Bush's chief of staff on Dec 16, 1991.

Feb 8, 1989 A **Boeing 707 crashed** into a fog-shrouded mountain on the Azores island of Santa Maria with the loss of all 144 persons aboard. The small U.S. charter company Independent Air had operated the aircraft.

Feb 10, 1989: FAA issued a **new rule upgrading the fire safety standards for baggage and cargo compartments** in existing airline aircraft. The new standards required that all cargo compartments larger than 200 cubic feet that were inaccessible to crewmembers in flight be lined with rigid fiberglass or comparable materials on their sidewalls and ceilings to more effectively resist the spread of fire. The airlines had two years from the effective date of the new regulation to comply. (See May 16, 1986, and Nov 14, 1996.)

Feb 17, 1989: Effective this date, **T. Allan McArtor resigned as FAA Administrator**. The post of Acting Administrator was filled by Robert Whittington, whose regular position was now Executive Director for Policy, Plans, and Resource Management. (See Jun 30, 1989.)

Feb 28, 1989: **FAA's first operational Automated Weather Observing System (AWOS)** began service, and the agency had installed 50 more the end of Sep 1990. AWOS equipment automatically gathered weather data from various locations around an airport and transmitted that information directly to pilots by means of computer-generated voice message (see Jan 26, 1983). In cooperation with the National Weather Service, FAA also pursued a program to acquire **Automated Surface Observing System (ASOS)** equipment, which offered additional percipitation sensing capabilities. The agency began ASOS installation in Aug 1991, and had commissioned over 60 by April 1996.

Mar 4, 1989: Upon the expiration of a Federally imposed cooling-off period, the union representing **Eastern's machinists went on strike**, supported by large numbers of the airline's pilots and flight attendants. Approximately ninety percent of Eastern's planes were grounded. The airline's attempt legally to force pilots back to work failed on Mar 7, when a Federal judge ruled that the pilots could continue their sympathy strike. **On Mar 9, Eastern filed for protection under Chapter 11** of the Federal Bankruptcy Code. On Nov 21, President Bush vetoed legislation which would have set up a commission to investigate the dispute between Eastern's unions and its management. The next day, leaders of the pilot union voted to end their strike, and on Nov 23 the flight attendant union also told its members to return to work. The machinists' strike continued. (See Jun 2, 1988, and Apr 18, 1990.)

Mar 22, 1989: **Fire consumed one of the mobile lounges used at Dulles** International Airport to transport passengers from the terminal to aircraft, injuring two passengers. The day before the fire, a ramp worker at Dulles had been crushed to death under the wheels of a lounge. As a result of the accidents, airport officials on Mar 23 ordered maintenance inspections on all mobile lounges and retraining courses for all lounge drivers.

Mar 31, 1989: The **Acquisition and Materiel Service was retitled the Logistics Service**, its name prior to Oct 29, 1982. (See Sep 30, 1991.)

Mar 1989: The **U.S. licensed commercial space industry made its first launch** when Space Service, Inc., sent a scientific payload on a suborbital trip aboard a Starfire rocket. Later in 1989, **the first U.S. licensed commercial orbital launch was successfully carried out on Aug 27** by the McDonnell Douglas corporation, using a Delta I launch vehicle.

Apr 6, 1989: In Lebanon, NH, FAA commissioned the **first permanent, Federally funded Microwave Landing System (MLS) at a commercial airport**. The Hazeltine Corporation had delivered the system to the agency under a contract for 178 MLS units. **On Aug 7, 1989, however, FAA notified Hazeltine that it was terminating the contract** because of the company's failure to meet the specified delivery schedule. (See May 20, 1987, and Dec 6, 1989.)

May 1, 1989: **FAA and the National Air Traffic Controllers Association (NATCA) concluded their first labor agreement**. (Signing on behalf of the union was R. Steve Bell, who had been elected president in 1988.) Negotiators had reached a tentative agreement in January, and union members ratified the contract on Apr 18. (See Jun 19, 1987, and Aug 1, 1993.)

May 2, 1989: FAA commissioned the **first operational ASR-9 airport surveillance radar** (see Sep 30, 1983). The new radar employed advanced Doppler technology to filter out radar reflection, and was capable of detecting a one square meter target at a distance of 60 nautical miles. FAA planned to equip every major airport with an ASR-9, and 121 of them had been commissioned by the end of FY 1996. With the introduction of the ASR-9 radars, the older ASR-7 and -8 units would be used to replace aged ASR-4 and -5 radars.

May 5, 1989: FAA's **National Data Interchange Network 1A (NADIN 1A) became fully operational,** supplanting several independent communications networks with a single, efficient means of transmitting weather and flight plan data. The agency had originally contracted for the system in Nov 1980. On Mar 31, 1995, FAA commissioned an upgraded version designated **NADIN II**.

Jun 7, 1989 New York real estate developer Donald Trump acquired Eastern Air Lines' shuttle operation between Washington, New York, and Boston, and began service under the name **Trump Shuttle** the next day. The venture proved unprofitable, however, and on Apr 12, 1992, USAir began operating the renamed **USAir Shuttle** under a management contract with a group of banks.

Jun 16, 1989: FAA issued a **rule limiting the distance between emergency exits on transport category planes to no more than 60 feet**. The rule applied to all new transport planes certificated after Jul 23 and to all newly manufactured airplanes of older type designs produced after Oct 16, 1987. It also prevented modifications, such as deactivation of exits, to increase the distance between exits to more than the 60 foot standard.

Jun 18, 1989: FAA implemented a **five-year Pay Demonstration Project** to provide a quarterly retention/recruitment allowance of up to 20 percent of base pay. The project covered approximately 2,100 air traffic, flight standards, and airway facilities personnel working at 11 hard-to-staff facilities in the New York, Chicago, Los Angeles, and Oakland areas. (See May 26, 1994.)

Jun 30, 1989: **FAA broke ground for its new high technology training complex** in Oklahoma City, named for General Thomas P. Stafford, an astronaut. The agency dedicated the building's tower cab simulation laboratory on Jan 25, 1991, then marked the full opening of the Stafford Building with a ceremony on Mar 11, 1992.

Jun 30, 1989: **Admiral James B. Busey (USN, Ret.) became FAA's eleventh Administrator**, succeeding T. Allan McArtor (see Jul 22, 1987). Busey took the oath a second time in a public ceremony on Jul 11. The new Administrator had been on active duty with the Navy when President Bush announced his selection on Mar 17. He retired from the Navy in May, and the Senate confirmed his nomination on Jun 23. Enactment of Public Law 101-47 exempted him from the legal provision barring active or retired military officers from becoming FAA Administrator.

Born in 1932 in Peoria, Ill., Busey attended the University of Illinois in Urbana, and received a B.S. and master's in management from the Navy Postgraduate School. During a 37-year career with the Navy, Busey rose from enlisted ranks to become a full admiral. An experienced pilot and a winner of the Navy Cross for combat action in Vietnam, he served as commander of the Naval Aviation System Command while a vice admiral. Busey's other positions included Vice Chief of Naval Operations, Auditor General of the Navy, and Deputy Chief of Naval Materiel, Resource Management. Prior to becoming FAA Administrator, Busey served for two years as Commander-in-Chief of U.S. Naval Forces in Europe and Commander-in-Chief of Allied Forces in Southern Europe, a NATO command. He held the post of FAA Administrator for one year and five months. (See Nov 20, 1991.)

Jul 19, 1989: A **United Airlines DC-10 crashed while attempting an emergency landing in Sioux City, Iowa**, after debris from a failed engine damaged the aircraft's control system. The accident killed 110 of the 296 people on board. On Aug 3, FAA announced the formation of an agency/industry task force on improving aircraft survivability following major in-flight structural damage (see, Jun 5, 1990). Preliminary investigation of the accident indicated that **one of the two titanium disks holding the engine's fan blades separated**, either intact or in fragments, from the rest of the engine. On Sep 15, FAA issued the first of several directives requiring fan disk inspections. In its final report on the crash, the National Transportation Safety Board listed the probable cause as the failure of the airline's engine overhaul facility to detect a fatigue crack in the fan disk, a failure the Board attributed to inadequate consideration of human factors limitations.

Aug 24, 1989: FAA established the Charlotte, N.C. terminal control area (TCA), the **first new TCA since 1980** (see May 15, 1980). Additional TCAs were established at: Memphis, Oct 19, 1989; Salt Lake City, Nov 16, 1989; Phoenix, Jan 11, 1990; Orlando and Tampa, Sep 20, 1990; and the Washington Tri-Area (which superceded the Washington TCA and encompassed Andrews AFB, and the Washington National, Dulles International, and Baltimore-Washington airports), Mar 7, 1991. This brought the total of TCAs to 29. (See Dec 17, 1991.)

Aug 31, 1989: FAA established the **new pilot category of recreational pilot**, requiring less training than a private pilot certificate. The agency intended the new category for pilots interested in flying basic, experimental, or homebuilt aircraft in close proximity to a home airport in which communication with air traffic control facilities was not required. At the same time, FAA established a required **annual flight review** for non-instrument-rated private pilots with less than 400 flight hours.

Sep 17, 1989: **Hurricane Hugo** slammed into the U.S. Virgin Islands before moving on to Puerto Rico and then South Carolina. Numerous FAA facilities in the storm's path suffered damage and service interruption. Destruction was especially heavy in the Virgin Islands, where two airport towers were badly damaged and a radar destroyed. Southern Region Headquarters took charge of the recovery effort, which included establishment of temporary mobile towers on the islands. The agency's DC-9 carried relief supplies to the Virgin Islands and evacuated four FAA employees and 35 dependents, as well as other Federal personnel and their families. Damage to FAA facilities on the mainland was less severe than in the Caribbean, although many employees suffered personal losses. Agency personnel established a relief fund to assist their coworkers affected by the storm. By the end of September most airports in the devastated areas had resumed operation.

Sep 28, 1989: **Braniff again filed for protection under Chapter 11 of the U.S. Bankruptcy Code, and ceased all passenger operations on Nov 6**. The company had previously suspended operations during 1982, but later resumed flights. (See Mar 1, 1984 and Jul 1, 1991).

Oct 1, 1989: A **State Block Grant Pilot Program** began on this date, as legislated by Congress (see Dec 30, 1987). Under the program, scheduled to run through Sep 30, 1991, FAA selected Illinois, Missiouri, and North Carolina to administer Federal grants for the development of nonprimary airports within their borders. Congress subsequently extended the program for one additional year under the Aviation Safety and Capacity Expansion Act of 1990. (See Jun 29, 1992.)

Oct 2, 1989: A directive issued on this date **restructured the organization of the Associate Administrator for Air Traffic** (see Sep 15, 1984) by abolishing the Office of Air Traffic Evaluations and Analysis and establishing a new Office of Air Traffic System Effectiveness. On Feb 22, 1990, another directive added an Office of Air Traffic Program Management. A further change came on Jul 3, 1990, with the abolition of the Air Traffic Operations Service and establishment of the Air Traffic Rules and Procedures Service and the Office of Air Traffic System Management. (See Nov 30, 1994.)

Oct 17, 1989: **An earthquake, registering 7.1 on the Richter scale, shook northern California**, damaging runways, disrupting airline service, and causing approximately $50 million damage to FAA facilities and equipment. Among the affected facilities were the San Francisco tower cab, which lost windows and its ceiling, and the San Jose tower, which lost a window and air conditioning unit; controllers nevertheless remained on duty to ensure the safety of flights aloft. FAA subsequently allocated $8 million in discretionary airport improvement funds for partial reconstruction of a runway at Oakland.

Oct 20, 1989: FAA issued a rule requiring **newly built air transport aircraft to have public address systems with an independent power source** to increase safety during emergency evacuation. (See Jul 27, 1973.)

Oct 27, 1989: FAA published a **rule improving type certification standards for transport category rotorcraft** by adding requirements for "flaw tolerance," a design concept aimed at ensuring that failure of a part does not cause an accident, and by extending requirements for structural fatigue evaluations.

Dec 6, 1989: FAA issued a **precision approach landing systems policy, outlining how it planned to transition from the Instrument Landing System (ILS) to the Microwave Landing system (MLS)**. An international agreement obligated the agency to provide MLS service at all U.S. international runways by

Jan 1, 1998. Until that date, FAA determined to install new ILS's only at those locations that had an immediate and critical requirement for precision approach service that could not be delayed until MLS deployment. (See Apr 6, 1989, and Jun 21, 1991.)

Dec 14, 1989: **Alaska's Redoubt Volcano began a series of eruptions**, emitting ash that hampered aviation. FAA used a satellite-based system, recently developed with the National Oceanic and Atmospheric Administration, to track the ash and warn aviators. On Dec 15, however, a Boeing 747 lost all engine thrust temporarily after encountering an ash cloud, and ash from Redoubt damaged four other airliners during the following three months. (See May 18, 1980, and Jun 15, 1991.)

Dec 14, 1989: FAA authorized use of the **Oceanic Display and Planning System (ODAPS)** at the Oakland Air Route Traffic Control Center (see Oct 1984). ODAPS achieved initial operational capability at the New York center during FY92. (See Oct 1984 and Jun 21, 1995.)

Dec 14, 1989: **Alliance Airport, the nation's first industrial airport, officially opened**. Located fifteen miles northwest of Dallas-Fort Worth airport, the new facility incorporated air, rail, and highway connections. FAA grants provided major funding for construction of the airport, which stood on land donated by industrialist Ross Perot, Jr.

Dec 21, 1989: DOT awarded AT&T a contract under the **Office Automation Technology and Services (OATS)** program to replace many computer brands and software packages throughout the Department with a standardized system for desktop automation. FAA, the lead agency for OATS, observed the coming of the new system with a ceremony at headquarters on Feb 20, 1990.

Dec 26, 1989: DOT announced the creation of the **Airport Capacity Funding Advisory Committee**, formed at the behest of Congress to recommend new approaches to funding airport capacity projects. The Secretary of Transportation selected representatives from the airlines and airports to serve on the board, which reported to the Secretary through FAA. On Apr 19, 1990, the committee's report made recommendations concerning the design of **possible Passenger Facility Charges**, should these be authorized by legislation (see Nov 5, 1990).

***1990**

Jan 8, 1990: The **Department of Transportation officially opened TransExpo** at the Sheraton Washington Hotel. The three-day exhibition, which attracted between 8,000 and 10,000 people, was the biggest U.S. transportation trade show since Transpo 72 (see May 27, 1972).

Jan 10, 1990: The **McDonnell Douglas MD-11 first flew**. A medium/long-range transport designed as a successor to the DC-10, the aircraft could seat up to 323 passengers in its standard passenger version. The MD-11 received Federal Aviation Administration certification on Nov 8 and first entered commercial service on Dec 20, 1990, with Finnair.

Jan 18, 1990: On its landing roll at Atlanta Hartsfield airport, **an Eastern Air Lines Boeing 727 collided with a Beechcraft King Air 100** that had landed just before it. The accident killed the pilot of the King Air, which was operated as a charter by Epps Air Service. FAA decertified the controller who cleared the Eastern flight to land. On Apr 2, 1991, the majority of the National Transportation Safety Board (NTSB) cited the controller's error as the accident's probable cause, while dissenting member Jim Burnett blamed inadequate separation standards. On May 29, 1991, NTSB announced a revised finding expanding the probable cause to include the failure of air traffic control procedures to take into consideration occasional lapses in human performance. Chairman James Kolstad dissented, saying that use of existing procedures could have prevented the accident.

Jan 25, 1990: Attempting to land at New York Kennedy airport, a **Boeing 707 operated by the Colombian airline Avianca ran out of fuel and crashed** on Long Island, fatally injuring 73 of the 158 people on board. On Feb 25, demonstrators drove a procession of automobiles through Kennedy as a protest against air traffic controllers' alleged mishandling of the flight. The National Transportation Safety Board cited the probable cause of the accident as the crew's failure to manage their fuel load or alert controllers to their fuel emergency. Among the contributing factors, however, the Board pointed to a lack of clear, standardized terminology on fuel emergencies, as well as inadequate traffic flow management.

FAA's actions in reponse to the accident included steps to address these concerns and to stress the need for clear pilot/controller communication and for air carriers to be thoroughly familiar with rules and procedures.

Jan 30, 1990: The Department of Transportation (DOT) issued an **order inviting applications from eligible foreign airlines wishing to serve U.S. cities** having no single-plane service to the applicant's home countries. On Mar 27, KLM Royal Dutch Airlines became the first of several carriers that received route awards under this program. During 1990, DOT announced agreements with a number of countries making possible **expanded air service**.

Feb 13, 1990: The **Direct User Access Terminal Service (DUATS) began operating**, allowing private pilots to receive weather briefings and file flight plans from home computers. An FAA contractor provided the service free to civilian pilots and students. DUATS took over most of the functions of the **Interim Voice Response System (IVRS)**, which FAA discontinued on Sep 30, 1990. (See Mar 14, 1984.)

Feb 16, 1990: Representatives of FAA and the Soviet aviation ministry signed a **memorandum promoting cooperation on air navigation between Alaska and the Soviet Far East**.

Feb 21, 1990: Administrator Busey announced **organizational changes** that included establishment of an **Executive Director for Acquisition**, a move designed to streamline the agency's procurement process. The action brought the number of Executive Directors to five (see Jun 16, 1988, and Sep 30, 1991). As documented in a directive issued on Jul 6, 1990, the newly created Executive Director controlled two new Offices: Acquisition Policy and Oversight; and Independent Operational Test and Evaluation Oversight. Other changes implemented by this directive included: conversion of two Associate Administrators (for Airports and for Policy, Planning, and International Aviation) to Assistant Administrators reporting directly to the Administrator; retitling of the Executive Director for Policy, Plans, and Resource Management as the Executive Director for Administration and Resource Management; establishment under the Executive Director for System Operations of an Office of System Capacity and Requirements with functions including those of the former Airport Capacity Program Office; abolition of two Offices: Operations Resource Management and Operations Planning and Policy; establishment of a new Associate Administrator for System Engineering and Development to replace the Associate Administrator for Advanced Design and Management Control; and retitling the Associate Administrator for Aviation Safety as an Assistant Administrator.

Feb 25, 1990: In response to a congressional mandate, **prohibition of smoking went into effect on virtually all scheduled U.S. domestic airline flights**. Flights to or from Alaska or Hawaii scheduled to last six hours or more were excepted. The prohibition included foreign carriers operating between two points within U.S. territory. The ban did not apply to the flight deck. (See Apr 23, 1988, and May 7, 1996.)

Mar 2, 1990: FAA issued a final rule requiring **air carriers to restrict seats in exit rows to persons capable of activating emergency exits** and performing other emergency functions during evacuation. Carriers were given until Oct 5, 1990, to comply (see Oct 27, 1992). Also on Mar 2, the Department of Transportation issued **a revised regulation prohibiting airline discrimination against disabled passengers**. The rule required accomodation for wheelchairs and limited an airline's ability to restrict the number of disabled persons on a flight or to require passengers to travel with an attendant. It also including a ban on seating restrictions for the disabled, except to comply with FAA's safety rule.

Mar 3, 1990: FAA assigned the **first permanent Civil Aviation Security Liaison Officer** (CASLO) oversees, marking the beginning of a program established as a result of the Pan American Flight 103 bombing. The first CASLO was stationed at the American Embassy in London. (See Jan 3, 1989, and May 15, 1990.)

Mar 5, 1990: FAA's Administrator Busey announced a **new policy on fostering compliance with FAA regulations by private pilots**. He described a series of changes emphasizing communication and education rather than sanctions. Also in March, and as part of that program, Busey **revoked the enforcement bulletin implementing a 60-day suspension of the certificate of any pilot who violated a Terminal Control Area** (see Oct 10, 1986). Instead, inspectors were allowed to recommend lesser penalities and remedial training for the infraction.

Mar 6, 1990: FAA issued a **rule requiring private aircraft flying into or out of the country through an Air Defense Identification Zone (ADIZ) to be equipped with altitude-reporting (Mode C) transponders** by Dec 30. (See Sep 1, 1987.)

Mar 6, 1990: An **SR-71 Blackbird reconnaissance aircraft** landed at Dulles International after a **record-breaking 68 minute flight from the Pacific coast**, and was then retired to the National Air and Space Museum collection.

Mar 7, 1990: FAA published three airworthiness directives requiring extensive structural modifications to older Boeing 727s, 737s, and 747s. The first in a **series of directives dealing with older airliners**, the rules reflected a new FAA approach adopted in 1988 (see Jun 1 of that year). To combat the hazard of structural deterioration, the agency had historically relied upon mandatory inspections that became more frequent as aircraft aged. Now, however, it required preventive modifications for high-service airliners and the replacement of certain parts after a specified number of flight hours or takeoff-and-landing cycles. FAA also asked for comments on a proposal to require **corrosion control programs** for certain aging Boeing aircraft. This requirement, which became effective on Dec 31, 1991, was also extended to other aircraft types.

Mar 8, 1990: A three-man Northwest Airlines flight crew took off from Fargo, N.D., despite an FAA inspector's warning that they might be in **violation of a rule against flying an aircraft within eight hours of consuming alcohol**. After their landing in Minneapolis, the three crewmembers were given tests that showed their blood alcohol exceeded the permissible level. FAA revoked the trio's airman certificates the next day. As a result of this incident, **FAA announced on Mar 14 a six-point action plan designed to tighten drug and alcohol enforcement investigation procedures**. On Aug 20, a Federal jury in Minneapolis convicted the three men of a felony for operating a common carrier while under the influence of alcohol, and they received jail sentences in October. (See Apr 17, 1985.)

Mar 12, 1990: **Barry L. Harris became FAA's Deputy Administrator**, succeeding Barbara McConnell Barrett (see Apr 1, 1988). President Bush had announced the nomination on Nov 6, 1989. A native of Cincinnati, Ohio, Harris attended Harvard and Denison Universities and served as an officer in the U.S. Army. His career included positions as assistant city manager for Gloucester, Mass., director of community programs for the Boston Metropolitan Area Planning Council, and work as a writer and producer for the news media. Prior to joining FAA, he was president and chief executive of Alliance Corp., in Portland, Maine, and Community Services, Inc., in Gloucester. Harris had been cochairman of the Bush campaign's state finance committee in Maine, and had served on the campaign's national finance committee. He was an experienced pilot, qualified to fly helicopters as well as piston- and jet-powered fixed wing aircraft.

Harris served as Acting Administrator during the period between the tenures of Administrators Busey and Richards (see Dec 4, 1991, and Jun 27, 1992). He remained as Deputy for the rest of the Bush Administration, resigning effective Jan 20, 1993.

Mar 27, 1990: In a speech to the Aero Club of Washington, Administrator **Busey urged all airlines to establish a safety self-audit program**. FAA would not penalize airlines for inadvertent violations uncovered by the audits, provided the problem were promptly corrected and reported to the agency. (See Apr 8, 1992.)

Apr 2, 1990: A **National Transportation Safety Board reorganization** effective this date included establishment of a new Office of Aviation Safety.

Apr 13, 1990: A Federal court declared **FAA's rules of practice in assessing civil penalties not exceeding $50,000** to be invalid because the agency had failed to give public notice of the proposed rules or to allow a period of public comment (see Dec 30, 1987). FAA accordingly suspended the program, issued a rulemaking proposal, and followed this with a final rule effective Aug 2, 1990. A law enacted Aug 15, 1990, provided new legislative authority for the program, extending it until Aug 1, 1992. **The program became permanent with the Civil Penalty Assessment Act enacted on Aug 26, 1992.**

Apr 18, 1990: A Federal bankruptcy **judge removed Eastern Air Lines from the control of Texas Air Chairman Frank Lorenzo** and placed it in the hands of special trustee, Martin Shugrue. Eastern had lost more than $1 billion since it filed for Chapter 11 protection on Mar 9, 1989. **On Aug 9, 1990, Scandinavian Airline System bought Lorenzo's interests in Continental Airline Holdings** (formerly

known as Texas Air Corporation), which owned Eastern and Continental airlines. Besides stepping down as chairman of Continental Airlines Holdings, Lorenzo agreed not to work for a Continental competitor for seven years, although this stipulation was later dropped as part of a legal settlement. (See Mar 4, 1989, and Jan 18, 1991.)

May 10, 1990: FAA announced that a contract for development of a prototype program for air traffic control training had been awarded to Hampton University, a designated Historically Black College or University (HBCU). Hampton thus joined the Air Traffic Control Training Center at Eden Prarie, Minn., as one of two institutions to receive Federal funds as part of the **Collegiate Training Initiative (CTI)** begun by FAA earlier in the year. Three other educational institutions subsequently joined the CTI, but without receiving Federal funds. Graduates of CTI programs became eligible to apply to FAA for employment as developmental controllers without having to attend the FAA Academy.

May 13, 1990: The FAA Depot at the Aeronautical Center was renamed the **FAA Logistics Center**.

May 15, 1990: The President's **Commission on Aviation Security and Terrorism released its report**, which focused on the bombing of Pan American Flight 103 (see Dec 21, 1988). The report included criticism of FAA and recommendations for improving security and combating terrorism. Among its recommendations, the report suggested that FAA: elevate is security division to a position reporting directly to the Administrator (see Jun 14, 1990); appoint federal security managers to manage security at domestic airports (see Oct 1, 1991); launch a research and development program to produce techniques and equipment to detect small amounts of plastic explosives (see Nov 16, 1990); and make public notification of threats to civil aviation under certain circumstances.

Jun 1, 1990: **The U.S. Secretary of State and Soviet Foreign Minister signed an agreement providing for expanded air service** between their two countries. The accord was one of several pacts concluded in the context of a Washington summit meeting between Presidents Bush and Gorbachev. DOT subsequently authorized several airlines to provide new service to Soviet airports. On Jun 17, 1991, Alaska Airlines became the first U.S. carrier to offer scheduled service from the West Coast to the Soviet Far East. (See Apr 29, 1986, and May 25, 1993.)

Jun 5, 1990: FAA issued an Airworthiness Directive requiring **modifications to the hydraulic system of certain DC-10 aircraft** to guard against possible loss of the flight control system. (See Jul 19, 1989.)

Jun 13, 1990: FAA dedicated its first **child care center** to be built "from the ground up" in a ceremony at the Aeronautical Center.

Jun 14, 1990: Secretary Skinner announced that he intended to create an **Office of Intelligence and Security within OST**, and that its Director would be Coast Guard Vice Admiral Clyde E. Robbins. At the same time, Administrator Busey announced the new FAA position of Assistant Administrator for Civil Aviation Security (see Jul 20, 1990). The actions were in part a response to recommendations of the President's Commission on Aviation Security and Terrorism (see May 15, 1990).

Jul 10, 1990: The U.S. **Court of Appeals for the 9th Circuit upheld FAA's random drug testing program for the aviation industry**. (See Nov 21, 1988, and Jul 25, 1991).

Jul 20, 1990: AN FAA directive issued this date established the **new position of Assistant Administrator for Civil Aviation Security** in response to a recommendation by the President's Commission on Aviation Security and Terrorism (see May 15, 1990). Orlo K. Steele, a retired Marine Major General, was appointed to fill that position on Nov 1. On Nov 23, FAA announced a new structure for the security organization. A Scientific Staff was created to advise Steele, and four new offices were established to handle: Policy and Planning; Program and Resource Management; Operations; and Intelligence.

Jul 26, 1990: FAA adopted a new rule, effective Nov 29, 1990, **requiring pilots to consent to the release of information from the National Driver Register when applying for an FAA-required medical certificate**. Pilots were also required to provide FAA with written notification of each driving conviction related to alcohol or drugs. The rule authorized FAA to deny, suspend, or revoke a pilot certificate if the individual concerned received two or more alcohol or drug-related convictions within a three-year period. (See Feb 17, 1987, and Feb 3, 1994.)

Aug 2, 1990: **Iraq invaded and seized control of Kuwait**. President Bush's response included immediate restrictions on air transportation between the U.S. and Iraq, and these prohibitions were extended to include occupied Kuwait on Aug 9. The United States also sent thousands of troops to Saudi Arabia in **Operation Desert Shield**. Among the other effects of the crisis during the rest of 1990 was a dramatic escalation of the rise in jet fuel prices. (See Aug 17, 1990.)

Aug 15, 1990: FAA and the Community College of Beaver County, Pa., signed an agreement under which the college would conduct **a five-year prototype training program for air traffic controllers**. Qualified graduates would be eligible to become controllers without attending the FAA Academy.

Aug 17, 1990: A portion of the **Civil Reserve Air Fleet (CRAF) was called up for the first time** in history as the Defense Department activated CRAF Level 1. Participating airlines provided aircraft and crews to expand U.S. airlift capability for the Operation Desert Shield deployment in the Middle East. (See Aug 2, 1990, and Sep 25, 1990.)

Sep 1, 1990: In accordance with DOT policy, **smoking was prohibited in FAA facilities**, although designated smoking areas were permitted where a complete ban was not feasible. The actual implementation date of the ban at specific locations was allowed to vary to allow for negotiation with unions.

Sep 6, 1990: A **new Air Force One made its maiden voyage**. The specially designed Boeing 747, and its identical backup plane, replaced two twenty-year-old Boeing 707s.

Sep 25, 1990: **FAA released its first strategic plan**, addressing six issue areas as well as aviation in the 21st Century. The plan, dated August 1990, was presented in the framework of the Secretary's **National Transportation Policy (NTP)**, which Secretary Skinner had presented to President Bush on Mar 8, 1990. The NTP presented 169 guidelines and 65 legislative, regulatory, budget, and program initiatives to improve the nation's transportation network.

Sep 25, 1990: The **United Nations voted to ban virtually all air traffic with Iraq**, with the exception of certain humanitarian flights. (See Aug 2, 1990, and Jan 16, 1991.)

Sep 26, 1990: FAA issued a rule permitting airlines to develop alternative training for flight crews under the **Advanced Qualification Programs (AQP)**. Developed by a government/industry task force, AQP was intended to promote flexibility and innovation in crew training techniques. A required element of the AQP option was Cockpit Resource Management (CRM) training, which focused on communications skills, coordination, and decision-making. By Aug 1996, 15 air carriers were participating in the AQP program. During that month, FAA announced that it had developed a new training tool to assist regional airlines in adopting the AQP approach.

Sep 28, 1990: FAA and the MITRE Corporation signed a five-year agreement under which **MITRE would operate a new Center for Advanced Aviation System Development** at the firm's facility in McLean, Va. The arrangement was subsequently renewed.

Sep 30, 1990: During fiscal 1990, which ended on this date, FAA began a **Direct Route Program** that allowed controllers greater flexibility in honoring pilots' requests to use more direct, fuel-saving routes. Renamed the **National Route Program** during the following fiscal year, the enhanced program permitted more cost-effective operations between 16 city pairs. By Sep 1994, the expanding program included 104 city pairs. (See Oct 1994.)

Oct 1, 1990: FAA began a **"Manage to Budget" pilot project**, to last at least one year, under which the managers of about 2,000 employees received new types of authority in an effort to speed personnel actions and achieve a requirements-driven budget process. The project was subsequently extended for a second year.

Oct 16, 1990: The Department of State announced that it had **raised to $4 million the maximum reward for information helping to catch terrorists**, due to $1 million donations from both the Air Transport Association and the Air Line Pilots Association. The rewards program had begun in 1984 with a maximum payment of $500,000, but Congress increased that limit to $2 million after the bombing of Pan American Flight 103 (see Dec 21, 1988).

Nov 5, 1990: The Omnibus Budget Reconciliation Act of 1990 authorized funding for FAA and other Federal entities for FY91-92. Title IX of that legislation included as subparts three acts pertaining to aviation:

The **Aviation Safety and Capacity Expansion Act** included permission for FAA to draw on the Trust Fund for up to 75 percent of its operations and maintenance costs and authorized $5.5 billion for modernization of air traffic Facilities & Equipment over the two years. It also empowered the Department of Transportation to authorize airports to levy **Passenger Facility Charges** of up to $3. per enplaning passenger (see May 22, 1991). Other features of the law provided: encouragement of **capacity development at former and current military airports** (see May 30, 1991); continuation of the **Essential Air Service** program; development of a system of **Auxiliary Flight Service Stations** (see Nov 8, 1991); and more **flexibility for FAA in procurement contracts**.

The **Federal Aviation Administration Research, Engineering and Development Authorization Act** further defined FAA's research functions (see Nov 3, 1988). It included a mandate for the establishment of a **Catastrophic Failure Prevention Program** to develop technologies to combat the failure of parts and equipment that could result in aircraft accidents.

The **Airport Noise and Capacity Act** required airlines by mid-1999 to **phase out Stage 2 noise-level jets** (see Feb 18, 1980), although those carriers that met this deadline for 85 percent of their fleet might apply to operate their remaining Stage 2 aircraft until the end of 2003. The law also directed the Secretary of Transportation to prepare a national noise policy by mid-1991, and placed **limitations were upon airports' authority to impose noise restrictions** (see Sep 19, 1991).

Nov 14, 1990: Pan American and United Airlines signed an agreement under which **United would pay $400 million for Pan Am's routes to London** Heathrow and certain other assets. (See Nov 7, 1985, and Jan 8, 1991.)

Nov 15, 1990: FAA announced that it had completed installation of the **Enhanced Traffic Management System (ETMS)**, which would become operational nationwide on Dec 3. ETMS was a computer system able to predict nationwide air traffic demands, permitting traffic managers to take corrective action. (See May 17, 1987, and Apr 15, 1994.)

Nov 16, 1990: President **Bush signed the Aviation Security Improvement Act of 1990**, which: required certain regulatory actions affecting several agencies; mandated new reports, organizational arrangements, and staffing requirements; and empowered FAA to conduct an accelerated research and development program in support of aviation security. (See May 15, 1990, Aug 15, 1991, and Oct 1, 1991.)

Dec 3, 1990: For the second time within eight years (see Sep 24, 1983), **Continental Airlines filed for protection under Chapter 11 of the Federal bankruptcy code**. (See Jan 7, 1993.)

***1991**

Jan 4, 1991: In the first of a series of **telecommunications failures which created air traffic control problems** during this year, the AT&T company's maintenance workers accidentally cut a fiber-optic telephone cable in New Jersey, disrupting communications between air traffic control sites and delaying air travel for several hours in the New York area. Other significant delays occurred: on May 4, when a farmer cut a fiber cable, limiting operations at four air route traffic control centers; on Sep 17, when an AT&T equipment failure in New York City cut controller communications and disrupted airline travel in the Northeast; and on Nov 5, when AT&T maintenance errors disrupted New England long distance telephone service, delaying flight operations at Boston Logan airport. (See May 8, 1988.)

Jan 8, 1991: **Pan American World Airways filed for protection under Chapter 11 of the bankruptcy laws**. **On Aug 12, 1991, a Federal bankruptcy judge approved a deal under which Delta Air Lines would acquire major Pan American assets** and also own 45 percent of a downsized PAA. On Sep 1, Delta began operating Pan Am's shuttle serving Washington, New York, and Boston. On Oct 18, DOT gave final approval to the sale of most of Pan Am's remaining transatlantic routes to Delta. (See Dec 4, 1991.)

Jan 13, 1991: An **"interim geographic adjustment" gave an eight percent pay raise** to 5,933 FAA employees at facilities in the New York, Los Angeles, and San Francisco areas. The adjustment did not

result in raises for those already receiving local special pay rates of more than eight percent, or for those already receiving a 20 percent retention allowance under the Pay Demonstration Project (see Jun 18, 1989).

Jan 16, 1991: One day after the expiration of a United Nations deadline for Iraqi withdrawal from Kuwait, **military aircraft of the U.S.-led coalition began Operation Desert Storm, striking targets in Iraq and occupied Kuwait**. At 7:00 pm EST, shortly after the attacks began, **FAA declared Level 4 airport/airline security**, the highest domestic level ever imposed. **On Jan 17, the Department of Defense activated Level 2 of the Civil Reserve Air Fleet (CRAF) program**, calling upon U.S. airlines to provide additional transport aircraft. American and allied troops routed Iraqi forces in a ground assault that began on Feb 24, and a U.S.-proclaimed **ceasefire took effect at midnight EST on Feb 27**. (See Aug 17, 1990, and May 14, 1991.)

Jan 18, 1991: **Eastern Air Lines ceased flight operations** as of midnight on this date, after nine months under the control of a trustee appointed by a bankruptcy judge (see Apr 18, 1990). **On Jan 24, the International Association of Machinists and Aerospace Workers ended their strike** of over 22 months against the airline. **On Feb 27, Eastern agreed to plead guilty to Federal charges involving falsification of aircraft maintenance records**, and was fined $3.5 million, while prosecutors dropped other related charges. The case stemmed from a grand jury indictment on Jul 25, 1990.

Jan 23, 1991: The **Department of Transportation announced that it would relax restrictions on foreign investment in U.S. airlines**. Under the new policy, investment of up to 49 percent of total equity obtained from foreign sources would not generally, by itself, be considered an indicator of foreign control.

Feb 1, 1991: In a night approach to Los Angeles International Airport, a **USAir 737 landed atop a Sky West commuter Fairchild Metroliner III**. Both planes then slid into a building as fire began. Fatalities included all 12 persons aboard the commuter flight and 22 of the 89 aboard the USAir flight. On Oct 22, the National Transportation Safety Board listed the accident's probable cause as air traffic control management deficiencies that lead to a controller's issuing inappropriate clearances. FAA actions after the accident included assigning additional controllers to the tower and adjusting runway lights to prevent glare from obstructing the view from the tower. (See Feb 7, 1991.)

Feb 7, 1991: FAA announced a **Runway Incursion Plan** to cut incursions through actions that included tests of advances in runway marking, lighting, and signs at four airports: Boston, Seattle-Tacoma, Pittsburgh, and the new Denver airport under construction (see Jan 15, 1989). On Feb 15, the agency also **amended its ATC Handbook** to prohibit controllers from authorizing aircraft to hold at a taxiway/runway intersection at night or when the intersection was not visible from the tower. The change was among several that FAA had been considering as the result of a ground procedures review, begun in early 1990, that also resulted in the Runway Incursion Plan. (See Feb 1, 1991.)

Feb 8, 1991: FAA's **first annual Capital Investment Plan (CIP)** became effective, superseding the National Airspace System Plan, or NASP (see Jan 28, 1982). The new plan incorporated the NASP projects, over 86 percent of which were completed or in field implementation. The CIP was issued to the public on Apr 23.

Feb 14, 1991: First Lady **Barbara Bush took a commercial flight** from Washington, D.C., to Indianapolis to reassure the public about the terrorist threat to airline security stemming from the conflict with Iraq. (See Jan 16 and May 14, 1991.)

Feb 18, 1991: FAA announced **plans to build a new terminal radar control (TRACON) facility at Elgin, Ill.**, to handle air traffic in the Chicago metropolitan area. Construction began during fiscal year 1993, and the facility was dedicated on Nov 10, 1996.

Feb 26, 1991: The Metropolitan Washington Airport Authority **dedicated a new terminal for international arrivals at Dulles International Airport**.

Mar 1, 1991: The United States and 39 other nations signed a **pact requiring the addition of a chemical marking agent to plastic explosives during manufacture** to assist their identification by use of vapor detectors.

Mar 3, 1991: All 25 persons aboard a United Airlines flight died when their **Boeing 737 crashed on approach to Colorado Springs** airport. Reported theories as to the cause included a "rotor" mountain wind pattern or a mechanical flaw. The National Transportation Safety Board conducted an exhaustive investigation, but reported on Dec 8, 1992, that it could not explain the crash. (See Sep 8, 1994.)

Mar 11, 1991: FAA began a series of **hearings in New Jersey to obtain public comment on the noise effects of air traffic changes under the Expanded East Coast Plan (EECP)**, which had been implemented in phases between Feb 1987 and Mar 1988 (see Aug 25, 1988). The meetings reflected strong citizen discontent with the EECP. On Jun 28, FAA announced a contract with PRC, Inc., to assist in developing an Environmental Impact Statement (EIS) on the effects of New Jersey flight patterns revised under the EECP. In Oct 1992, Congress acted to freeze the pay levels of certain FAA employees involved with the project until the final impact statement was completed. In a response to another congressional action, FAA on Oct 28 announced a series of public meetings in New York and Connecticut as part of an Aircraft Noise Mitigation Review for the New York metropolitan area (see Nov 20, 1992). **On Nov 12, 1992, FAA released a Draft Environmental Impact Statment (DEIS)** on the EECP's effects on New Jersey. The agency scheduled public hearings and gathered public views on the DEIS during a comment period that was subsequently extended until Nov 23, 1993. (See Oct 31, 1995.)

Mar 11, 1991: The **United States and the United Kingdom reached an agreement on airline service** which included permission for United and American Airlines to succeed Pan American and Trans World Airways in serving London Heathrow. In return, British airlines received supplementary rights involving increased access to U.S. airports.

Mar 31, 1991: Construction of the **Development Demonstration Facility** to assess segments of the Advanced Automation System was completed in Gaithersburg, Md. FAA accepted the facility on May 31, and the first operational suitability demonstration began on Aug 13.

Apr 1, 1991: A **Northwest Airlines 747 began a series of test flights in Soviet airspace** as part of a cooperative program to develop a satellite navigation system in which aircraft would receive signals from both the **U.S. Global Positioning System (GPS) and the Soviet Global Orbiting Navigation Satellite System (GLONASS)**. A US/USSR exchange of receivers took place in Montreal on Apr 27. GPS was a satellite-based radio-navigation system controlled by the U.S. Department of Defense. When completed, it would include 24 satellites orbiting 11,000 miles above the earth. At an International Civil Aviation Organization meeting on Sep 5, 1991, FAA Administrator Busey announced that **the United States was offering world civil aviation the use of its GPS** for at least 10 years, starting in 1993 when the system was to be fully operational. (See May 23, 1983, and Oct 14, 1992.)

Apr 4, 1991: FAA completed **transfer of more than 600,000 square miles of oceanic airspace from the Miami and Boston en route centers to the New York center**. The action completed the last phase of a larger restructuring begun in Sep 1989, with transfer of airspace from the San Juan center to the New York center.

Apr 4, 1991: FAA issued a **rule increasing protection against cabin fires** by upgrading requirements for lavatory fire detectors, lavatory trash receptacles, and hand fire extinguishers. (See Mar 29, 1985.)

Apr 5, 1991: An **Embraer 120 commuter plane crashed** on approach to Brunswick/Glynco Jetport, Ga. All 23 persons aboard the Atlantic Southeast Airlines flight died in the accident, including former Sen. John G. Tower (R-Tex.). Citing several incidents, FAA during May required inspections of certain Hamilton Standard propellers used on the Embraer 120 and other aircraft In Apr 1992, the National Transportation Safety Board cited the probable cause of the crash as malfunction of the left propeller control unit. As contributary factors, the Board listed deificencies in the design of the control unit and FAA's approval of that design.

Apr 16, 1991: FAA announced that educators could now obtain information on the agency's aviation education programs by using any modem-equipped personal computer to access the **Federal Education Information Exchange System (FEDIX)**.

Apr 17, 1991: The Supreme Court ruled that **passengers on international flights can not recover damages for purely emotional or mental injuries**.

May 1, 1991: **A majority of those aviation safety inspectors casting ballots voted for representation by the Professional Airways Systems Specialists, known as PASS** (see Dec 31, 1981). On May 10, PASS was certified as the bargaining agent for this previously non-union group of 1,913 FAA employees.

May 2, 1991: FAA ordered the **Collins version of the Traffic Alert and Collision Avoidance System** used on some airliners taken out of service temporarily for correction of a computer problem that led to false traffic warnings.

May 14, 1991: DOT **completed the LORAN-C long range navigation system** by closing the mid-continent coverage gap. (See Jun 2, 1986.)

May 14, 1991: As the Gulf crisis waned, DOT announced that **airport security measures would soon be adjusted to a modified Level 2**, a transition that was completed by May 27. The Defense Department **deactivated the Civil Reserve Air Fleet (CRAF) Level 2 on May 17**, then deactivated Level 1 on May 24. During Operation Desert Shield/Storm, 27 U.S. carriers had flown 5,441 CRAF missions, carrying 709,000 people and 126,000 tons of equipment and supplies. (See Jan 16, 1991.)

May 20, 1991: In an **effort to reduce the bird hazard to aircraft**, U.S. Department of Agriculture biologists shot sea gulls at New York Kennedy airport between this date and Aug 8. More than 14,000 gulls were killed during the program, which was funded by the airport authority and lasted until Aug 8. Similar programs took place at the airport during the next three years, but the practice was suspended in 1995 due to litigation.

May 22, 1991: FAA issued a rule under which the agency could authorize airports to impose **Passenger Facility Charges (PFCs)** to finance airport-related projects, in accordance with the Aviation Safety and Capacity Expansion Act (see Nov 5, 1990). Airlines would be compensated for the service of collecting the fees from passengers departing and making connections. **On Jan 31, 1992, FAA announced its first PFC program approval**, which authorized Savannah (Ga.) International Airport to begin collecting a $3 fee on Jul 1.

May 23, 1991: The FAA's **Aviation Rulemaking Advisory Committee**, which had been established on Feb 5, 1991, held its first meeting.

May 26, 1991: All 223 persons aboard an Austrian Lauda Air flight died when their **Boeing 767 crashed after takeoff from Bangkok**, Thailand. On Jun 6, FAA confirmed that the thrust reverser on one engine was found fully deployed among the wreckage (and a Thai government report later stated that **uncommanded deployment of a thrust reverser** was the accident's probable cause). Beginning on Jul 3, 1991, FAA issued a series of directives requiring deactivation of the thrust reversers on 767s powered by Pratt & Whitney PW4000 series engines, as well as inspections and adjustments for these and certain other Boeing aircraft. In October, Boeing announced that it had received FAA approval for design changes to the aircraft affected by the reverser deactivation order. Subsequent actions stemming from the crash included a Boeing program, undertaken in 1992, to install an additional locking device to keep reversers properly stowed on nearly 2,000 of its aircraft.

May 30, 1991: DOT announced a $5 million grant to Stewart International Airport, Newburgh, N.Y., the **first award under the Military Airports Program** mandated by the Aviation Safety and Capacity Expansion Act of 1990 (see Nov 5, 1990). The new program used Airport Improvement Program funds to assist former military airports and joint civil/military airports.

Jun 2, 1991: As of this date, **Pre-Departure Clearance (PDC) was operational at all 29 continental U.S. airports designated to receive the system**, which used data link to speed departures and reduce voice radio frequency congestion. (An additional PDC system was planned for Honolulu.) Operational evaluation of the first PDC workstation had begun at Dallas/Fort Worth in Jul 1989.

Jun 11, 1991: FAA issued a **rule requiring air carriers to notify aircrew members when there is a specific and credible security threat to their flight**.

Jun 15, 1991: The Philippines' **Mt. Pinatuba erupted**, damaging airports within that country and emitting a huge ash cloud that disrupted aircraft operations over a wide area. Ash damaged at least 17 airliners in flight, most at distances over 600 miles from the volcano. The eruption lent urgency to the **First**

International Symposium on Volcanic Ash and Aviation Safety, held on Jul 8-12 in Seattle. FAA, one of the symposium's sponsors, reported on its work to improve volcanic hazard notification procedures. The problem was illustrated again when Alaska's **Mt. Spurr erupted on Aug 18, 1992**, depositing almost a quarter inch of ash on Anchorage airport. One of the airport's runways reopened the following afternoon, and the other reopened on Aug 20. Later FAA actions to combat this hazard included a December 1996 warning to airliners to avoid the **Pavlov Volcano** in the Aleutian Islands. (See Dec 14, 1989.)

Jun 17, 1991: The **Supreme Court ruled that the law establishing the Metropolitan Washington Airports Authority was unconstitutional** (see Oct 30, 1986). The Court held that the legislation violated the separation of powers by giving a congressional review board veto rights over WMAA's decisions. **New legislation enacted on Dec 18, 1991**, removed the veto rights.

Jun 21, 1991: FAA issued a **security regulation on foreign air carriers** operating into or out of the United States, requiring such carriers to provide a level of protection similar to that of U.S. carriers serving the same airports.

Jun 21, 1991: FAA awarded a **contract to Bendix for two Microwave Landing Systems**. The contract included an option for 26 additional units, which the agency subsequently ordered. (See Dec 6, 1989, and Jun 15, 1992.)

Jun 27, 1991: **America West Airlines filed for protection under Chapter 11 of the bankruptcy code**. The Phoenix-based carrier had begun operations in Aug 1983, and was listed as a major airline by 1990. **The airline emerged from bankruptcy on Aug 25, 1994**.

Jul 1, 1991: **Piper Aircraft Corporation filed for protection under Chapter 11 of the bankruptcy code**.

Jul 1991: The **first of two Mode S production systems was delivered to the Technical Center** in preparation for formal acceptance of this new radar beacon ground interrogator system, 137 of which were to be implemented in the airspace system. (See Oct 5, 1984, and Jul 30, 1992.)

Jul 1, 1991: A new **Braniff International Airlines began scheduled service.** Legally a different entity from the earlier Braniff (see Sep 28, 1989), the small new airline flew for only a few weeks before filing for Chapter 11 bankruptcy protection on Aug 7, 1991. **It ceased operations on Jul 2, 1992**.

Jul 25, 1991: FAA announced the **results of the first full year of drug testing** (CY90) of employees in and applicants for safety/security positions in the aviation industry: of 230,621 tests, 966 (or 0.4 percent) were positive for drug use. The rate of positive findings in subsequent years remained below one percent. (See Dec 1, 1989, and Feb 3, 1994.)

Aug 6, 1991: The FAA Technical Center, in conjunction with Sandia National Laboratories, opened an **aging aircraft nondestructive inspection validation center** at Albuquerque International Airport, N.M.. The center, which studied improvements in nondestructive inspection systems, was dedicated on Feb 10, 1993.

Aug 8, 1991: **DOT ended all aviation sanctions against South Africa** and said that it would consider applications for air carrier routes between the two countries. The action followed a DOT show cause order issued on Jul 11, the day after President Bush declared South Africa had met conditions set by the anti-apartheid law under which the sanctions were imposed (see Nov 16, 1986).

Aug 13, 1991: FAA held ground-breaking ceremonies for its Technical Center's new **Advanced Automation System Laboratory and its Aviation Security Laboratory**. Construction was completed on both facilities during FY 1993.

Aug 15, 1991: FAA issued a rule prescribing **more stringent standards for hiring, training, and performance of airline and airport security personnel** as mandated by the Aviation Security Improvement Act. (See Nov 16, 1990, and Sep 28, 1995).

Sep 1, 1991: **Barry Krasner became president of the National Air Traffic Controllers Association**, having defeated Steve Bell in an election during the previous month. In Aug 1994, Krasner won a second three-year term.

Sep 19, 1991: FAA adopted two rules that had been mandated by the Airport Noise and Capacity Act of 1990 (see Nov 5, 1990). One **rule required airlines, by the end of 1999, to eliminate Stage 2 noise-level aircraft** (see Feb 18, 1980), and provided interim deadlines and options for transitioning to Stage 3. The **companion rule set procedures for any new local restrictions on Stage 2 operations**, and required that local restrictions on Stage 3 be achieved by voluntary agreements with the airlines or receive FAA approval. Secretary Skinner announced the new rules on Sep 24, saying that DOT had fulfilled its "promise to Congress and the American people to formulate a balanced **national noise policy**." The Port Authority of New York and New Jersery and local governments in Los Angeles and Minneapolis-St. Paul considered plans for certain restrictions on Stage 2 aircraft in advance of the national phase-out; however, FAA successfully opposed the adoption of local rules that it deemed incompatible with national policy and legislation. Meanwhile, progress on eliminating noisier aircraft brought the percentage of Stage 3 planes in the U.S. airline fleet to 59.3 by the end of 1992 and 70.7 at the end of 1995.

Sep 20, 1991: A **dedication ceremony for the New York Terminal Radar Approach Control Facility's ARTS IIIE marked completion of Stage II of the upgrade** of the TRACON's Automated Radar Terminal System. (See Mar 26, 1986.)

Sep 30, 1991: **Joseph Del Balzo became Executive Director for System Operations, and the position's responsibilities were expanded**. As documented in a directive issued on Jan 31, 1992, the reorganization gave Del Balzo's new position responsibility for four Associate Administrators directing major agency functions (Air Traffic; Airway Facilities; Regulation and Certification; and Aviation Standards). Other elements reporting to Del Balzo were the: Office of System Capacity and Requirements; Aeronautical Center; and Regional Administrators. The reorganization also **abolished the Executive Directors for Administration and Resource Management and for Regulatory Standards and Compliance**, reducing the number of FAA's Executive Directors from five to three (see Feb 21, 1990, and Nov 26, 1991). The Associate Administrators for Administration and for Human Resource Management were redesignated Assistant Administrators reporting directly to the Administrator. The Logistics Service was abolished and its functions divided between the Associate Administrator for Airway Facilities and a new Office of Acquisition Support under the Executive Director for System Development.

Sep 30, 1991: During fiscal 1991, which ended on this date, FAA and the National Air Traffic Controllers Association began a **Quality Through Partnership program** aimed at improving operations and productivity.

Oct 1, 1991: The first **Peripheral Adapter Module Replacement Item (PAMRI)** became operational at the Seattle ARTCC. PAMRI was the initial element of the Advanced Automation System. (See Jul 26, 1988, and Nov 30, 1992.)

Oct 1, 1991: FAA **inaugurated the Federal Security Manager (FSM) Program** as mandated by the Aviation Security Improvement Act (see May 15, 1990, and Nov 16, 1990). The Federal Security Managers had responsibility for approving airport security programs, acting as focal points for FAA security operations at airports, coordinating government and law enforcement activities in domestic security areas, and providing security information to the aviation community at each of the 18 airports where FSMs were stationed.

Oct 1, 1991: FAA received 6 British Aerospace BAe-800 aircraft from the Air Force. The transfer was part of an **agreement under which FAA would take over the last of the Air Force's capability to conduct flight inspection of air navigation aids** (see Jan 1962).

FAA's **flight inspection fleet continued to evolve** under a multi-year modernization plan. As of Nov 1, 1995, the flight inspection inventory included the 6 Bae-800s, 19 BE-300 Beechcraft, 1 BE-F90 Beechcraft, 3 NA 265-80 Sabreliners, as well as 5 other aircraft with disposal action pending. (Planning called for further disposals and for acquisition of Learjet 60 and Canadair 601 aircraft.) In addition, FAA's inventory included 15 aircraft for training, research and development, and support functions. The total fleet consisted of 47 owned and two leased aircraft.

Oct 23, 1991: A ceremony in San Diego marked the start of construction of a new **Southern California Terminal Radar Approach Control (TRACON)** facility. Five existing TRACONs in the area were to be consolidated into the new facility, a process completed in Sep 1995. Meanwhile, FAA planned several similar TRACON consolidations. (See Apr 19, 1993.)

Oct 28, 1991: The **Aging Aircraft Safety Act**, enacted on this date, required FAA to undertake rulemaking requiring certain airworthiness reviews and inspections for airliners in service more than 15 years. The agency accordingly published such a proposal on Oct 5, 1993. The act also directed FAA to establish programs to insure that U.S. air carriers properly maintained their older aircraft and to encourage foreign airlines to so the same. Although the legislation did not specifically address commuter aircraft, FAA extended its aging aircraft program to that sector.

Nov 8, 1991: FAA notified Congress of an **Auxiliary Flight Service Station Plan** adding 26 permanent and five seasonal auxiliary stations to supplement the 61 automated flight service stations already planned (see Oct 2, 1981). The Aviation Safety and Capacity Expansion Act (see Nov 5, 1990) had mandated the project. (See Feb 12, 1986, and Feb 15, 1995.)

Nov 13, 1991: **Midway Airlines ceased operations** at midnight. (See Nov 1, 1979.) Earlier that day, Northwest Airlines had dropped plans to acquire Midway, which had filed for Chapter 11 bankruptcy protection on Mar 26, 1991. **On Nov 15, 1993, a smaller new carrier named Midway Airlines began service** from Chicago Midway airport.

Nov 14, 1991: The U.S. **Justice Department indicted two Libyans for the bombing of Pan American Flight 103** (see Dec 21, 1988). Libya reportedly detained the suspects but refused to extract them. (See Apr 15, 1992.)

Nov 20, 1991: The White House announced the selection of **FAA Administrator James Busey to become DOT Deputy Secretary**, succeeding Elaine Chao, who left DOT on Oct 22 to become Peace Corps Director. **On Nov 22, the White House announced the choice of Jerry R. Curry to succeed Busey** as FAA Administrator. A retired Army major general, Curry was serving as Administrator of the National Highway Traffic Safety Administration. Subsequently, **Curry withdrew as nominee for the FAA post on Mar 20, 1992**. (See Dec 4, 1991.)

Nov 21, 1991: **Secretary of Transportation Skinner and his Mexican counterpart signed an agreement expanding aviation opportunities**. The accord permited each country to designate a carrier to fly between any U.S. city and any Mexican city, a level of flexibility unique in U.S. international aviation relations.

Nov 26, 1991: Administrator Busey announced a **reorganization at FAA headquarters**, including:

* A new **Assistant Administrator for Information Technology** position with responsibility for administrative and operational information resources. The Office of Management Systems at headquarters was abolished and its former director became Acting Deputy for the new Assistant Administrator.

* A new **Assistant Administrator for Budget and Accounting** position with responsibility for the Office of Budget and the Office of Accounting. These two offices had previously reported to the Associate Administrator for Administration, a position which was abolished.

* **Retitling the Executive Director for Acquisition as the Executive Director for Acquisition and Safety Oversight and expanding this position's responsibilities** by the addition of: the Office of Aviation Safety, whose head was retitled an Associate Administrator rather than an Assistant Administrator; and the appraisal functions of the former Deputy Associate Administrator for Appraisal. (See Sep 30, 1991, and Nov 30, 1993.)

Dec 4, 1991: **Pan American World Airways ceased flying** after 64 years of operations. On the previous day, Delta Air Lines had told a bankruptcy court that it would not supply further financing for Pan Am (see Jan 8, 1991). At an auction of Pan Am assets on Dec 9, United emerged as the largest purchaser, bidding successfully on most of the defunct airline's Latin American routes. Such remaining Pan Am property as industrial and office equipment was auctioned at Miami airport on Aug 4-7, 1992. (See Sep 26, 1996.)

Dec 4, 1991: **James B. Busey left the post of FAA Administrator and became Deputy Secretary of Transportation** (a position which he held until resigning effective Jun 19, 1992). On Busey's departure from FAA, Deputy Administrator Barry L. Harris became Acting Administrator, and Executive Director for System Operations Joseph M. Del Balzo became Acting Deputy Administrator (see Jun 27, 1992). **On Dec 6, 1991, President Bush announced the choice of DOT Secretary Samuel L. Skinner to become his chief of staff** on Dec 16, replacing John H. Sununu (see Feb 24, 1992). Busey became Acting Secretary upon Skinner's departure from DOT.

Dec 17, 1991: FAA published a **rule to establish six classes of airspace** designated by a single letter, in conformance with the recommendations of the International Civil Aviation Organization. The new designations and their equivalents under the existing system were: Class A (Postive Control Area); Class B (Terminal Control Area); Class C (Airport Radar Service Area); Class D (Airport Traffic Area, and Control Zone); Class E (General Controlled Airspace); and Class G (Uncontrolled Airspace). **The new system became effective on Sep 16, 1993**.

Dec 18, 1991: President Bush signed the **Intermodal Surface Transportation Efficiency Act**, designed to help develop intermodal travel through a range of actions, one of which was improving access to the country's airports. On May 11, 1992, DOT invited the 50 states to submit proposals for development of intermodal transportation plans, including aviation as well as surface modes. On Jul 2, 1992, DOT established a new Office of Intermodalism.

Dec 26, 1991: On the day following President Mikhail S. Gorbachev's resignation, **the Soviet legislature voted the Soviet Union out of existence**.

***1992**

Jan 31, 1992: **Trans World Airlines filed for protection under Chapter 11 of the bankruptcy laws**, announcing a plan under which chairman Carl Icahn would lose his controlling interest but continue to head the airline for at least one year. Subsequent events included acquisition of substantial interests in TWA by its employees, and the departure of Icahn in early 1993. **TWA became solvent on Nov 3, 1993, filed again for protection on Jun 30, 1995, and emerged from its second Chapter 11 reorganization on Aug 23, 1995**.

Feb 3, 1992: FAA announced a **computerized testing system, expected to speed selection of air traffic controller trainees** and improve their success rate, as well as a strengthened training program. Previously, candidates spent their first 9 weeks of employment training and testing and were terminated if they were not successful. The new program took 4 1/2 days, demonstrated an equivalent ability to predict success, and was conducted before an individual was hired.

Feb 4, 1992: FAA awarded a 10-year, $508 million contact to Electronic Data Systems (EDS) to provide automated data processing services to support such functions as safety analysis and payroll. On Aug 14-15, the company successfully transferred computer applications and data from FAA's Aeronautical Center in Oklahoma City to an EDS data center in Plano, Texas. The EDS contract was part of the **Computer Resources Nucleus (CORN) project**, a program to "outsource" computer services begun in the fall of 1986. CORN had received criticism during June 1990 when General Accounting Office faulted FAA's planning and justification of the project. The General Services Administration suspended procurement authority for CORN in September, but reinstated the program in Dec 1990 after FAA made revisions.

Feb 7, 1992: The Department of Transportation published a request for public comments on rules that may be outdated, too costly, or impede economic growth. The action was a response to President Bush's Jan 28 State of the Union speech declaring a **90-day rulemaking moratorium and a review of regulations**. On May 1, Secretary Card announced that a regulatory review had identified over 300 administrative or legislative changes in DOT regulations that would help the nation's economy.

Feb 24, 1992: **Andrew H. Card, Jr., took the oath as Secretary of Transportation** (a public swearing-in ceremony was held on Mar 11). A former member of the Massachusetts legislature, the new Secretary had been deputy Chief of Staff under Bush and served the Reagan White House as deputy assistant to the President and director of the Intergovernmental Affairs Office. Card had been nominated on Jan 22 and

confirmed by the Senate on Feb 21. He served for the remainder of the Bush Administration, resigning effective Jan 20, 1993.

Mar 5, 1992: Effective this date, FAA chartered the **Pilot and Aviation Maintenance Technician Shortage Blue Ribbon Panel**. On Sep 27, 1993, FAA announced the results of the panel's study, which forsaw a possible shortage of experienced personnel within three to five years. The panel considered the fundamental solution was to focus education and training programs on industry needs, and made 13 recommendations to that address the problem.

Mar 17, 1992: A ceremony at the Salt Lake City Air Route Traffic Control Center commemorated the completed installation of **Meteorologist Weather Processors (MWPs)** at 21 en route centers and the central flow control facility in Washington. The system assisted air traffic controllers by combining data from the National Weather Service, FAA radars, and a satellite operated by Harris Corporation, the contractor that provided MWP on a lease basis. On Jul 8, 1996, FAA announced a contract with Harris to develop, install, and support the **Weather and Radar Processor (WARP)**, a more advanced system that would integrate information including data from Next Generation Weather Radar (NEXRAD). The first phase of this project would replace MWP with upgraded leased equipment.

Mar 17, 1992: FAA issued a **rule extending the requirement for the Ground Proximity Warning System** to all turbine powered (rather than just turbojet) aircraft with 10 or more passenger seats flown by air taxi and commercial operators, effective Apr 24, 1994. The new rule affected primarily commuter airlines. On May 27, the National Transportation Safety Board announced that it had removed a recommendation for such a rule from its "Most Wanted" list of safety actions. (See Dec 24, 1974.)

Mar 22, 1992: A **USAir Fokker F-28 4000 jet crashed at New York's La Guardia Airport** while taking off during a snowstorm, killing 27 of the 51 persons aboard. In a 1993 report, the National Transportation Safety Board cited the probable cause as: failure of the airline industry and FAA to provide flight crews with procedures and requirements compatible with departure delays in conditions conducive to icing; and the flight crew's decision to take off without positive assurance that the airplane's wings were ice-free after 35 minutes exposure to precipitation following deicing. (See Nov 15, 1987, and May 28, 1992.)

Mar 31, 1992: DOT announced that **the United States would explore "open skies" aviation agreements with all European countries** willing to allow free access to their markets. In the past, the nation had offered such agreements to only a few of its largest aviation partners. On Aug 5, DOT established a **definition of "open skies"** including such points as: (1) open entry on all routes; (2) unrestricted capacity and frequency on all routes; (3) flexibility in setting fares; (4) liberal charter arrangements; (5) liberal cargo arrangements; (6) open code-sharing opportunities; (7) nondiscriminatory operation of and access to computer reservations systems; (8) the ability of carriers to freely enter into commercial transactions related to their flight operations; (9) the right of a carrier to perform its own ground handling in the other country; (10) no restrictions on converting earnings into hard currency or returning earnings to homelands; and (11) the right to operate between any U.S. airport and any point in the European country without restriction. (See Sep 4, 1992.)

Apr 8, 1992: FAA announced a **new self-audit program for aviation manufacturers**. The firms were encouraged to identify their own violations of safety regulations, and the agency would not take enforcement action for infringements voluntarily reported and corrected. FAA had previously unveiled a similar program for airlines (see Mar 27, 1990).

Apr 15, 1992: **United Nations sanctions, including a cut-off of air transportation links, went into effect against Libya** due to its failure to surrender two suspects in the Dec 1988 bombing of a Pan American flight (see Nov 14, 1991). On Apr 16, FAA issued a special regulation implementing a Presidential order prohibiting any aircraft on a flight to or from Libya from taking off from, landing in, or overflying the United States.. Since commercial air links with Libya had already been prohibited for several years (see Feb 11, 1986), the action expanded the ban to business and private aircraft and to overflights of U.S. territory.

Apr 16, 1992: At Manassas, Va., FAA **dedicated its first "recycled" tower**. The 60-foot structure had been moved from Englewood, Colo., where it was no longer being used.

Apr 22, 1992: FAA announced **expansion of the Terminal Area VFR Routes program** which charted special routes to help pilots using Visual Flight Rules in avoiding controlled airspace. The concept, which had been evaluated in the Los Angeles area in 1988-89, would be applied at eight other locations.

Apr 27, 1992: FAA announced that its Flight Standards Service was **opening a direct computer line to answer questions** from the aviation community about regulations and procedures. The action reflected a growing global trend toward use of computer networks for communications. On Aug 15, 1995, FAA opened a "Headquarters News and Public Affairs Home Page" on the World Wide Web to provide news releases and other information to the media and public, and the Northwest Mountain Region opened a home page on the same day.

Apr 30, 1992: President Bush signed an order directing Federal agencies to modify their procedures in order to facilitate the **privatization of airports** and other public assets built with Federal assistance.

Apr 30, 1992: **Rioting in the Los Angeles area** forced FAA to temporarily close its towers at Santa Monica, Torrance, and Hawthorne, as well as the flight service station at Hawthorne. The disorders also hampered operations at Los Angeles International, where smoke from burning buildings created Instrument Flight Rules conditions.

May 4, 1992: To facilitate emergency evacuations, FAA published a **rule specifying required distances between rows of seats near over-wing exits on airliners**: a 20 inch clear path for three-seat exit rows, and a 10 inch clear path for two-seat exit rows. As an alternative, airlines could remove the seat nearest to each overwing exit and provide two paths six inches wide in front of and behind the seats adjacent to the exit.

May 20, 1992: At the request of the State Department, **DOT halted the U.S. landing rights of Yugoslav Airlines**. The sanction was a response to Yugoslavia's failure to guarantee that Sarajevo Airport would be reopened for humanitarian relief flights or that Serbian troops would withdraw from the airport and its vicinity. In accordance with a Presidential order issued on June 5, DOT and FAA implemented sanctions that included a ban on flights between the United States and the Federal Republic of Yugoslavia (Serbia and Montenegro). The sanctions were suspended indefinitely following a Jan 2, 1996, determination by the President that such a suspension was needed to achieve a settlement of the conflict in Bosnia-Herzegovina.

May 28, 1992: FAA opened a two-day **International Conference on Airplane Ground Deicing**. The conference reflected global concern about icing and produced a series of recommendations for combating the hazard. On Sep 25, FAA announced a requirement for **airlines using large aircraft (Part 121) to have an approved ground de-icing/anti-icing program in place by Nov 1, 1992**. On Dec 29, 1993, FAA announced **strengthened deicing requirements for commuter and air taxi pilots** to check aircraft surfaces before taking off in adverse weather. The agency also mandated certain new training requirements for commuter pilots as well as certain training and checking requirements for pilots of larger private planes. (See Mar 22, 1992, and Oct 31, 1994.)

Jun 15, 1992: FAA awarded contracts to the Wilcox and Raytheon corporations to design and develop **advanced versions of the Microwave Landing System**. Each vendor was to produce six to twelve first article test systems. Following successful completion of this phase, full scale production was planned with the same contractors in 1996. (See Jun 21, 1991, and Jun 2, 1994.)

Jun 17, 1992: **DOT Secretary Card and Russia's Foreign Minister signed a memorandum of understanding on airspace use, air navigation, and air traffic control**. Features included joint cooperation in opening shorter Far Eastern routes and FAA assistance in establishing a joint civil-military air traffic system for Russia. (See Feb 16, 1990, and May 25, 1993).

Jun 26, 1992: The **Supreme Court ruled that airports are not a public forum and hence airport authorities may place reasonable restrictions on speech**. Such regulation might include a ban on soliciting donations, and limits on the time, place, and manner of distributing literature. (See Feb 18, 1980.)

Jun 27, 1992: **General Thomas C. Richards (USAF, Ret.) became FAA's twelfth Administrator**, succeeding James B. Busey (see Jun 30, 1989), in a private ceremony. On Jul 17, Richards took the oath a second time in a public ceremony. President Bush had announced Richards' nomination on Mar 31, following the withdrawal of a previous nominee (see entry for Nov 20, 1991), and formally nominated him

on May 1. The Senate confirmed the nomination in June, and Congress passed legislation exempting Richards from the statute barring military officers from serving as FAA Administrator.

Born on Feb 13, 1930, in San Diego, Calif., Richards received a B.S. from Virginia Polytechnic Institute in 1956, an M.A. from Shippensburg State College in 1973, and was also a graduate of the U.S. Army War College. Richards' military career began with the Army infantry in 1948 and included combat service in the Korean War. He received a commission as a distinguished graduate of the Air Force Reserve Officer Training Corps program at Virginia Polytechnic Institute in 1956. He earned his pilot's wings in 1957. During his Air Force career, he flew over 600 combat missions as a forward air controller in the Vietnam war. His assignments included: commandant of cadets at the Air Force Academy; vice commander, 8th Air Force, Strategic Air Command; commander of the Air University; and deputy commander in chief, U.S. European Command. Upon retiring from the military in 1989, he became a corporate consultant and served on the President's Commission on Aviation Security and Terrorism (see May 15, 1990). Richards was FAA Administrator for less than seven months, resigning when William J. Clinton succeeded George H. Bush as President on Jan 20, 1993.

Jul 17, 1992: The United States and the European Economic Community signed an **agreement placing certain limitations on government subsidies for the development and production of large civil aircraft**.

Jul 20, 1992: One of the Navy Department's five prototypes of the **V-22 Osprey tiltrotor crashed** in the Potomac River, killing all seven people aboard. (Another of the prototypes had crashed, causing no injuries, during the previous summer.) The Navy Department suspended V-22 flight testing until after an accident report, dated May 18, 1993, identified a fluid leak and fire as the cause of the Potomac River crash. On Aug 20, a XV-15 tiltrotor crashed during a Bell Helicopter demonstration flight at Arlington (Texas) Municipal Airport. The XV-15, a smaller, two-seat version of the V-22, was a forerunner of the Osprey.

Jun 29, 1992: In a report released to Congress on this date, **FAA recommended that all states be allowed to administer block grants** for nonprimary airports on the basis of a successful pilot project under which three states had administered such grants. (See Oct 1, 1989, and Oct 31, 1992.)

Jul 30, 1992: **FAA excluded general aviation aircraft from the rule that all transponders installed after Jul 1, 1992, be Mode S transponders** (see Jan 29, 1987).

Aug 24:, 1992 **Hurricane Andrew** swept through south Florida, causing devastation that included damage to airports and resulting flight cancellations. Among the worst hit FAA facilities were the Richmond Long Range Radar site and the tower and International Automated Flight Service Station at Tamiami airport, all of which were severely damaged. Facilities at Key West lost communication lines, and other agency installations experienced significant damage, power loss, and outages. By the following day, however, Miami, Key West, West Palm Beach, and Fort Lauderdale Executive airports reopened. The hurricane moved into Louisiana on August 26. During the height of the storm, most FAA facilities in the affected part of that state shut down or were placed on standby status, and several airports were temporarily closed.

The hurricane destroyed or badly harmed the homes of about 144 FAA employees in the Miami area, and the agency organized an airlift to provide emergency relief. A committee representing local agency organizations coordinated the distribution of supplies and of funds donated by FAAers throughout the country, while the agency provided such benefits as administrative leave, counseling, and emergency loans. At the same time, FAA rushed the restoration of airspace system facilities and supported the overall Federal relief program.

Aug 28, 1992: **Typhoon Omar struck Guam** with winds of up to 150 miles an hour, causing major damage to an estimated 75 to 90 percent of all buildings. The island lost all power. By Aug 30 the airport had reopened, but only for VFR/daylight operations. No FAA families were injured, although the housing area was severely damaged.

Sep 4, 1992: DOT announced that the **U.S. and the Netherlands had agreed to open their international aviation markets to each other's airlines**, the first such agreement under the Department's open skies initiative (see Mar 31, 1992). Taking advantage of the pact, **Northwest Airlines and KLM Royal Dutch Airlines agreed on Sep 9 to create what they called "a unified global airlines system."** Although KLM already had a 20 percent stake in Northwest, the new agreement enabled the two carriers to integrate their operations worldwide. On Jan 11, 1993, DOT gave Northwest and KLM immunity from antitrust laws so

they could operate as one airline. The **trend toward greater collaboration with foreign carriers** was further illustrated by cooperative plans announced in 1993 by the following U.S. airlines: Delta (with Swissair); Continental (with Air France); United (with Lufthansa); and USAir (which announced a scaled-back version of a plan for partnership with British Airways first proposed in July 1992).

Sep 9, 1992: FAA published a rule establishing a **"primary aircraft" category** for aircraft of simple design intended for pleasure and personal use. Primary aircraft must: be unpowered or powered by a single engine meeting certain specifications; have an unpressurized cabin; carry no more than four persons; and weigh no more than 2,700 pounds. (Ultralight vehicles were not included, however.) The new classification was intended to simplify certification procedures and provide owners with aircraft less costly to buy and maintain. The addition of this category raised the number of such of type certificates to 8: normal, utility, acrobatic, transport, special class, commuter, restricted, and primary.

Sep 11, 1992: **Hurricane Iniki hit parts of the state of Hawaii**, killing one person on the island of Oahu and three on Kauai, which suffered most of the damage. The storm severely damaged the control tower cab at Kauai's Lihue airport.

Sep 15, 1992: FAA published a **final rule requiring airlines to allow the use of approved child restraint systems (CRSs) on their aircraft**. At the same time, FAA amended its Advisory Circular describing approved CRSs to exclude any that positioned the child on the lap or chest of a seated adult. (See Feb 26, 1985, and Sep 21, 1994.)

Sep 16, 1992: FAA published a rule allowing manufacturers to use a much less costly **alternative method of determining whether light helicopters met noise certification standards**. The new procedure employed fewer tests and microphones, but required helicopters to meet a standard that was two decibels more stringent than under the normal procedure.

Sep 30, 1992 During the fiscal year ending on this date, air fares in markets served by Southwest Airlines were dramatically lower than in other short haul markets, according to a DOT study announced on May 11, 1993. The study found that Southwest (which had begun operations as a Texas intrastate carrier on Jun 18, 1971) now ranked fifth among U.S. airlines in terms of passengers carried. **The success of Southwest illustrated the demand for low-cost service in short haul markets**. The DOT study also noted an **increase in new carriers** over the past year, including five jet airlines providing scheduled passenger service.

Sep 1992: FAA inspectors completed the first evaluations under the **Aircraft Certification Systems Evaluation Program (ACSEP)**. The program used standardized evaluation techniques to ensure the continued integrity of manufacturers' design data and production activities subsequent to their initial approval.

Oct 8, 1992: **FAA ordered inspection of fuse pins securing the engines of most Boeing 747s** following the crash of an Israeli 747 in Holland on Oct 4. On Nov 13, the agency ordered all U.S. 747 operators to replace old-style fuse pins after the inspections showed instances of corrosion and cracking.

Oct 14, 1992: An FAA-chartered task force released its **report on a Global Navigation Satellite System using the Global Positioning Systen (GPS)**. The report concluded that the system offered the greatest opportunity to enhance aviation efficiency and safety since the introduction of radio communications and navigation. To help begin the implementation process, FAA on Dec 10 released a **technical standard order prescribing standards for airborne supplemental navigation equipment using GPS**. (See Apr 1, 1991, and Dec 17, 1993.)

Oct 27, 1992: Effective this date, **FAA amended its regulation on exit row seats**, now redefined as "exit seats" to clarify that the rule affected only seats providing direct acces to an exit or seats in rows through which passengers must pass to use an exit. The changes included: prohibiting taxi or pushback until a crewmember has verified that no exit seat is occupied by a person unable to perform required emergency functions; and prohibiting a passenger from sitting in an exit seat if that passenger cannot read, speak, or understand the primary language of the crew. (See Mar 2, 1990.)

Oct 31, 1992: President Bush signed the **Airport and Airway Safety, Capacity, Noise Improvement and Intermodal Transportation Act of 1992**. Among other provisions, the act contained amendments

reauthorizing the **Airport Improvement Program** through Sep 30, 1993 (see May 26, 1994). It also reauthorized the **State Block Grant Pilot Program** through fiscal 1996 for the current participants (Illinois, North Carolina, and Missouri) and provided funds to add four additional states to the program. On Jan 15, 1993, FAA selected the states of Michigan, New Jersey, Texas, and Wisconsin to participate in the pilot project. (See Oct 1, 1989.)

Oct 1992: In response to safety issues relating to aging aircraft, FAA established the Center of Excellence in Computational Modeling of Aircraft Structures as a joint effort with Rutgers University and Georgia Institute of Technology. This was the **first Air Transportation Center of Excellence** created by the agency through a program in which selected institutions received long-term matching grants to conduct research under cooperative agreements. FAA subsequently established a Center of Excellence for airport pavement research in 1995 and another for operations research in 1996. In Dec 1996, FAA announced that it was soliciting proposals to establish a Center of Excellence for airworthiness assurance.

Nov 20, 1992: FAA outlined the **results of a congressionally mandated Aircraft Noise Mitigation Review for the New York metropolitan area** within a 55 nautical mile radius of La Guardia airport. The review complemented FAA's work on the environmental impact of the Expanded East Coast plan on New Jersey (see Mar 11, 1991). In conducting the review, FAA held 18 listening sessions in New York and Connecticut. The review team's recommendations, which represented a comprehensive **action plan**, included: raising certain helicopter flight altitudes; amending flight patterns to allow more flights bound for La Guardia to remain longer over Long Island sound; establishing a second instrument landing system at Stewart Airport, and increasing noise reduction awareness training programs.

Nov 27, 1992 A directive issued on this date **retitled the Aviation Standards National Field Office as the Office of Aviation System Standards**, a designation that better reflected its identity as an FAA Washington headquarters organizational element.

Nov 30, 1992: **FAA gave a "cure notice" to IBM concerning its development of the Initial Sector Suite System (ISSS)**, a part of the Advanced Automation System (AAS). The agency stated that unless the company provided a plan to remedy deficiencies within 10 calendar days, the government would withhold progress payments under the contract. Earlier in November, IBM had stated that, because of software difficulties and other problems, the ISSS would not be ready for FAA acceptance until Sep 1994, thus adding another 14 months to an already delayed timetable. Following the cure notice, IBM submitted to FAA an initial and later a final cure plan. FAA's own steps to remedy the situation included changes in the project's management structure and an Apr 1 ban on further changes in user requirements for the ISSS. (See Oct 1, 1991, and Dec 13, 1993.)

Dec 10, 1992: Northwest Airlines began the first commercial flight to transport U.S. troops to Somalia in support of **Operation Restore Hope**, an international effort to counter famine and disorder in that nation. U.S. forces remained in Somalia until Mar 1994, and returned briefly during Feb-Mar 1995 to aid the evacuation of United Nations peacekeepers.

Dec 17, 1992: The United States, Canada, and Mexico concluded the **North American Free Trade Agreement (NAFTA)**. The U.S. Congress approved implementation of NAFTA by passing P.L. 103-182, signed into law on Dec 8, 1993. On May 20, 1994, FAA Administrator Hinson and his counterparts from Mexico and Canada held a trilateral meeting as a first step in a continuing process aimed at increasing cooperation on a variety of aviation issues.

Dec 18, 1992: Eight fatalities occurred when a **Cessna 550 crashed after encountering wake turbulence behind a Boeing 757** during descent into Billings, Mont. The National Transportation Safety Board subsequently cited the probable cause as the pilot's failure to follow established wake turbulence procedures. Nevertheless, the accident increased concerns that 757 wake turbulence might represent a special problem, an issue raised within FAA by Chief Scientist Robert Machol. (See Nov 1, 1975, and Dec 15, 1993.)

Dec 21, 1992: **The Justice Department filed a civil antitrust suit against eight airlines, charging them with fixing prices through their computerized fare system**. The suit resulted from a three year probe into ticket pricing between 1988 and 1990. All eight carriers eventually signed consent decrees, denying wrongdoing but agreeing to avoid the fare practices.

Jan 7, 1993: DOT announced its approval of a $450 million **investment in Continental Airlines** by Air Canada and Air Partners of Dallas, Tex. **On Apr 28, Continental emerged from Chapter 11 bankruptcy** (see Dec 3, 1990).

Jan 20, 1993: **William J. Clinton became President**, succeeding George Bush. FAA's Administrator Thomas C. Richards left office with the Bush Administration, and **Joseph M. Del Balzo became Acting Administrator** (see Aug 10, 1993).

Jan 21, 1993: **Federico F. Peña became Secretary of Transportation**, succeeding Andrew H. Card with the change of Administrations. A former member of the Colorado legislature and two-term mayor of Denver, Peña had been a strong advocate of the new airport under construction for his city (see May 17, 1988). He served as Secretary until Feb 14, 1997 (see entry for Dec 20, 1996).

Feb 9, 1993: **Lt. Gen. Elwood R. Quesada died** at the age of 88. Quesada had been FAA's first Administrator (see Nov 1, 1958).

Feb 22, 1993: The first prototype of the **McDonnell Douglas MD-90 series**, a follow-on to the MD-80 series, made its initial flight. FAA type-certificated the MD-90 on Nov 16, 1994, and it entered commercial service on April 1, 1995, with Delta.

Mar 13, 1993: A **blizzard swept over the East Coast**, halting or delaying almost all airline travel from Georgia to Maine. At one point during the two-day storm, which claimed over 100 lives, all major airports were closed north of Charlotte, N.C. The airspace system took several days to recover.

Mar 25, 1993: Secretary of Transportation Federico Peña confirmed that he planned a **reorganization separating aviation policy issues from the policy issues of other transportation modes**. As documented in a directive issued on Feb 15, 1994, the change abolished the Office of the Assistant Secretary for Policy and International Affairs and established a new Assistant Secretary for Transportation Policy and a new Assistant Secretary for Aviation and International Affairs.

Apr 7, 1993: President Clinton signed legislation creating a **National Commission to Ensure a Strong, Competitive Airline Industry** to study the problems facing the aviation industry. Former Virginia governor Gerald L. Baliles chaired the commission, which had 11 non-voting and 15 voting members. The commission met for the first time on May 24, and delivered its final report to the President on Aug 19. Among its recommendations was the **creation of an independent federal corporate entity within DOT to manage and fund air traffic control** and related functions (see Sep 7, 1993). Other recommendations included: establishment of an advisory committee to further the airlines' financial health; bankruptcy code reforms; tax breaks for airlines; possible use of oil reserves when needed to control sharp increases in fuel prices; efforts to create a multi-national operating environment for airlines free of discrimination and restrictions; allowing foreign ownership of up to 49 percent of voting equity in U.S. airlines, providing this was part of a liberal and fair bilateral agreement; limiting the liability of general aviation aircraft manufacturers to 15 years from the date of manufacture (see Aug 17, 1994); and maintaining the Essential Air Service program.

Apr 8, 1993: **FAA released a study it had sponsored on the Age-60 rule** on mandatory airline pilot retirement (see Mar 15, 1960). On the basis of accident data, the study's authors concluded that there was "no support for the hypothesis that the pilots of scheduled air carriers have increased accidents as they near the age of 60." The study did not deal with medical problems. FAA stated that any change to the Age-60 rule would have to be based on evidence that passenger safety would not be compromised. (See Dec 14, 1995.)

Apr 19, 1993: In testimony on Capitol Hill, Acting Administrator Del Balzo announced that **FAA had modified its plan to consolidate its en route centers and Terminal Approach Control facilities** (TRACONs) into 23 large facilities (see Mar 22, 1983). Instead, the agency planned to operate the 22 existing centers, 170-175 stand-alone TRACONs, and 5 consolidated TRACONs (see Oct 23, 1991).

May 9, 1993: At the airport in Orlando, Fl., FAA commissioned the first of 133 **ground interrrogator systems for the Mode S radar beacon transponder** (see Oct 5, 1984). On Mar 8, 1994, the agency commissioned its **first monopulse beacon radar** by upgrading the Mode S sensor at the same airport. While the older radar beacon system used a barrage of interrogation and required 16-20 replies to determine accurate position information, the monopulse technique obtained position information from a single transponder reply.

May 25, 1993: DOT announced a **new U.S.-Russian aviation agreement**, updating and expanding an accord signed in June 1990 (see entry for Feb 16, 1990). Under the pact, the U.S. obtained new rights to fly over parts of Russia to points in Asia, and Russia received rights to serve 11 new U.S. cities. (See Jun 17, 1992, and Oct 14, 1994.)

Jun 14, 1993: As mandated by legislation, FAA established the **Civil Tiltrotor Development Advisory Committee** to study the feasibility of civil tiltrotor transportation. Delivered to Congress on Dec 29, 1995, the Committee's final report recommended an expansion of civil tiltrotor research and the establishment of a public/private partnership to address issues associated with the concept.

Jul 2, 1993: **Mississippi River flooding** that began to disrupt air traffic control operations on this date closed 36 general aviation airports and two FAA towers. One heavily damaged Automated Flight Service Station remained closed for several months after the flood. FAA response to the disaster included activation of a temporary tower in the St. Louis area.

Aug 1, 1993: A **new collective bargaining agreement between FAA and the National Air Traffic Controllers Association (NATCA)** went into effect. The four-year agreement covered all operational air traffic control specialists in terminals and centers. (See May 1, 1989.)

Aug 10, 1993: **David R. Hinson became FAA's thirteenth Administrator**, succeeding Thomas C. Richards (see Jun 27, 1992). Hinson took the oath a second time in a public ceremony on Aug 24. The new Administrator's nomination had been announced on May 13, made formal on Jun 30, and confirmed by the Senate on Aug 6.

A native of Oklahoma, Hinson held a bachelor's degree from the University of Washington. He served as a naval aviator and as a pilot for Northwest Airlines. In 1961, he became a flight instructor for United Airlines. Hinson later became a captain and director of flight training for West Coast Airlines, eventually becoming director of flight standards and engineering for West Coast's successor, Air West. In 1973, he founded Hinson-Mennella, Inc., a partnership whose acquisitions included Flightcraft, Inc., the Beech aircraft distributor in the Pacific Northwest. He was one of four founders of Midway Airlines in 1978, and served as chairman and chief executive officer from 1985 until the airline ceased operations in 1991. When selected to head FAA, Hinson was executive vice president for marketing and business development with Douglas Aircraft, a subsidiary of McDonnell Douglas. (See Nov 9, 1996.)

Aug 12, 1993: The Clinton Administration announced that **air traffic controllers fired for participation in the Professional Air Traffic Controllers Organization strike (see Aug 3, 1981) could apply for reemployment**. (Since Dec 1981, the fired controllers could apply for any federal position except for jobs in the FAA and certain related positions in the Defense and Treasury Departments.) At the time of the announcement, FAA had already imposed a hiring freeze because of budget restrictions. The agency estimated that once the freeze ended it would hire fewer than 200 new controllers per year over the next few years. In Jan 1995, a rehired group of 26 former strikers began training, and about 14 others were rehired during that year. (See Feb 22, 1996).

Sep 2, 1993: FAA announced that it planned to **require air carriers to have proof that freight forwarders followed FAA-approved security programs** or else to inspect all cargo sent to them by the freight forwarders. The compliance date of Jan 31, 1974, was subsequently extended to Apr 1, 1974.

Sep 7, 1993: Vice President Albert Gore released the report of the **National Performance Review**, a study of the operations of the Federal government that Gore had led during the past six months. The report made recommendations intended to streamline government and make it more cost beneficial. Proposals concerning aviation included: terminating Federal grant funding for FAA higher education programs; cutting Essential Air Service subsidies; increasing FAA fees for inspection of foreign repair facilities; and contracting for the operation of low activity (Level 1) air traffic control facilities. The report's most far

reaching recommendation concerning FAA was its **proposal for creating a government-owned corporation to provide air traffic control services** (see Jan 6 and May 3, 1994).

Sep 8, 1993: An administrative law judge recommended that DOT deny the **application of Friendship Airlines, later renamed ATX, to operate as an air carrier**. The company had been founded by former Texas Air chairman Frank Lorenzo. Although DOT ordered the judge to reopen hearings, he reconfirmed his recommendation on Dec 22. **On Apr 5, 1994, DOT rejected the application**, citing past safety and regulatory compliance problems experienced by airlines run by Lorenzo.

Oct 6, 1993: The Metropolitan Washington Airports Authority (MWAA) held a ground breaking ceremony for the **expansion of Dulles airport's main terminal**, a project completed on Sep 5, 1996. On Nov 17, 1993, meanwhile, MWAA officially broke ground for a **new terminal for Washington National** as part of a major improvement of the airport.

Oct 26, 1993: An **FAA Beech Super King Air crashed** into mountainous terrain near Front Royal, Va., killing all three persons aboard. The National Transportation Safety Board cited the probable cause as pilot error and deficiences in the agency's management of its flying program. In response to the accident, FAA made extensive changes in training, procedures, and oversight relating to its flight operations.

Nov 2, 1993: FAA dedicated the new **Leased Interfacility National Airspace Communications (LINCS)** telecommunications system following an initial installation that took about nine months. LINCS connected 20 air route traffic control centers, replacing a network of more than 10,000 individual circuits. Expansion to other facilities was planned.

Nov 18, 1993: **American Airlines' flight attendants went on strike**, forcing the airline to cancel or delay flights. The disputed issues centered on scheduling, pay, and health benefits. **On Nov 22, President Clinton interceded** in the five-day old strike, persuading the union and the airline to agree to binding arbitration.

Nov 23, 1993: **Linda H. Daschle became the Deputy Administrator of FAA**. President Clinton had announced his intention to nominate Daschle on Oct 25, and the Senate had confirmed her appointment on Nov 20.

Born in Oklahoma, Daschle began her career as a weather observer for FAA while attending Kansas State University. During the early 1980's, she became the first woman to direct the Civil Aeronautics Board's Office of Congressional, Community, and Consumer Affairs. Daschle later served as director of Federal affairs at the Air Transport Association of America. She was also active in civic affairs and in the campaigns of her husband, Sen. Tom Daschle (D.-S.D.). When chosen for the FAA post, she was senior vice president in charge of Federal and environmental affairs for the American Association of Airport Executives. (See Nov 9, 1996.)

Nov 24, 1993: A group of airlines and their trade associations formally asked DOT or FAA to prohibit Los Angeles officials from implementing a **plan to deny airlines access to Los Angeles International Airport because of their refusal to pay higher landing fees**. On Nov 30 and Dec 1, FAA Administrator David Hinson and DOT Secretary Federico Peña met with airline representatives and Los Angeles city officials to mediate the dispute. As a result, the airlines agreed to pay the higher fees, retroactive to July 1, while planning to pursue the issue through litigation. The airlines subsequently asked DOT to review the increases in accordance with legislation (see Aug 23, 1994) that provided a means of timely resolution of such disputes. On June 30, 1995, DOT ruled that the increases were largely valid but that the airlines were due a partial refund, a decision that remained under appeal at the end of 1996.

Nov 30, 1993: FAA Administrator Hinson announced that Joseph Del Balzo had been named **Executive Director for Strategic Initiatives**, bringing to four the number of Executive Directors (see Nov 26, 1991, and Nov 30, 1994). **The position was discontinued after Feb 28, 1994**, the date of Del Balzo's retirement.

Dec 1, 1993: A Jetstream BA-3100 operating as **a Northwest Airlink commuter flight crashed** while approaching Hibbing, Mont., in instrument weather conditions. The National Transportation Safety Board cited crew errors and loss of altitude awareness as the probable cause of the accident, which killed all 18 persons aboard. The crash increased public and congressional awareness of the issue of commuter airline safety. (See Dec 13, 1994.)

Dec 3, 1993: FAA's first commissioning of an **Airport Surface Detection Equipment model 3 (ASDE-3)** took place at the Seattle-Tacoma airport. An improved ground surveillance radar system, ASDE-3 had been installed for testing at Pittsburgh in Feb 1990, and FAA had formally accepted the system for operational use in Dec 1991. (See Dec 23, 1983, and Jun 27, 1996.)

Dec 13, 1993: FAA Administrator David Hinson ordered an extensive **review of the Advanced Automation System (AAS)**, a multi-billion dollar program designed to help modernize the nation's air traffic control system. The contractor, IBM, was far behind schedule and had major cost overruns (see Nov 30, 1992). Hinson's recommended review included conferring with IBM to determine the impact the company's plan to sell its unit in charge of the AAS contract to Loral Corp., a sale subsequently concluded. On Mar 3, 1994, FAA announced initial actions as a result of the review that included a new AAS management team and suspension of the portion of the program designated the Area Control Computer Complex (ACCC). Subsequently, **on Jun 3, 1994, FAA announced a major overhaul of the AAS program**. The agency terminated ACCC. FAA also cancelled another AAS element, the Terminal Advanced Automation System (TAAS), stating that it would substitute a new procurement for modernization of terminal radar approach control facilities (see Sep 16, 1996). The agency reduced the number of towers planned to receive the Tower Control Computer Complex (TCCC). In addition, the agency planned to review the software for the Initial Sector Suite System (ISSS), a program to provide new workstations for en route controllers. On Sep 30, 1994, FAA announced that it would seek a proposal from Loral that would permit the company to move forward with this work under a new program, the Display System Replacement (DSR), which would replace ISSS. (See Apr 27, 1995.)

Dec 15, 1993: Five persons died when an **Israel Westwind aircraft following a Boeing 757 encountered wake turbulence and crashed** at Santa Ana, Calif. The National Transportation Safety Board later found the probable cause to have been the Westwind pilot's failure to maintain adequate separation behind the 757 and/or to remain above its flight path during approach. The Board considered a related factor to be inadequacy of air traffic control procedures regarding visual approaches and visual flight rules operations behind heavier airplanes. On Dec 21, meanwhile, FAA required air traffic controllers to issue wake turbulence advisories to aircraft following 757s in all cases for which such advisories would be issued for jets heavier than the 757. On Dec 22, FAA sent a letter to licensed pilots alerting them to accidents and incidents involving 757 wake turbulence and urging attention to existing guidance on avoiding wake hazards. (See Dec 18, 1992, and May 20, 1994.)

Dec 17, 1993: Continental Express began the **first FAA-approved use of the Global Positioning System (GPS) for non-precision airport approaches** in operations at Aspen and Steamboat Springs, Colo. Four days later, DOT announced the report of a **joint DOT/DOD task force on the GPS**. The task force recommended that DOT should take a stronger role in managing the DOD-controlled system, and that technical steps be taken to improve the integrity and availability of GPS for all transportation modes. (See Oct 14, 1992, and Feb 17, 1994.)

Dec 31, 1993: The end of this day completed a **calendar year in which major (Part 121) scheduled airlines experienced no passenger or air crew fatalities**. The only fatal accident in Part 121 scheduled operations involved a ground crewmember struck by a propeller. The fatal accident rate for this segment of aviation was 0.013 per 100,000 departures, the lowest since 1980 (see Dec 31, 1980).

*1994

Jan 3, 1994: As documented by a directive issued this date, the **organization of the Associate Administrator for Airway Facilities** included three Services: System Management (formerly System Maintenance), Operational Support, and NAS Transition and Implementation.

Jan 6, 1994: DOT, FAA, and the Council of Economic Advisors held a press conference to unveil the Clinton Administration's **plan to revitalize the aviation industry**. The plan entailed action on most recommendations of the National Commission to Ensure a Strong Competitive Airline Industry (see Apr 7, 1993). Included were efforts to move ahead with conversion of FAA's air traffic control function to a government corporation (see Sep 7, 1993, and May 3, 1994). Other elements of the plan aimed at: bankruptcy reform; increased foreign investment in U.S. carriers, contingent on reciprocal opportunities;

encouragement of new entrant carriers; heightened scrutiny of airline financial fitness; and promotion of employee ownership of airlines.

Jan 17, 1994: An **earthquake measuring 6.6 on the Richter scale hit the Los Angeles area**, briefly closing Los Angeles airport. The Van Nuys airport tower lost its window glass but continued to operate until a temporary tower was activated.

Jan 1994: **Locality pay** became effective for Federal workers, who received raises ranging from 6.52 to 3.09 percent. The percentage was determined by location in 27 metropolitan areas, plus a catchall "rest of the U.S." locality. Certain employees who were already paid at special rates did not receive a raise unless the amount of the locality increase exceeded their pay differential.

Feb 2, 1994: FAA announced that 25 **low activity towers** (Level 1) would be converted to contract towers, beginning in September 1994. The agency had been contracting the operation of such towers since 1982, and 30 were run on this basis as of the end of 1993. On Nov 28, 1995, FAA announced that it would discontinue funding for 7 low-activity towers, including three contract towers and four FAA-operated facilities.

Feb 3, 1994: DOT announced a group of new transportation-industry regulations on drugs and alcohol that had been developed in response to the Omnibus Transportation Employee Testing Act of Oct 28, 1991. Among these was an FAA rule, published on Feb 15, 1994, that established an **aviation industry alcohol misuse prevention program**. The program included pre-employment and random alcohol testing of safety-sensitive employees of airlines and certain other FAA-certificated operations (see May 10, 1995). In announcing the new rules, DOT also stated that its operating agencies would implement similar alcohol misuse prevention programs for their own safety-sensitive employees. At the same time, DOT unveiled a proposal to lower the minimum random drug testing rate for industries that record a positive rate of less than one percent for two calendar years and maintain that record during subsequent years. On Nov 22, DOT issued a final rule allowing such industries to test only 25 percent of safety-sensitive employees rather than 50 percent. Accordingly, **FAA reduced the random drug testing rate for the aviation industry, effective on Jan 1, 1995**.

Feb 17, 1994: FAA announced that it was implementating **civil use of the Initial Operational Capability (IOC) of the Global Positioning System (GPS)**. IOC signified that the system's 24 satellites were operating in their assigned orbit and providing signals. FAA also stated that it had granted approval for certification of two types of GPS signal receivers. (See Dec 17, 1993, and Jun 2, 1994.)

Feb 28, 1994: The National Weather Service commissioned the first **Next Generation Weather Radar (NEXRAD)** as part of a joint development program in which FAA was a participant (see Jun 8-14, 1983).

Mar 10, 1994: FAA Administrator Hinson issued a memorandum announcing **establishment of a Management Board** with broader membership than that of the Executive Board (see Jan 28, 1989), which was disestablished. The new Board's responsibilities included implementation of performance measures for FAA as well as oversight of tactical issues and of the agency's strategic plan.

Mar 17, 1994: DOT and the Department of the Interior published a joint advanced notice of proposed rulemaking on **measures to reduce the impact of aircraft noise over the Grand Canyon and other national parks**. In an Earth Day memorandum issued on Apr 22, 1996, President Clinton directed DOT to take both short- and long-term actions to restore natural quiet to national parks. In response, FAA on May 15 published a notice proposing several alternative methods of controlling aircraft noise in Rocky Mountain National Park. On Jul 31, the agency published a rulemaking proposal to modify the flight regime at the Grand Canyon (see Mar 26, 1987), followed by a final rule on Dec 31, 1996. Among other provisions, this final rule: modified the "flight-free" zones over the Canyon and established new ones; set curfews for commercial sightseeing operations; and established a cap on the number of commercial tour aircraft allowed to fly over the park. Also on Dec 31, FAA published a rulemaking proposal for a phased ban on noisier aircraft over the Canyon.

Mar 17, 1994: FAA announced a multi-year **strategy to help the general aviation industry**, which was facing adverse economic conditions. The plan included a range of initiatives to lower the cost of flying, boost safety and technology, and guarantee fair and equal access to airways and airports. (See Aug 17, 1994.)

Mar 30, 1994: President Clinton signed the **Federal Workforce Restructuring Act of 1994, legislation offering buyouts** of up to $25,000 to personnel willing to leave Federal service. The act also targeted a reduction of 272,900 Federal employees between 1993 and 1999. The buyout was offered in conjunction with an early retirement option, authority for which had become available on Mar 14. FAA initially offered the buyout to its personnel between Mar 31 and May 3, 1994. Certain categories of employees received subsequent buyout offers, some with a deferred retirement option, during 1994 and 1995. More than 3,000 FAA employees eventually received buyouts. The buyouts were a major factor in the **reduction of FAA's full-time equivalent workforce**, which fell from 52,352 in fiscal 1992 to 47,738 at the end of fiscal 1996.

Apr 15, 1994: FAA's **Air Traffic Control System Command Center (ATCSCC)** officially began operations in its new facility at Herndon, Va. The ATCSCC had moved from FAA Headquarters because of size and technological constraints (see Apr 27, 1970).

Apr 18, 1994: DOT stated that it had urged nations that mandate routine **spraying of pesticides on board aircraft while passengers are present** to reconsider the requirement. The practice had been discontinued in the United States 15 years earlier due to health concerns. In May 1995, DOT hailed a recommendation against such spraying by the Facilitation Division of the International Civil Aviation Organization.

May 3, 1994: Vice President Albert Gore and Transportation Secretary Federico Peña announced the Clinton Administration's **proposal to create a new Air Traffic Services Corporation** to operate, maintain, and modernize the air traffic system. (See Sep 7, 1993, and Jan 6, 1994.)

Under the proposal, 38,000 FAA employees involved in providing air traffic services would become part of a new not-for-profit government corporation. Support for the corporation would be derived from fees levied upon commercial aviation, subject to approval by the Department of Transportation. The Department would maintain additional oversight through membership on the corporation's board of directors, on which airspace users would also be represented. FAA would continue to exercise safety oversight over civil aviation, including the new corporation.

On the same day that Gore and Peña unveiled the plan, President Clinton wrote letters urging Congress to make the new corporation a reality. During the following months, however, Congress considered a variety of plans for restructuring FAA. These proposals included calls to make the agency independent of the Department of Transportation. (See Sep 12, 1995.)

May 4, 1994: In a joint memoradum, the Associate Administrator for Airway Facilities and the President of the Professional Airways Systems Specialists (PASS) advised employees of a proposed **realignment of the Airway Facilities organization**. The proposal envisioned a leaner organization with consolidation to be achieved gradually over a four-year period. Implementation of the plan involved steps to reduce five organizational levels to three: Regional Office, System Management Office, and System Support Center. In May 1995, the Southern Region was the first to declare that its headquarters realignment had been accomplished in accordance with the plan. During the following month, Central Region stated that both its System Management Offices were in place.

May 20, 1994: In letter responding to a series of National Transportation Safety Board recommendations, FAA outlined an **interim policy on Boeing 757 wake turbulence separations**. Beginning Jul 1, controllers would maintain a four-mile separation for both large and small aircraft following 757s. The letter indicated that the agency would revise guidance to pilots concerning wake turbulence and would study further changes in air traffic rules relating to this hazard. On Jun 10, Secretary of Transportation Federico Peña and FAA Administrator Hinson ordered a **review of the timeliness of FAA's response to the 757 wake turbulence issue**. FAA Deputy Administrator Linda Hall Daschle and DOT General Counsel Stephen Kaplan submitted the resulting report on Jul 26. Although supporting some aspects of FAA's actions, the report stated that the 757 wake turbulence issue should serve as a "wake-up call" to the agency regarding its processes for addressing emerging safety issues. Recommendations included improved integration between FAA's research and operations functions. (See Dec 15, 1993, and Aug 17, 1996)

May 23, 1994: FAA began operational testing of the **Integrated Terminal Weather System (ITWS)** at Memphis airport. ITWS was designed to combine data from FAA and National Weather Service sensors and radars. The system would present predictions on potentially hazardous weather to air traffic control personnel via easily-understood graphics and text. On Jan 29, 1997, FAA selected Raytheon to build ITWS and to install and maintain the system at 34 sites covering 45 airports.

May 26, 1994: Enactment of the **Airport Improvement Program Temporary Extension Act of 1994** (P.L. 103-260) renewed FAA's authority to award Airport Improvement Program grants, the legislative mandate for which had lapsed on Sep 30, 1993. The new act authorized FAA to make grants through Jun 30, 1994 (see Aug 23, 1994). The law provided for the gradual **phasing out of compensation that certain FAA employees had received under the Pay Demonstration Project** after that project's termination on Jun 17, 1994 (see Jun 18, 1989, and Apr 1, 1996). It also placed a temporary freeze on increases to certain airport fees charged to airlines and required DOT to study reforming the air traffic control system.

Jun 2, 1994: Administrator Hinson announced that **FAA would halt further development of the Microwave Landing System (MLS)** for use under the more difficult visibility conditions rated Category 2 and 3 (see Jun 15, 1992). He stated that the agency instead would concentrate on the **development of the Global Positioning System**, known as GPS (see Feb 17, 1994). On Jun 8, FAA issued a request for proposals for an initial **Wide Area Augmentation System (WAAS) for GPS**. The initial WAAS would be a network of 24 ground stations and related communications systems that would enhance the integrity and availability of GPS signals (see entry for Aug 1, 1995). On Jul 16, Administrator Hinson and President Phil Boyer of the Aircraft Owners and Pilots Association landed at the Frederick, Md., airport using the **first FAA-approved public "stand alone" GPS instrument approach**. On Oct 17, the Administrator formally offered free use of GPS for 10 years to International Civil Aviation Organization member states, reconfirming a previous verbal offer (see entry for Apr 1, 1991). Other related events during 1994 included FAA's Dec 8 announcement of approval of GPS as a primary means of navigation for oceanic/remote operations, subject to certain conditions.

Jun 12, 1994 The **Boeing 777, the first U.S. jetliner to use a "fly-by-wire" control system**, made its first flight. The long-range, twin-engine transport was designed for a basic seating capacity of 375 passengers. On April 19, 1995, the aircraft received joint certification by FAA and Europe's Joint Aviation Authorities. After an unprecedented testing program, FAA on May 30, 1995, approved the 777 to fly on long, over-water flights as far as three hours from a landing site. This was the first time that the agency had granted this **Extended Twin-Engine Operations (ETOPS)** authority without an extensive period of in-service operation. The 777 entered commercial service, with United Airlines, on Jun 7, 1995.

Jul 2, 1994: A **USAir DC-9 crashed** while attempting to land at Charlotte-Douglas International Airport, killing 37 of the 57 persons aboard. The accident illustrated the continuing problem of **wind shear**. As part of its ongoing efforts to combat this hazard, **FAA on Jul 20 commissioned the first Terminal Doppler Weather Radar (TDWR)**. The agency had commissioned a total of 22 TDWRs by the end of CY1996. (See Nov 2, 1988.)

July 5, 1994: Public Law 103-272 recodified certain laws pertaining to transportation, including the Federal Aviation Act of 1958, as amended, which was FAA's basic enabling legislation. As a result of the recodification, the **Federal Aviation Act was superseded** by provisions of Subtitle VII of Title 49, United States Code.

Jul 12, 1994: United Air Lines' parent corporation announced that its shareholders had voted to transfer 55 percent majority ownership of United to the airline's employees. The deal made **United the largest employee-owned U.S. company**.

Jul 12, 1994: FAA dedicated its **National Aviation Safety Data Analysis Center (NASDAC)**. Located at national headquarters, NASDAC provided access to safety-related computer data bases and relevant reference material in printed form. A new and improved NASDAC formally opened on Mar 14, 1996.

Jul 29, 1994: Citing the rapid development of satellite technology (see Jun 2, 1994), FAA announced **cancellation of plans to purchase up to 235 next generation Instrument Landing Systems (ILS)** designed for specifically for Category 1 precision approaches. (Category 1 conditions are the least difficult of three categories defining visibility conditions for landing.)

Aug 15, 1994: FAA issued a regulation which, for the first time, set **length of duty and rest requirements for airline flight attendants**. Under the rule, attendants could remain on duty for as many as 14 hours within a 24-hour period, but would get a rest period of at least 9 hours after that duty period. Longer duty periods would be permitted, but in such cases FAA required that rest periods and the size of

the flight attendant crew would increase. Due to litigation, FAA did not begin enforcing the rule until Feb 1, 1996.

Aug 17, 1994: President Clinton signed the **General Aviation Revitalization Act of 1994**. Under the new law, manufacturers could not be held liable for accidents happening more than 18 years after the production of general aviation aircraft, engines, or parts. The legislation was followed by an upturn for this sector of industry.

Aug 23, 1994: Enactment of the **Federal Aviation Administration Authorization Act of 1994** provided fiscal year 1994-96 funding and authorization for FAA's programs. This included the awarding of **Airport Improvement Program grants**, which had lapsed at the end of June 1994 (see entries for May 26, 1994, and Sep 30, 1996). The act also required that **airport fees** be reasonable, and directed DOT to issue rules on resolving disputes between airlines and airports over such fees, and to establish policies to prevent diversion of airport revenues to activities unrelated to airports. In addition, the act **established a five-year term of office for the FAA Administrator**, and directed FAA to institute a **joint aviation research and development program** with other agencies.

Aug 30, 1994: **Lockheed and Martin Marietta announced plans for a merger** that was accomplished during 1995, creating Lockheed Martin. Lockheed had been formed in 1926, while Martin Marietta had been created in 1961 by a merger of the American-Marietta Company with the aircraft manufacturing firm founded by Glenn Martin in 1917.

Sep 2, 1994: FAA issued the first release of results of its **International Aviation Safety Assessment (IASA) program**, under which the agency evaluated the capability of nations to provide safety oversight for their air carriers. In rating 30 countries, FAA concluded that 17 were acceptable in their ability to ensure adherence to international safety standards, four were conditionally acceptable, and nine did not meet the standards. The agency continued to issue and to revise such ratings, with the goal of evaluating all nations with airlines serving U.S. airports. By the end of 1996, a total 64 countries had been assessed.

Sep 8, 1994: A USAir **Boeing 737 crashed in Aliquippa, Pa.**, as it approached Pittsburgh airport. All 132 persons aboard died in the accident, the cause of which proved difficult to determine. Prompted by this crash and an earlier one at Colorado Springs (see Mar 3, 1991), FAA conducted a **critical design review of the 737 flight control system**. On May 3, 1995, the review team reported that it had found no critical flaws but made a number of recommendations for improving the aircraft's safety margin (see Aug 22, 1996). Following the accident, NTSB urged that upgraded Flight Data Recorders (FDRs) be required on 737s by the end of 1995 and on other large airliners by Jan 1, 1998. FAA, however, called for voluntary upgrading of FDRs on 737s while the agency developed comprehensive rulemaking on the FDR issue (see Jul 16, 1996).

Sep 12, 1994: A pilot flying a stolen **Cessna 150 crashed a few yards from the White House**, dying on impact.

Sep 21, 1994: FAA issued a **warning concerning certain types of child restraint systems (CRSs)** that were adequate for use in motor vehicles but not in aircraft. The statement was based on a research report by the agency's Civil Aeromedical Institute. FAA announced that it would consider banning these CRS types, and would also: conduct further research; cooperate with the National Highway Traffic Safety Administration to revise CRS standards and labeling; and urge airlines to adopt cost-saving policies that would encourage parents to use CRSs. (See Sep 15, 1992, and Jun 8, 1995.)

Sep 22, 1994: In response to a series of accidents, FAA issued a special **rule tightening safety requirments for air tour operators in the state of Hawaii**.

Oct 14, 1994 Following a **joint evaluation of the Russian air transportation system**, a U.S.-Russian team recommended immediate steps to shore up safety oversight. FAA worked with Russian authorities to assist implementation of these recommendations, and continued to participate in efforts to improve communications and routes for international flights in the area of Russia. On Jun 30, 1995, Vice President Gore and Russian Prime Minister Chernomyrdin signed a **memorandum of understanding on strengthening technical cooperation** toward a bilateral airworthiness agreement.

Oct 31, 1994: **An American Eagle commuter flight crashed near Roselawn, Ind.**, with the loss of all 68 persons aboard. The aircraft, an Avions de Transport Regional ATR-72, had been in a holding pattern due to weather delays at Chicago. In a report issued on Jul 9, 1996, the National Transportation Safety Board cited the probable cause as a loss of control due to icing, the manufacturer's failure to provide information on the icing hazard to the aircraft, and French aviation authorities' failure to ensure its airworthiness under icing conditions. Deficiencies in FAA oversight were listed as contributory causes.

Following the accident, meanwhile, FAA took a variety of steps to reduce hazards to ATR aircraft and, on Dec 9, 1994, prohibited flight by models 72 or 42 into known or forecast icing conditions. On Jan 11, 1995, FAA eased this ban, subject to certain requirements, to apply only to freezing rain and freezing drizzle. The agency also required the installation of improved deicing boots on the aircraft by June 1995. Subsequent FAA **actions on the broader issue of combating icing** included the issuance on May 2, 1996, of 18 new airworthiness directives affecting pilots of 29 different aircraft types. (See May 28, 1992, and Dec 13, 1994.)

Oct 1994: At FAA's request, RTCA, Inc., convened a government/industry committee to study the **Free Flight concept**. (RTCA, Inc., was the official name of the former Radio Technical Commission for Aeronautics: see Jun 19, 1935.) The Free Flight concept sought to employ new procedures and technology to provide much greater flexibility for Instrument Flight Rules operations at high altitudes. Currently, the pilots of such flights were obliged to follow specified routes, unless deviations were approved by air traffic controllers. Under Free Flight, in contrast, these pilots (or their airline managers) would be able to choose the routes that they considered most efficient. Controllers would intervene only to ensure safety or prevent congestion.

In Jan 1995, a report by the RTCA committee defined Free Flight and the first steps for its implementation. This was followed in Oct 1995 by the more detailed report of an RTCA task force that had been formed at FAA request. On Mar 15 1996, FAA announced progress on Free Flight, stating that the agency and the aviation community would work together to phase in the concept over the next ten years. On Jan 15, 1997, the agency issued a fact sheet on a plan for a two-year evaluation of Free Flight in the airspace of Alaska and Hawaii, beginning in 1999. (See Sep 30, 1990.)

Nov 30, 1994: Administrator Hinson announced a **reorganization aimed at structuring FAA along its key lines of business**, making better use of resources, consolidating functions, and increasing management accountability. As documented in a directive issued on May 15, 1995, the reorganization eliminated a layer of management by **abolishing the three remaining Executive Director positions** (see Nov 30, 1993). The positions reporting to the Administrator and Deputy Administrator were now the following:

Chief Counsel.

Assistant Administrator for Civil Rights.

Assistant Administrator for Government and Industry Affairs.

Assistant Administrator for Public Affairs, to which the public affairs functions in regions and centers now reported directly.

Assistant Administrator for System Safety, a new position charged with analyzing safety data and making recommendations for improvement. The position of Associate Administrator for Aviation Safety, which had reported to an Executive Director, was abolished.

Assistant Administrator for Policy, Planning, and International Aviation, which was modified to include six Offices: Aviation Policy and Plans; Environment and Energy; International Aviation; Asia-Pacific; Europe, Africa, and Middle East; and Latin America-Caribbean.

Associate Administrator for Administration, a new position assuming the responsibilities of the abolished Assistant Administrators for Budget and Accounting and for Human Resource Management. Elements reporting to the new Associate Administrator included the Regional Administrators, the Director of the Aeronautical Center, and three Offices: Business Information and Consultation; Human Resource Management; and Financial Services, a new office established to consolidate the budget and accounting functions.

Associate Administrator for Airports, formerly an Assistant Administrator, responsible for two Offices: Airport Planning and Programming; and Airport Safety and Standards.

Associate Administrator for Civil Aviation Security, formerly an Assistant Administrator, responsible for three Offices: Civil Aviation Security Intelligence; Civil Aviation Security Operations; Civil Aviation Security Policy and Planning.

Associate Administrator for Regulation and Certification, which continued to control the Office of Rulemaking, Aircraft Certification Service, and Flight Standards Service, with the added responsibility for the Offices of Accident Investigation and Aviation Medicine. The Associate Administrator for Aviation Standards was abolished.

Associate Administrator for Air Traffic Services, a new position responsible for the Air Traffic Service, the Airway Facilities Service, the Office of Independent Operational Test and Evaluation, and the Office of System Capacity and Requirements.

Associate Administrator for Research and Acquisitions, a new position responsible for the FAA Technical Center and six Offices: Acquisitions; Air Traffic Systems Development; Aviation Research; Communications, Navigation, and Surveillance Systems; Information Technology; and System Architecture and Program Evaluation. The Associate Administrators for NAS Development and for System Engineering and Development were abolished.

Dec 9, 1994: For the first time, **FAA certified an explosives detection system, the Invision CTX-5000**. The system used computed tomography and high-quality x-ray technology to automatically locate suspicious objects in baggage. (See Dec 23, 1996)

Dec 13, 1994: An **American Eagle commuter flight crashed on approach to Raleigh-Durham, N.C.**, killing 15 of the 20 persons aboard the BAe Jetstream 3201 aircraft. Capping a series of fatal airline accidents during 1994, the tragedy heighted public concern about the safety of both commuter and major air carriers. The next day, DOT Secretary Peña announced a **three-point safety initiative**, including: acceleration of FAA efforts to **increase commuter safety standards** to the level for large airlines (see Dec 14, 1995); a **government/industry meeting on airline safety** (see Jan 9, 1995); and a **national airline safety audit**, subsequently completed in Dec 1995.

In October 1995, the National Transportation Safety Board cited the probable cause of the accident as errors by the captain, who had resigned from another airline following adverse performance evaluation. The Board's recommendations stemming from the crash included establishment of a system for airlines to share information on pilot qualifications.

*1995

Jan 9, 1995: DOT and FAA opened a two-day **"summit" Aviation Safety Conference** on ways to improve safety measures and increase public confidence in airline transportation. More than 950 government and industry representatives attended the event, at which Transportation Secretary Federico Peña and FAA Administrator David Hinson urged cooperation to achieve a goal of zero accidents. Participants formed workshops and produced recommendations on six key areas: crew training; air traffic control and weather issues; safety data collection and use; applications of emerging technologies; aircraft maintenance procedures and inspections; and flight operating procedures. In response, **FAA on Feb 9 published an Aviation Safety Action Plan** that identified 173 safety initiatives. In publishing the plan, the agency noted that many airlines were voluntarily establishing safety offices reporting to their chief executives. The agency stated its intention to require airlines with aircraft seating more than nine passengers have independent safety offices. Among the action plan's many features were emphasis on Advanced Qualification Program (AQP) training (see Sep 26, 1990) and on increased sharing of safety data. At the same time that it released the plan, FAA announced that it had reached agreement with the Air Line Pilots Association and Air Transport Association on a **Flight Operations Quality Assurance (FOQA) program**. The FOQA would permit the use of information from Flight Data Recorders to analyze safety trends rather than merely to investigate accidents and incidents. FAA would have access to the data, with pilot identities deleted. (See Dec 6, 1995.)

Feb 15, 1995: **Commissioning of the final Automated Flight Service Station (AFSS)** capped FAA's flight service modernization plan. On this date, all AFSSs also had the Model 1 Full Capacity system. By fiscal 1995's end, 286 flight service stations had been consolidated into 61 AFSSs, 31 auxiliary stations, and one remaining conventional station. (See Nov 8, 1991.)

Feb 24, 1995: FAA announced a strengthened **campaign against the use of suspected unapproved parts (SUPs)** in aviation. The agency had expanded its SUP program in recent years, but its efforts had been criticized by Department of Transportation Inspector General A. Mary Schiavo. On Feb 27, FAA published a notice warning of its policy to enforce full compliance with relevant regulations and giving non-complaint firms until May 30 to apply for approval to manufacture aviation parts. On May 24, the agency announced a plan for an industry-operated accreditation program for aircraft parts brokers and distributors. On Oct 12, FAA issued a task force report that proposed a SUP program plan and the establishment of a national Suspected Unapproved Parts Program Office. This office was established on Nov 13, and its creation was formally documented in a directive issued on Jan 2, 1996.

Feb 28, 1995: At **Denver International Airport's opening day**, air traffic controllers at the state-of-the-art facility cleared three aircraft to make the world's first triple simultaneous landing. By this date, FAA had provided Airport Improvement Program grants totaling $267.6 million for the project, and had committed over $200 million more in Letters of Intent. In a February 1996 report on the airport's first 11 months in operation, FAA stated that the facility had achieved a flight delay rate five times less than the airport it replaced, Stapleton International. (See May 17, 1988.)

Mar 31, 1995: FAA announced its **first certification of an aircraft type designed and manufactured in the People's Republic of China**, the Model Y-12 Harbin. During the 1980s, FAA had provided certification expertise to Chinese authorities in connection with McDonnell Douglas' manufacture of aircraft in China. The United States and China had concluded a bilateral airworthiness agreement on Oct 14, 1991, and a later expansion of this agreement permitted U.S. acceptance of small aircraft, such as the Y-12 Harbin, and certain aircraft components. (See Mar 15, 1986.)

Apr 14, 1995: Four FAA officials signed an agreement on the **Integrated Product Development System (IPDS)**, greatly broadening the application of a new management approach. (The signers were the Associate Administrators for: Research and Acquisition; Regulation and Certification; Air Traffic Services; and Airports.) The IPDS called for the use of **Integrated Product Teams (IPTs)** as part of a tiered system of teams in research, acquisition, and the management of equipment life-cycles. The IPTs were multidisciplinary and cut across organizational lines to bring together customers and suppliers with the goal of improving products and services and expediting their delivery. The IPDS became a prominent feature of FAA's new acquisition system (see Apr 1, 1996).

Apr 19, 1995: A **bomb blast at the Alfred P. Murrah federal office building in Oklahoma City** killed more than 160 persons and injured hundreds of others. FAA personnel participated in relief efforts.

Apr 21, 1995: FAA issued a rule establishing **minimum combined experience levels for two airline pilots flying together** and also upgrading operational experience requirements. The agency had proposed the rule in Mar 1993 in response to accidents and incidents in which a contributing factor was the pairing of inexperienced pilots.

Apr 23, 1995: Effective this date, **many government-owned aircraft became subject to FAA safety standards and procedures** for the first time. The change resulted from legislation, enacted on Oct 25, 1994, that established a more restricted definition of "public aircraft." It affected more than 5,000 planes and helicopters owned by Federal, state, and local governments and used for transporting officials or other passengers. The new statute also continued to require that FAA regulate air operations for which governments received compensation from other governmental entities. Aircraft remaining in the public-use category, and hence exempt from FAA oversight, included those used in fire fighting, search and rescue, aeronautical research, and law enforcement, as well as those operated by the armed forces or intelligence agencies.

Apr 27, 1995: FAA announced an agreement with Loral Corp. on contract modifications regarding air traffic control modernization under the former Advanced Automation System program (see Dec 13, 1993). Loral would develop and implement the **Display System Replacement (DSR)**, new automated workstations for controllers at en route centers and other key sites. On Dec 5, 1996, FAA announced that Loral had delivered the first DSR to the Seattle Air Route Traffic Control Center, ten months ahead of schedule. The Apr 1995 agreement with Loral also included delivery of the first **Tower Control Computer Complex (TCCC)**, with a future agreement for additional TCCC systems to be negotiated. The TCCC program was subsequently restructured, however, to provide modular upgrades to towers on an "as needed" basis.

May 10, 1995: Effective this date, **DOT suspended rules requiring transportation companies to conduct preemployment alcohol testing** for safety-sensitive workers (see Feb 3, 1994). A Supreme Court decision of Apr 5, 1995, had vacated the Federal Highway Administration's rule on this subject and raised questions about the validity of similar rules issued by FAA and the Federal Railroad Administration. At DOT's request, Congress amended the relevant legislation to permit such tests rather than to require them. On May 9, 1996, DOT accordingly published a rulemaking proposal to harmonize the regulations with the legislation by making pre-employment testing voluntary for employers.

May 28, 1995: Effective this date, DOT gave the Office of Airline Statistics the new name **Office of Airline Information** and transferred it from the Research and Special Projects Administration to the Bureau of Transportation Statistics, a multi-modal agency which had been established in Dec 1992.

Jun 8, 1995: FAA issued a number of safety tips on traveling with children by air and announced a coming campaign to promote use of **child restraint systems, known as CRSs** (see Dec 17, 1996). At the same time, FAA reconfirmed its decision not to require CRS use for children under 2 years of age. Such children were still allowed to fly on parent's laps, customarily without tickets. The agency based its position on new research, released on the same day as part of a report to Congress. This research supported FAA's view that a rule requiring CRS use would kill more children than it saved because the resulting increase in air travel costs would force many parents to choose modes of travel less safe than aviation. The agency also announced a proposal to **ban certain inadequate CRS types** (see Sep 21, 1994), an action accomplished in a final rule published on Jun 4, 1996.

Jun 13, 1995: FAA unveiled the **National Plan for Civil Aviation Human Factors**, a joint FAA-DOD-NASA initiative. The Plan outlined a national agenda to eliminate aviation accidents caused by human error. Its elements included: identifying needs and problems involving human performance; guiding research programs to address the human element; involving the nation's top scientists and aviation professionals; and sharing the resulting information with the aviation community.

Jun 20, 1995: A series of **encounters with turbulence** on this date and Jun 25 and Jun 26 injured a total of over 40 airline passengers and crew members. On Jun 27, Secretary of Transportation Peña directed FAA to review recent turbulence incidents and determine whether new seat belt rules are needed. The next day, FAA issued a public advisory instructing airline passengers to use seat belts whenever seated. (See Dec 17, 1996.)

Jun 21, 1995: FAA and Australia's Qantas Airlines completed the first in a series of operational trials of a satellite-based communication, navigation, and surveillance system. Known as the **Future Air Navigation System (FANS)**, the system was designed to improve communication between controllers and pilots on oceanic and remote flights. Other events related to oceanic aviation in 1995 included FAA's Jul 26 announcement that the first component of the prototype **Oceanic Data Link (ODL) system** was operational at the Oakland Air Route Traffic Control Center. Single sector air-to-ground communications using ODL became operational at Oakland in October. On Sep 22, meanwhile, FAA announced the award of a contract to Hughes Aircraft Company to develop the **Advanced Oceanic Automation System (AOAS)** to upgrade and automate the agency's oceanic air traffic control systems. (See Dec 14, 1989.)

Jun 28, 1995: FAA directed airlines and airports in California to increase security measures and warned passengers to be alert for suspicious baggage and parcels. The precautions responded to a **threat from the so-called "Unabomber"** received by the San Francisco Chronicle on Jun 27. Postal authorities also implemented certain temporary restrictions on mailing packages from California. The Unabomber's alleged crimes included several related to aviation, among them responsibility for an explosion in an American Airlines cargo hold on Nov 15, 1979, that caused 12 persons to suffer smoke inhalation. On Apr 3, 1996, Federal agents detained Theodore Kaczynski as a suspect in the Unabomber case.

Jun 30, 1995: At the Seattle Air Route Traffic Control Center, **FAA commissioned the first Voice Switching and Control System, known as VSCS** (see Oct 21, 1986). The project was completed for all 21 en route centers on Feb 18, 1997, when VSCS became operational at the Jaksonville ARTCC. Meanwhile, on Aug 8, 1995, FAA had announced a contract with Denro, Inc, to build and install the **Enhanced Terminal Voice Switch (ETVS)**. This system would provide to towers and approach control facilities the same benefits that VSCS gaves to en route centers. On Nov 1, 1995, FAA commissioned its 100th **Small Tower Voice Switch (STVS)**, a system also produced by Denro.

Jul 13, 1995: FAA announced that it and 11 airlines would establish a consortium to develop the framework for a worldwide **Aeronautical Telecommunication Network (ATN)**.

Aug 1, 1995: FAA announced a decision to go forward as quickly as possible with the **Display Channel Complex Rehost (DCCR)** project to replace aging IBM 9020E computers at five Air Route Traffic Control Centers: Chicago, Dallas/Fort Worth, Washington, Cleveland, and New York. The centers had experienced 20 display channel complex failures in the past four months. On Aug 9, loss of electrical power at the Oakland center highlighted another type of outage problem. On Aug 11, a DOT/FAA

announcement described **steps to combat equipment service interruptions**, including reviews of the problem by both FAA and outside experts, additional training, and hiring of 116 more maintenance technicians. On Aug 30, FAA announced award of a contract to Loral Corp. for DCCR production and installation. Highly-publicized outages at the Chicago center and other facilities prompted DOT and FAA statements during the next two months describing remedial actions and assuring the public that the air traffic control system was safe. On Oct 25, FAA awarded a five-year **contract for new emergency electrical systems** to provide backup power to air traffic facilities nationwide. (See Apr 1, 1996.)

Aug 1, 1995: DOT announced the availability of a **Global Positioning System (GPS) signal specification** defining performance standards for civil aviation use. On Aug 3, a consortium led by Wilcox Electric received an FAA contract to develop and field the **Wide Area Augmentation System (WAAS) to enhance GPS signals**. (See Jun 2, 1994 and Mar 29, 1996.)

Aug 2, 1995: DOT and the Department of Agriculture (USDA) released to Congress a **joint study on aviation inspection programs**. The study concluded that USDA actions during 1994 had reduced to a minimal level duplication between FAA inspections and USDA's inspections of its aviation activities.

Aug 7, 1995: **DOT announced that the Office of Commercial Space Transportation would move from the Office of the Secretary to FAA**, effective Oct 1, 1995. The change was part of a larger DOT reorganization aimed at streamlining the Department in accordance with the National Performance Review (see Sep 7, 1993). The transfer of the office was delayed, however, until sanctioned by legislation (see Nov 15, 1995).

Aug 9, 1995: DOT stated that the Clinton Administration had directed Cabinet agencies to review their security practices. As a result, FAA had determined a need for, and was requiring, **increased security by all airports and air carriers in the United States**. The action was based on information from intelligence and law enforcement agencies but did not reflect a specific threat. On October 1, DOT announced a further heightening of aviation security. The Department again stated that the measure was not based on a specific threat, but press reports linked it such factors as the conviction on the same day of Islamic militants accused of a conspiracy to bomb locations in New York. (See Jul 17, 1996.)

Sep 7, 1995: FAA announced that it was putting into operation a new **Safety Performance Analysis System (SPAS),** an automated decision support system designed to aid in targeting inspection and certification resources. By the end of fiscal 1996, the SPAS operational test system was in use by selected inspectors at 58 FAA offices.

Sep 12, 1995: Sen. John McCain (R-Ariz) introduced a **bill to reform FAA** while keeping it within DOT. The bill gave the agency more flexibility in personnel and acquisition matters (an approach that was also part of a bill to provide DOT's fiscal 1996 appropriation: see Nov 15, 1995). The McCain bill also provided for a system of financing FAA that emphasized fees for services. The Secretary of Transportation and FAA Administrator immediately endorsed the bill, a position that marked the Clinton Administration's shift away from its drive to create a government corporation for air traffic control (see May 3, 1994).

Sep 13, 1995: The United States and the Netherlands signed the **world's first bilaterial aviation safety agreement (BASA)**, a new type of agreement aimed at promoting safety by creating a regulatory partnership. The BASA included provisions on increased cooperation in such areas as aircraft certification and the approval and/or monitoring of airmen, training, flight operations, and maintenance facilities. By the end of 1996, the United States had concluded five more BASAs with Britain, Germany, France, Malaysia, and Switzerland.

Sep 16, 1995: Pres. Clinton declared Puerto Rico and the U.S. Virgin Islands disaster areas due to **Hurricane Marilyn**. Aviation-related effects of the storm included severe damage to the tower at Cyril E. King Airport on St. Thomas. FAA worked with the Air Force to transport a mobile tower to the island, and took other actions to restore air service.

Sep 26, 1995: FAA issued **rule on investigations of persons seeking unescorted access to secure areas of airports**, requiring disqualification of applicants who had been convicted of certain crimes in the past 10 years. The new rule, which replaced a less stringent November 1985 regulation, fulfilled a provision of the Aviation Security Improvement Act (see Nov 16, 1990).

Oct 6, 1995: FAA issued a **rule requiring manufacturers of new design transport category rotorcraft to minimize the adverse effects of turbine engine rotor failure**.

Oct 27, 1995: The first **Alaskan "Alliance for Safety"** meeting took place in Anchorage, with participants from FAA, the National Transportation Safety Board (NTSB), the military, the aviation community, and related industries. A committee formed at this meeting developed a sample safety program for use by the state's numerous and diverse air taxi and commuter operators. In Mar 1996, the program was presented at a convention of the Alaskan air carriers. Meanwhile, on Nov 28, 1995, NTSB issued a report on Alaskan aviation safety that contained a variety of recommendations for FAA, the National Weather Service, and state authorities. In comparing the state's fatal accident rates in recent years with that of the rest of the nation, the report concluded that in Alaska: commuter airline fatal accident rates remained greater despite improvement; air taxi fatal accident rates had fluctuated but were generally greater; and general aviation fatal accident rates were comparable.

Oct 31, 1995: FAA announced its **final decision on the New Jersey Environmental Impact Statement** (see Mar 11, 1991). The agency rejected a plan to reroute many flights over the ocean, but accepted a measure known as the Solberg Mitigation Proposal for implementation in early 1996. This measure involved routing changes to reduce noise in the Scotch Plains and Fanwood areas.

Nov 13, 1995: At midnight on this date, **funding for much of the Federal government lapsed** with the expiration of a continuing resolution that had been approved by the Congress and President in October. As instructed by the Office of Management and Budget, Federal agencies implemented shutdown plans by 12:30 pm on Nov 14. Employees were placed on furlough, with the exception of those exempted because their positions: directly affected safety or the protection of property; were necessary for the orderly shutdown of operations; or did not require further congressional action for their funding. **About 7,800 FAA employees were furloughed**, but most of the agency's personnel were exempted. (See Nov 15, 1995.)

Nov 15, 1995: President Clinton received from Congress and signed the **fiscal 1996 DOT appropriations bill**, allowing all **furloughed DOT employees to return to work on the morning of Nov 16**. (The furlough ended government-wide on Nov 20.) The DOT appropriations legislation provided $8.216 billion for FAA, and included important **provisions for FAA personnel and procurement reform** (see Apr 1, 1996). It also cleared the way for the **transfer of the Office of Commercial Space Transportation** from the Office of the Secretary of Transportation to FAA (see Aug 7, 1995). The transfer became effective on Nov 16, and the director of this new FAA line-of-business organization became an Associate Administrator reporting to the Administrator.

Nov 17, 1995: DOT announced a plan to implement congressionally-mandated **reductions in Essential Air Service subsidies** in a manner designed to maintain the highest possible level of service to communities eligible under the program, which had been established by the Airline Deregulation Act (see Oct 24, 1978).

Dec 6, 1995: DOT and FAA opened a two-day **Aviation Safety Initiative Review meeting** to evaluate safety actions since the earlier "summit" conference (see Jan 9, 1995) and set the safety agenda for 1996. Some 300 aviation safety experts attended the event. On the second day of the meeting, airline representatives announced a Jan 22 launch date for the new **Flight Operations Quality Assurance (FOQA) program** to share data from flight recorders (see Sep 18, 1996). Following the meeting, FAA published an updated Aviation Safety Action Plan in Feb 1996. Another meeting in Dec 1996 was followed by a revised plan issued in 1997.

Dec 14, 1995: FAA announced the **Commuter Safety Initiative, a group of new rules aimed at providing a single level of safety for travelers on airliners** ranging from "ten-seaters" to jumbo jets. The Commuter Safety Initiative represented one part of a three-point program unveiled a year earlier (see Dec 13, 1994), and was based on a proposal issued on March 16 in an accelerated rulemaking effort. The new rules required many commuter airlines formerly operating under Federal Aviation Regulations Part 135 to operate under the stricter Part 121 governing major airlines. This change applied to scheduled passenger operations using airliners with 10 to 30 passenger seats or using turbojets. The rules also contained provisions on standards for airplane performance and for flightcrew training and qualifications. In addition, the regulations **extended to commuter airline pilots the age-60 rule on mandatory retirement**, which had formerly applied only to airline pilots flying larger aircraft (see Mar 15, 1960). Finally, the

Commuter Safety Initiative included a notice of proposed rulemaking on new common standards regarding rest requirements and limitations on duty and flight time for airline flightcrew members.

Dec 20, 1995: An **American Airlines 757 crashed into a mountain while attempting an approach to Cali, Colombia**, killing 159 of the 163 persons aboard. The Colombian accident report cited the probable cause as errors by the flightcrew, who had entered incorrect data into their Flight Management System (FMS). Alerted by the Ground Proximity Warning System (GPWS), the crew tried to pull up but failed to retract the speedbrakes. In response to the crash and to National Transportation Safety Board recommendations, FAA undertook efforts aimed at improvements in FMSs and their use as well as in charting and pilot training. The agency began evaluations of possible regulatory requirements for: automatic speedbrake retraction for situations requiring maximum thrust and climb; visual "angle-of-attack" indicators to aid pilots in safely obtaining maximum climb; and Enhanced GPWS (see Nov 6, 1996).

Dec 31, 1995: **Authority to collect aviation user taxes expired** at midnight. By this date, the tax levels had risen to: domestic airline passenger ticket tax; 10 percent; international departure tax, $6 per passenger; domestic air cargo tax, 6.25 percent of the freight waybill; non-commercial jet fuel, 17.5 cents per gallon; and non-commercial aviation gasoline tax, 15 cents per gallon (14 cents of which continued to be collected and deposited in the Highway Trust Fund). Loss of this revenue quickly reduced the amount of money in the Airport and Airway Trust Fund. Legislation enacted on Aug 20, 1996, **temporarily reinstated** these taxes, effective Aug 27, but they expired again at the end of CY 1996.

***1996**

Feb 13, 1996: FAA announced that it and Europe's Joint Aviation Authorities (JAA) had developed a common set of certification standards for newly designed small airplanes. The achievement was part of an ongoing effort to reduce or eliminate burdensome duplicative requirements through **harmonization of international standards**.

Feb 20, 1996: FAA began a 120-day **special emphasis safety review of ValuJet Airlines**, an innovative low-cost carrier that had grown rapidly since its certification on Oct 21, 1993. Factors prompting the review included a series of incidents and nonfatal accidents. (See May 11, 1996.)

Feb 22, 1996: Confirming its intent to address staffing needs at key facilities, FAA announced that it planned to hire 100 **more air traffic controllers** during 1996, and that the Clinton Administration would request funding for hundreds more during 1997 (see Sep 30, 1996). The agency pledged to give fair consideration to former strikers (see Aug 12, 1993).

Feb 24, 1996: **Cuban fighters shot down two U.S. civil aircraft off the coast of Cuba**, killing all four persons aboard the two Cessna 337s, which were operated by a Cuban exile group. A third exile plane returned to the United States. On Feb 26, President Clinton took retaliatory measures that included the indefinite suspension of all charter flights between Cuba and the United States. FAA actions included a letter warning south Florida airmen of the dangers and penalties associated with violating Cuban airspace. In May, the agency also revoked the license of the pilot of the third exile plane, based on evidence that he had entered Cuban airspace on Feb 24 and on a previous occasion.

Feb 29, 1996: As part of a **continuing "open skies" initiative** (see Sep 4, 1992), DOT announced a U.S.-German agreement relaxing limitations on air travel between the two countries. By this date, the United States had concluded 10 other open skies agreements with European nations: the Netherlands, Austria, Denmark, Finland, Iceland, Luxembourg, Norway, Sweden, Switzerland, and Belgium. In addition, the United States and Canada had signed a liberal agreement on transborder air travel on Feb 24, 1995. Other international accords increasing opportunities for airline service included a Jun 5, 1995, agreement with Britain that included some expansion of airport access and other priviliges for U.S. and U.K. carriers.

Mar 12, 1996: FAA issued a comprehensive **revision of pilot medical standards and medical certification procedures**. Among the many changes was a modification of the previous two-year validity period for the third-class airman medical certificates required for student, receational, and private pilots. The validity period would still be two years for pilots of age 40 and older, but would now be three years for younger pilots.

Mar 29, 1996: The Clinton Administration announced a Presidential directive assuring the **availabilility of Global Positioning System (GPS) signals to civilian users**. The new policy included a planned end to the practice of degrading civil GPS signals, within a decade, in a manner that would allow the U.S. military to prepare for this eventuality.

On Apr 26, FAA cancelled its contract with Wilcox Electric for the **Wide Area Augmentation System (WAAS) to enhance GPS signals** (see Aug 1, 1995). The agency cited project management problems and projected cost overruns. On May 1, FAA entered into a letter contract with Hughes Information Technology Systems regarding WAAS. This was followed by the Oct 29 announcement of a comprehensive contract with Hughes for WAAS development and implementation.

Other related milestones during 1996 included a Jul 26 FAA **plan for transition to GPS-based navigation and landing guidance** during a period of about 10 years that would start when augmented GPS service became available.

Mar 31, 1996: Effective this date, the following **functions were transferred from the Office of Public Affairs** to the organization of the Associate Administrator for Administration: the Freedom of Information Act program; the audiovisual function; and the agency history program.

Apr 1, 1996: Effective this date, **reforms gave FAA new flexibility on personnel and procurement policies**, a change made possible by legislative relief from various statutory requirements (see Nov 15, 1995). Teams of FAA personnel had helped to establish procedures for implementing the reforms. The new acquisition management system aimed at reducing the time and cost of acquiring systems and services while making the acquisition workforce more accountable. The new personnel system was intended to speed recruitment and to reward outstanding employees while dealing effectively with substandard performance.

In accordance with reform legislation, all **FAA employees became part of a new Federal Aviation Service (FAS)** on this date. The FAS was designated an "excepted service" in contrast to the "competitive service" to which most Federal personnel belonged. FAA was no longer subject to certain Office of Personnel Management rules on filling positions and related actions, but its employees continued to enjoy a range of legal protections that applied to other Federal workers. Unionized FAA employees retained their representational status, as provided for by legislation that had been enacted on Mar 29.

Later in the year, FAA reauthorization legislation enacted further reform measures (see entry for Sep 30, 1996).

Apr 1, 1996: DOT and FAA announced a program of special **pay incentives for seven hard-to-staff air traffic control facilities** in or near Oakland, Chicago, and New York City. The program affected about 2,200 employees, including controllers, flight service data processing specialists, technicians, and certain technical staff and managers. They received a 10 percent raise, with 7 percent effective Apr 14 and the remainder effective by mid-Oct 1996. At the same time, DOT Secretary Peña announced that delivery of new computers to five en route control centers under the **Display Channel Complex Rehost (DCCR) project would be speeded by 10 months** (see Aug 1, 1995). The first of these DCCR systems became operational at the Chicago center in Jan 1997.

Apr 12, 1996: FAA commissioned the nation's **first ARSR-4 air route surveillance radar** (see Sep 1986), and had commissioned a total of 12 by the end of calendar 1996.

May 6, 1996: FAA renamed its Technical Center the **William J. Hughes Technical Center**. The new name honored Ambassador Hughes, a former member of Congress (D.-N.J.) and a long-time supporter of the facility.

May 6, 1996: In a full-scale fire test at FAA's Technical Center, one of the new materials tested demonstrated its ability to double the time that it takes for fire to burn through an aircraft's fuselage. The test was part of joint work with British aviation authorities to increase fuselages' resistance to external conflagrations, and was an example of FAA's **continuing research in aircraft fire safety**. (See Nov 3, 1988.)

May 7, 1996: DOT announced that about 80 percent of non-stop scheduled U.S. airline flights between the United States and foreign countries would be free of smoking as of Jun 1, when certain air carriers would implement smoking curbs. During the previous year, DOT had granted anti-trust immunity permitting airlines to discuss smoking bans. Other **U.S. steps against smoking on international flights** had included

a 1994 agreement with Canada and Australia to ban the practice on flights between the three nations. (See Feb 25, 1990.)

May 9, 1996: FAA announced its **Global Analysis and Information Network (GAIN)** concept, a proposed system to collect and analyze aviation safety data. The agency asked for comments from the aviation community on the development of GAIN prototypes, including the proposal that GAIN be privately owned and operated by an international consortium. In Sep 1996, FAA announced that Britain's Royal Aeronautical Society had agreed to host a conference on GAIN during the following spring. On Oct 22-24, meanwhile, the first international GAIN workshop took place at Cambridge, Mass.

May 11, 1996: A **ValuJet DC-9 crashed into the Everglades** shortly after takeoff from Miami, killing all 110 persons aboard. The crew's loss of control was due to an intense fire caused by activation of one or more oxygen generators carried in the forward cargo compartment. In a report released in Aug 1997, the National Transportation Safety Board found the accident's probable cause to be: the failure of SabreTech, a Valujet contractor, to properly handle and identify the chemical oxygen generators before presenting them to the airline for carriage; Valujet's failure to properly oversee its contract maintenance program; and FAA's failure to require smoke detection and fire suppression systems in cargo compartments of the type (Class D) in which the fire had started.

On the day after the crash, FAA announced an expansion of its ongoing review of Valujet (see Feb 20, 1996). On May 23, DOT's Research and Special Projects Administration issued an immediate temporary **ban on the the transportation of chemical oxygen generators as cargo on passenger airlines**. (See Jun 17 and Dec 30, 1996.)

May 16, 1996: FAA unveiled the **findings of the Challenge 2000 project**, a review of the agency's regulation and certification capabilities in light of the rapid changes taking place in aviation. The agency had announced the project on Jul 13, 1995, and during the following month had selected Booz-Allen & Hamilton, Inc. to conduct the review. The project report included recommendations that FAA's Regulation and Certification organization: shift its resources to focus more on industry groups most in need of oversight; revise its organizational structure; redesign and expedite the rulemaking process; and create new Centers of Excellence as sources of expertise (see Oct 1992).

May 20, 1996: FAA announced that the agency and Boeing had formed a partnership to build the world's first **full-scale airport pavement test facility** at the William J. Hughes Technical Center.

Jun 17, 1996: **FAA announced that ValuJet Airlines would cease operations,** as of midnight on the same day, pending safety improvements required under a consent decree (see Aug 29, 1996). The agency based its action on an intensified inspection of the carrier undertaken since the recent crash (see May 11, 1996). FAA stated that this heightened scrutiny had revealed serious safety deficiences in the areas of airworthiness, maintenance, quality assurance of contractors, and engineering capability. The announcement sparked renewed criticism of DOT and FAA because it appeared to contrast with statements, made following the accident, assuring the public that the airline was safe. **The next day, Secretary of Transportation Peña and Administrator Hinson described steps to improve safety oversight** and address public concerns. Peña stated that he would urge Congress to make safety FAA's single primary mission (see Sep 30, 1996). Hinson outlined improvements to FAA's examination of airlines, such as ValuJet, that relied heavily on contractors for maintenance and training. He stated that Deputy Administrator Daschle would lead a review of pertinent regulatory issues (see Sep 16, 1996). Hinson also announced the retirement of Anthony J. Broderick, Associate Administrator for Regulation and Certification. (See Jul 15 and Nov 14, 1996.)

Jun 27, 1996: FAA signed a contract with Northrup Grumman Systems for three full-scale development versions of the **Airport Movement Area Safety System (AMASS)**. The system was designed to provide a visual and aural alert for the display of the Airport Surface Detection Equipment model 3. (See Dec 3, 1993.)

July 1, 1996: The United States adopted, with some modifications, an **international system for reporting surface weather observations and terminal forecasts** for aviation use.

Jul 2, 1996: Vice President Gore announced NASA's selection of **Lockheed Martin to build the X-33**, an unmanned, reusable spacecraft intended as step toward replacing the space shuttle. The experimental craft

would be capable of suborbital flight 50 miles high. NASA stated that the project should lead to a fleet of privately owned and operated vehicles to carry both government and industry payloads.

Jul 16, 1996: FAA published a rulemaking **proposal to increase the amount of data collected by Flight Data Recorders** installed in airliners. The agency specified the data paramenters to be required for various new and existing aircraft, with retrofit to be accomplished within four years of the final rule. The largest increase in parameters -- from 29 to 88 -- would apply to aircraft manufactured five years after the proposed rule's effective date. The proposal addressed concerns raised in several National Transportation Safety Board recommendations following unexplained crashes (see Sep 8, 1994).

Jul 15, 1996: FAA Administrator Hinson announced **initiatives to address the dangers of transporting hazardous materials** by air. The initiatives called for a seven-fold increase in resources devoted to the issue, funding to upgrade the "hazmat" program, and the hiring of 130 additional inspectors and legal personnel. He also stated that FAA had asked the Research and Special Projects Administration to ban the transport of oxidizing materials in specific compartments on passenger and cargo aircraft (see Dec 30, 1996).

Jul 17, 1996: **Trans World Airlines Flight 800 exploded in midair** and crashed into the Atlantic off Long Island after taking off from New York Kennedy airport for Paris. All 230 persons aboard the Boeing 747 died. Initial speculation as to the cause focused on terrorism. On the day after the tragedy, FAA confirmed that the security measures announced during the previous summer (see Aug 9, 1995) remained in effect, with some adjustments. On Jul 25, President Clinton announced **increased security for air travel**. FAA stated that steps would include more intensive screening of passengers on international flights, increased screening of carry-on bags for both international and domestic flights, as well as other actions not disclosed to the public. Clinton also announced that Vice President Gore would head a commission to review aviation security. This **White House Commission on Aviation Safety and Security** was formally established Aug 21, 1996. (See Sep 9, 1996.)

Despite painstaking recovery of the wreckage, the TWA disaster proved difficult to explain. Throughout 1996, the National Transportation Safety Board refused to rule out any of three possible causes: a bomb, a missile, or mechanical failure. As the investigation progressed, however, the **possibility of an accidental fuel tank explosion** received increased media attention. On Dec 13, 1996, the Board announced a group of recommendations for improving the safety of the 747 fuel system. FAA, which had been conducting a review of 747 safety issues in the wake of the crash, issued on Dec 23 an airworthiness directive requiring inspection of certain wiring in the fuel systems of older 747s.

Aug 17, 1996: **To combat the hazard of wake turbulence, FAA implemented new separation standards** for aircraft. The agency increased the required separation for small aircraft traveling behind a Boeing 757 from four to five nautical miles. At the same time, FAA revised the definition of the three aircraft weight categories used in setting separations to avoid wake turbulence: small (formerly 12,500 lb. or less, changed to 41,000 lb. or less; large (formerly 12,500-300,000 lb, changed to 41,000-255,000 lb.); and heavy (formerly 300,00 lb. or more, changed to 255,00 lb. or more). As a result, some 57 aircraft types moved from the large to small category. (See Nov 1, 1975, and May 20, 1994.)

Aug 22, 1996: FAA announced nine proposed Airworthiness Directives on **changes to the design of Boeing 737 flight control systems**. The proposals stemmed from recommendations of a Critical Design Review prompted by two 737 accidents (see Sep 8, 1994). Following new information from Boeing that a valve in the 737 rudder power control unit could jam under extreme conditions, FAA on Nov 11 issued an airworthiness directive requiring repetitive inspections. **Continuing attention to the 737 control system issue** led in Jan 1997 to an airworthiness directive on precautionary flight procedures. During the same month, Vice President Gore announced that FAA intended to require retrofit of 737 rudder components.

Aug 29, 1996 **FAA returned ValuJet's operating certificate to the airline**, stating that the carrier had completed the safety improvements outlined in the consent order that grounded it (see Jun 17, 1996). The action cleared ValuJet to renew operations, subject to a DOT fitness ruling subsequently granted on Sep 26. **The airline resumed flying on Sep 30**. FAA imposed a limit of 15 aircraft, subject to review, in contrast to the 51 aircraft that the carrier had operated before its grounding.

Sep 9, 1996: President Clinton called on Congress to appropriate more than $1 billion for a variety of **anti-terrorism measures**. Proposed programs related to aviation included: improved airport bomb-detection equipment, more FAA research; more FAA security personnel; expanded Customs Service air security

resources; a computerized passenger "profile" screening system; immediate criminal background checks for airport workers with access to secure areas; deployment of explosive-detection dog teams at airports; and a test of a system for matching luggage and passengers on all domestic flights. These measures were based on **recommendations of the White House Commission on Aviation Safety and Security** (see Jul 17, 1996), whose initial report was also dated Sep 9, 1996. Many of these initiatives were funded by legislation enacted on Sep 30, 1996 (see that date).

Sep 16, 1996: FAA announced the award of a contract to build the **Standard Terminal Automation Replacement System (STARS)** to a team led by Raytheon (see Dec 13, 1993). Under the contract, the team would develop and install new computers, displays and software for terminal radar approach control facilities (TRACONs). This joint procurement involved new equipment for up to 172 FAA and 199 DOD facilities. On Sep 17, FAA announced that the Dallas-Fort Worth TRACON was now operating an **updated Automated Radar Terminal System IIIE (ARTS IIIE)**, the first of several new ARTS IIIEs that would provide improvements pending STARS implementation.

Sep 16, 1996: A team headed by Deputy Administrator Daschle submitted a **report on a 90-day review of FAA safety regulation and certification** (see Jun 17, 1996). Recommendations included: creation of a national team to assist local certification offices regarding new entrants into the airline industry; increased safety surveillance and growth management for new carriers; actions to ensure that carriers have the resources to operate a varied fleet and to support "outsourcing" of functions to contractors; additional support for inspectors through upgraded training, guidance material, and information technology; and increased inspector staffing. (See Sep 30, 1996.)

Sep 18, 1996: FAA announced that it and NASA were testing a new **Automated Performance Measuring System (APMS)** to convert digital data from Flight Data Recorders directly into easily understood safety information. FAA/industry joint work on **Flight Operations Quality Assurance (FOQA)** programs had demonstrated the need for such a system to assist FAA, airlines, and flight crews in improving safety and efficiency. (See Dec 6, 1996.)

Sep 19, 1996: FAA issued a license to Spaceport Systems International, allowing it to open the world's **first privately-operated space launch facility**, California Spaceport. The facility was located on Vandenberg AFB, Calif.

Sep 26, 1996: A **new Pan American World Airways began service**. The operators of the small new carrier had purchased the name and trademark of the original airline. (See Dec 4, 1991.)

Sep 30, 1996: **Chicago's Meigs Field ceased operations** as part of a plan by the city's mayor to convert the lakefront facility into a park, a concept opposed by Illinois' governor. On Jan 6, 1997, the two officials announced a **compromise under which the city would reopen and operate the airport for five years** but then be free to close it.

Sep 30, 1996: Pres. Clinton signed the **DOT appropriations bill for fiscal 1997** (P.L. 104-205), providing $8.3 billion for FAA programs. The legislation gave funds for hiring hundreds of new controllers, maintenance technicians, inspectors, and security personnel. On the same day, the President also signed a **continuing appropriations bill** (P.L. 104-208) that funded programs to increase safety and combat terrorism through a range of means such as deployment of new security equipment at airports (see Sep 9 and Dec 23, 1996). The continuing resolution also gave funds to step up surveillance of newly certificated airlines and to increase the number of safety inspectors, as recommended by Deputy Administrator Daschle's 90-day review team (see Sep 16, 1996).

On Oct 9, the President signed the Federal Aviation Reauthorization Act of 1996 (P.L. 104-264) , which contained further appropriations, increased the agency's share of Trust Fund monies from 70 to 72.5 percent, and provided two-year funding for the Airport Improvement Program. The legislation established a **National Civil Aviation Review Commission** to report to Congress on the state of aviation safety and on providing long-term funding for the agency. The law contained provisions aimed at expanding FAA's financial accountability and increasing its autonomy within DOT. It directed the establishment of a **Federal Aviation Management Advisory Council** composed of 15 members serving 3-year terms, with one member designated by DOT, one by the Defense Department, and 13 by the President with Senatorial approval. The Council was to advise the FAA Administrator and function as an oversight resource for management policy, spending, and regulatory matters. To address public perceptions about

FAA's "dual mission," **the law specified safety as the agency's highest priority**. FAA remained responsible for encouraging and developing civil aeronautics, but references to a promotional role were eliminated from its mandate.

The law provided for a variety of **enhancements to aviation safety**, emphasizing anti-terrorism through such means as new requirements for background checks of certain airport personnel with security functions associated with cargo or baggage. The legislation **banned children from controlling aircraft for the purpose of setting records**. (This stipulation stemmed from a crash on Apr 11, 1996, that claimed the life of a 7-year-old girl, her flight instructor, and her father.) Another provision directed FAA to hire an ombundsman for noise issues.

The law's Title VII was designated the **Aviation Disaster Family Assistance Act of 1996**. It gave the National Transportation Safety Board new responsibilities for aiding the families of the victims of air accidents.

Sep 1996: The **Driver's Enhanced Vision System (DEVS)** became operational at Boston Logan airport, the pilot installation site for this FAA-developed equipment. DEVS was designed to assist emergency crews when visibility was limited by such factors as smoke, flames, fog, or precipitation. The system combined satellite, digital, and infrared technologies.

Oct 1, 1996: FAA established a **new Air Traffic Systems Requirements Service** within the organization of the Associate Administrator for Air Traffic Services. The move combined requirements organizations from Air Traffic and Airway Facilities into a single unit, bringing together controllers and engineers to conceptualize new technology.

Oct 10, 1996: FAA implemented the **Metroplex Plan at Dallas/Fort Worth airport**, making the airport capable of handling simultaneous triple landings and greatly increasing air traffic capacity. The plan entailed 68 construction projects, including two high-frequency radio towers, and an additional runway, and a new terminal radar approach control facility (TRACON), which was the latest element to be commissioned. New twin air traffic control towers had been commissioned at Dallas/Fort Worth on Jun 15, 1994, giving the airport a total of three working towers.

Nov 6, 1996: FAA announced its approval of operational use of the **Enhanced Ground Proximity Warning System (EGPWS)** on all Boeing 757 aircraft operated by American Airlines, the first carrier to receive such permission. (See Dec 20, 1995.)

Nov 9, 1996: David R. **Hinson resigned as FAA Administrator**, effective this date. With Hinson's departure, **Deputy Administrator Daschle became Acting Administrator**, a post that she held until resigning from the agency, effective Jan 31, 1997.

Nov 12, 1996: A **midair collision near New Delhi, India**, claimed the lives of all 349 persons aboard two airliners, a Saudi Arabia Airlines 747 and a Kazak Airlines Ilyushin Il-76. The accident was history's deadliest collision between two aircraft in flight, and ranked **third among the world's worst civil aviation disasters, summarized as follows**: (1) Mar 27, 1977, Pan American and KLM, runway collision, 583 fatalties; (2) Aug 12, 1985, Japan Air Lines, control system failure, 520 fatalities; (3) Nov 12, 1996, Saudi and Kazak airlines, midair collision, 349 fatalities; (4) Mar 3, 1974: Turkish Airlines, in-flight decompression, 346 fatalities; (5) Jun 23, 1985, Air India, believed sabotage, 329 fatalities; (6) Aug 19, 1980, Saudi Arabian Airlines, in-flight fire, 301 fatalities; (7) Jul 3, 1988, Iran Air, military shoot-down, 290 fatalities; (8) May 25, 1979, American Airlines, engine separation, 272 fatalities; (9) Dec 21, 1988, Pan American, sabotage, 270 fatalities; (10) Sep 1, 1983, Korean Air Lines, military shoot-down, 269 fatalities. (See dates indicated.)

Nov 14, 1996: FAA announced its **decision to issue a rulemaking proposal to require retrofit of fire detection and suppression equipment** on some 2,800 older commercial aircraft that did not currently carry this equipment in inaccessible cargo compartments. This proposal, which grew out of concerns following a ValuJet crash (see May 11, 1996), was subsequently issued on Jun 10, 1997. On Dec 12, 1996, meanwhile, a group of the nation's largest airlines announced that they would voluntarily install fire detection systems in cargo holds that lacked the equipment.

Nov 18, 1996: FAA announced a **policy change concerning pilot certification of individuals with insulin-treated diabetes**. The new policy permitted the consideration of waivers to allow such persons to

receive limited third-class medical certificates, making it possible for them to qualify for student, recreational, and private pilot certificates.

Nov 25, 1996: Officials at John F. Kennedy airport unveiled a **new aircraft arresting system**, made of foam blocks, to bring aircraft to a safe stop if they overrun a runway. The airport was the first to install the system, jointly developed by FAA and the Port Authority of New York and New Jersey.

Dec 15, 1996: An agreement under which **Boeing would acquire McDonnell Douglas** was announced by the two companies. On Aug 4, 1997, Boeing announced that the merger was complete and that it was now the world's largest aerospace company. Boeing had been formed as the Pacific Aero Products Company in 1916 and adopted the Boeing name the following year. McDonnell Douglas had been created by a merger of two firms (see Apr 28, 1967).

Dec 17, 1996: FAA unveiled a $500,000. **public education campaign using the slogan "Turbulence Happens."** The campaign promoted seatbelt use by airpline passengers (see Jun 20, 1995). It also reinforced FAA's recommendation that children weighing under 40 lb. were safest in a certified child restraint system when flying (see Jun 8, 1995).

Dec 20, 1996: President Clinton announced the **selection of Rodney E. Slater to be Secretary of Transportation** during the President's second term. A former chairman of the Arkansas State Highway Commission, Slater had been Administrator of the Federal Highway Administration since 1993. Clinton also revealed the nomination of the current Secretary of Transportation, Federico Peña, to be Secretary of Energy. Peña's resignation from the DOT post became effective on Feb 14, 1997, the same day that Slater became Secretary.

Dec 23, 1996: FAA announced the award of contracts to Raytheon and to Lockheed Martin to provide planning, design, and services required to integrate and install **advanced security equipment** at up to 77 U.S. airports. On Dec 26, the agency revealed that it had ordered **54 CTX-5000 SP explosives detection systems** (see Dec 9, 1994) for use at the nation's busiest airports. The action responded to a recommendation of the White House Commission on Aviation Safety and Security (see Sep 30, 1996).

Dec 30, 1996: The Research and Special Projects Administration (RSPA) published a **rule permanently banning oxygen generators as cargo on passenger aircraft** (see May 11, 1996). On the same day, RSPA published a **rulemaking proposal to prohibit carriage of oxidizing materials and compressed oxygen on passenger aircraft**, as well as on cargo aircraft if stored in inaccessible cargo compartments lacking fire detection and suppression equipment.