

EIGHTEENTH ANNUAL REPORT

Fiscal Year 1984

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

**U.S.
DEPARTMENT
OF
TRANSPORTATION**

**18th Annual Report
Fiscal Year 1984**

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Summary

Summary

The U.S. Department of Transportation (DOT) establishes overall national transportation policy. DOT encompasses 9 administrations whose jurisdictions include: highway planning, development and construction; railroads; aviation; urban public transportation; and the safekeeping of waterways, ports, highways, and oil and gas pipelines. The Department develops policies and programs to provide safe, rapid, secure, and accessible transportation.

The Department's most significant activities of 1984 are summarized below. More detailed descriptions of these and other Departmental activities appear in the Progress Reports section.

Aviation

In 1984, U.S. scheduled airlines were involved in 12 accidents, only one of which was fatal, setting the lowest accident rate in history and the second lowest recorded fatality rate. All categories showed a marked improvement in their safety records except for commuter air carriers. The commuter airlines accident rate increased from 17 in 1983 to 21 in 1984, with fatalities increasing from 11 to 45.

The FAA made important progress in rebuilding its air traffic control system, which had been severely limited as a consequence of the 1981 Professional Air Traffic Controllers Organization (PATCO) strike. By April 1, 1984, practically all strike-related restrictions on domestic flights had been lifted, and by the end of 1984, FAA had increased the number of air traffic controllers to 13,714.

FAA obligated \$805 million for grants under the Airport Improvement Program, for 1,077 development projects and 47 planning projects. FAA efforts to draw up safety regulations leading to airport certification, resulted in approval of safety certificates for 676 airports in 1984.

Railroads

Railroad accidents continue to decline; however, total rail-related casualties increased 16.2 percent compared with 1983. While accidents at highway/rail grade-crossings increased 12.9 percent and trespasser fatalities rose 25 percent, railroad employee on-duty fatalities decreased 3.3 percent.

In keeping with requirements of the Northeast Rail Service Act of 1982 (NERSA) to move Conrail back to the private sector, the Federal Railroad Administration is considering offers by 3 firms for the purchase of Conrail. Conrail, meanwhile, continues to display increased productivity.

Work continues on the Northeast Corridor Improvement Project (NECIP) to improve intercity passenger rail service on the 456-mile Northeast Corridor. The National Railroad Passenger Corporation (Amtrak) encountered

progress in 1984, as well. The biggest source of revenue, outside the Northeast Corridor, is Amtrak's new Auto Train service, carrying 55,000 passengers between Virginia and Florida

Talks continue between the Department and the State of Alaska to set the price and the date for the transfer of the federally-owned Alaska Railroad. Alaska established the Alaska Railroad Corporation as the entity to operate the railroad

Marine Transportation

As stated by the Maritime Administration, on September 30, 1984, the privately-owned, ocean-going, U.S.-flag merchant fleet comprised 501 ships with a capacity to haul 21.1 million deadweight tons (dwt) of cargo. American shipyards built 8 deep-draft commercial vessels totaling 243,180 dwt in 1984, compared with 16 ships totaling 330,000 dwt in 1983. U.S.-flag, privately-owned, deep-draft merchant vessels carried 5.8 percent of the 630.4 million long tons of commercial cargo moved in the nation's ocean-borne trade in calendar year 1983, compared with 4.6 percent of the 673.5 million long tons the previous year.

During 1984, the U.S. Coast Guard responded to over 66,000 calls for help, saving over 5,500 lives and assisting an additional 130,000 persons. Some 200 lives were saved with the help of the SAR Satellite System (SARSAT).

Taking part in the Justice Department's Organized Crime Drug Enforcement Task Force, the Coast Guard seized 223 vessels for narcotics trafficking, and interdicted over 2.8 million pounds of marijuana.

More than 475 million metric tons of cargo passed through the locks of the St. Lawrence Seaway, compared with 450 million the previous year, demonstrating the second successive year of noticeable Seaway traffic gains. The largest cargo increases consist of: iron ore, coal, iron and steel, and containers.

Materials Transportation

According to the Research and Special Programs Administration, there was a decrease in the number of gas pipeline failures from 1,711 in 1983 to 1,002 in 1984. Fatality statistics also fell from 287 the previous year to a low of 35 in 1984. A total of 203 liquid pipeline incidents resulted in no deaths, but 19 injuries.

In 1984, the Motor Carrier Field Staff conducted 9,781 safety management audits at the facilities of carriers and shippers of hazardous materials, including hazardous waste and substances. As a result of these activities, the staff prepared 1,368 case reports during 1984, uncovering serious violations of Federal Motor Carrier Safety Regulations (FMCSR) and Hazardous Materials Regula-

Summary

tions (HMR). In some cases, carriers and shippers were fined for knowingly and willfully violating the regulations. During the fiscal year, civil and criminal penalties collected from violators totaled about \$600,000.

Urban Mass Transportation

In 1984, the Urban Mass Transportation Administration (UMTA) obligated \$4.2 billion for transit assistance; \$407 million for major capital ventures such as the Downtown San Jose Transit Mall; \$1.25 billion for urban discretionary grants such as rail renovation projects, new buses and facilities; \$2.4 billion in urban formula grants; \$295 million for Interstate transfer grants; and \$250 million for continued construction of the Washington, D.C. area METRO subway system.

Transportation Safety

General aviation accidents continued to decline for this year. The number of motor vehicle fatalities increased slightly in 1984, reversing a downward trend that had begun in 1980. The highway fatality rate, in deaths per 100 million vehicle miles, remained the same. The railroad

accident rate continued to decline, despite an increase in the fatality rate.

Highways

Obligations for Federal-aid highway programs increased from \$8.2 million in 1982 to \$13.0 million in 1984. The Interstate Highway System continues to receive highest priority. One hundred eighty-two new miles were opened to traffic by July 1984, bringing the total of open miles to 40,935, or 96.3 percent of the Interstate system. In addition, more than 4,000 projects were started under the Highway Bridge Replacement and Rehabilitation Program (HBRRP).

The nationwide traffic death toll rose slightly for the first time since 1980, up 4 percent from 42,589 killed in 1983. The fatality rate, or number of deaths per hundred million vehicle miles, edged downward below 2.6 percent. Alcohol abuse continues to be the number one highway safety crisis. Further, the National Highway Traffic Safety Administration (NHTSA) estimates that failure to use safety belts allowed almost twice as many fatalities and injuries as would have otherwise been the case.

Progress Reports

Office of the Secretary

The U.S. Department of Transportation (DOT) coordinates the effective management of federal transportation laws. The Secretary of Transportation is the principal advisor to the President on all matters pertaining to Federal transportation programs. The Office of the Secretary (OST) furnishes staff and advisory support to the Secretary, and coordinates the activities of the various administrations of the Department. The Office of the Secretary also has basic responsibility for programs covered in this section.

Regulatory Reform

The Department continues to advance the Administration's target of regulatory reform. The Office of the Secretary (OST) urged the transportation regulatory agencies to effect regulatory reforms enacted in the airline, truck, rail, and bus industries in the most pro-competitive way.

During 1984, the Department endorsed repeal of the antitrust exemption for the trucking industry. DOT also recommended procompetitive decisions on other issues and assured that new Departmental regulations would be formulated with the least hardship for industry or consumers.

Three events in 1984 highlighted the role the Department played in deregulation, or at least, in the removal of excessive regulation.

The Office of the Assistant Secretary for Policy and International Affairs chaired a working group which produced and issued a blueprint for the December 31, 1984 sunset of the Civil Aeronautics Board (CAB); and the transfer of most of the remaining functions of the Board to the Office of the Secretary of Transportation and to the Research and Special Programs Administration (RSPA) without interruption.

DOT established the Office of Commercial Space Transportation (OCST) to streamline the approval process involved in commercial launch activities, including those of both large government corporate contractors and newer entrepreneurial firms.

DOT helped to pass the Shipping Act of 1984, in cooperation with U.S.-flag liners, shippers and labor

unions, legislation that reformed the regulation of the liner shipping industry.

Office of Small and Disadvantaged Business Utilization

The responsibility of the Office of Small and Disadvantaged Business Utilization (OSDBU) is to provide policy direction for minority, women-owned, and small and disadvantaged business participation in the Department's federal financial assistance activities; to design and construct programs to encourage such businesses to secure contracts, subcontracts and projects produced by the Department's direct procurement and federal financial assistance activities.

OSDBU implemented a joint 8(a) pilot program with the Small Business Administration (SBA) to identify contracting opportunities which contribute to the growth and development of 8(a) firms. The Department's pilot program includes 13 projects at an estimated value of \$159 million.

OSDBU developed a Uniform Reporting System for Minority Business Enterprise, Disadvantaged Business Enterprise, and Women-owned Business Enterprise (MBE/DBE/WBE) Awards. The lack of a uniform reporting system had prevented DOT from fully monitoring the MBE/DBE/WBE achievements of its recipients and developing the assistance necessary to help DOT recipients who are experiencing difficulty in achieving their approved goals.

Office of the Inspector General

The Office of Inspector General (OIG) works closely with other key Departmental officials to administer the Department's cost avoidance, reduction and efficiency (CARE) program, largely by audits, investigations, fraud prevention and detection, progress management advisory services, and legislative and regulatory review.

The highest priority of the Office of Inspector General continues to be the detection and prevention of bid-rigging in DOT-funded construction programs. At the end of 1984, investigations were proceeding in 36 states. Other activities designed to detect and prevent fraud included a survey of the Disadvantaged Business Enterprise (DBE) program, publication of a Fraud Awareness Bulletin on travel fraud, a Report of OIG Hotline activities to DOT Administrations, and several displays of how to detect bid rigging in construction contracts and false fronts in DBE programs.

The OIG issued 1,820 audits during the year. These reports contained suggestions for improving the efficiency and effectiveness of Departmental programs and operations posting a potential \$762 million in savings. OIG also

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questioned \$58 million in costs claimed, by federal aid recipients. Resolution of current and past years advice netted the Department savings and potential recovery of \$413 million.

During 1984, the Inspector General opened 85 reactive investigations and closed 168. Judicial dispositions included 107 indictments, 82 convictions with fines of \$4.82 million, 40 years of prison sentences, and 81 years probation. Regulatory actions included debarment of 38 construction companies or individuals and 57 other administrative actions such as suspensions, reprimands, and terminations. In addition to the fines, OIG identified \$927 thousand in cost avoidance.

The OIG provided numerous management advisory services to the Department during the year. These included: helping activate the Federal Managers' Financial Integrity Act; evaluating the interstate truck insurance program; and assisting the FAA with its computer acquisition design for the National Airspace System (NAS) Plan.

Office of Commercial Space Transportation

Executive Order 12465, issued on February 24, 1984, designated DOT as lead agency for coordinating and overseeing American commercial space launch activities.

The Office of Commercial Space Transportation (OCST) was formed to encourage a diverse and innovative American commercial launch industry and to regulate the activities of that industry. The Office's main focus is on unmanned launch service providers whether they be new firms (such as Space Services, Inc.) which are developing new commercial launch vehicles, or established aerospace firms (such as General Dynamics) which are commercializing existing technology, like the Atlas vehicles. OCST has also been active in assisting these firms in their plans to conduct commercial launches from national facilities like Wallops Island or the Kennedy Space Center.

OCST expedited federal consent for a test launch, conducted successfully by Starstruck, Inc., off the coast of California, on August 3, 1984. OCST staff worked with various agencies whose approval was needed—the Departments of State and Defense, the National Aeronautics and Space Administration (NASA), the FAA, the Materials Transportation Bureau, the Coast Guard, and others—to set licensing priorities, arrange review activities and facilitate federal approval. In addition, OCST helped Starstruck resolve problems at the state and local level.

During 1984, OCST worked with the Departments of State and Commerce, the Office of the U.S. Trade Representative (USTR) and NASA to develop policies that would enhance the competitive posture of U.S. commercial expendable launch vehicles (ELVs) in the world market.

OFFICE OF THE ASSISTANT SECRETARY FOR ADMINISTRATION

The Assistant Secretary for Administration is the principal advisor to the Secretary on matters relating to the organization and management of the Department. These responsibilities include executive direction of the Offices of Personnel, Management Planning, Information Resource Management, Administrative Services and Property Management, Acquisition and Grants Management, Hearings, Financial Management and Security.

Financial Management

The Office of the Assistant Secretary for Administration's principal accomplishments in the area of financial management include:

- Development of initial plans for a Department-wide accounting and financial information system (DAFIS);
- Coordination and implementation of the Debt Collection Act of 1982, assessing a 400 percent increase in cost, penalties and administrative charges over 1983, and a 90 percent increase in collections over 1983 amounts. Also, the Assistant Secretary for Administration coordinated efforts with the Office of Management and Budget to refer delinquent debtor information to Credit Bureaus; and
- Institution of an alternate travel payment system, permitting employees to use charge cards for official travel and transportation expenses, including the use of travelers checks rather than reliance on cash travel advances. These changes substantially reduced the government's requirements for cash, resulting insignificant savings.

Information and Telecommunications

DOT completed installation of the Transportation Office Network System (TONS), an automated office information system that provides a number of capabilities including spread sheets, text-editing, and many other features for the processing of information within the Department.

The Department also awarded a contract to install a new telephone system which provides large-scale digital switches for the three Headquarters buildings, expected to save \$70 million over the next ten years.

OFFICE OF THE ASSISTANT SECRETARY FOR POLICY AND INTERNATIONAL AFFAIRS

The Assistant Secretary for Policy and International Affairs is the principal advisor in the development, review and coordination of policies for domestic and international transportation. The Office of the Assistant Secretary for

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Policy and International Affairs develops and evaluates public policy related to the transportation industry and its economic regulation; works with others to assure that the Department's regulatory program remains consistent with established policy and maintains oversight of all Departmental safety regulatory action; and proposes and coordinates policy on transportation-related legislation involving the public and private sectors.

The Office of Policy established a working group which conducted analyses of a wide range of possible programs to reform government regulation of the U.S. maritime industry, such as authorizing subsidized U.S.-flag liner operators, to construct vessels abroad; supervised the Administration's Interagency Maritime Policy Group; and conducted maritime negotiations with a number of foreign nations

The Policy Office also furnished policy oversight and analysis for several safety proposals set in motion by the Department, including: an FRA Notice of Proposed Rulemaking (NPRM) on alcohol and drugs; FRA guideline on flammability and smoke toxicity for railroad vehicle materials; an FAA NPRM on shoulder harnesses in general aviation aircraft, plus notices on periodic training for private pilots, seat cushion flammability, and floor proximity emergency path marking; and FHWA proposals on licensing and training tractor trailer drivers and on improving roadside barriers.

At the same time, the Department:

- Contributed policy guidance to transit agencies purchasing vehicles to provide transportation services for senior citizens and persons with disabilities;
- Completed, in October 1984, "The Washington, D.C. Heliport Study," in response to Congressional request, which investigated the feasibility of helicopter facilities at various downtown sites;
- Weighed cost, safety, security and noise factors, and estimated public use of the heliport and its impact on passenger traffic at National, Dulles International, and Baltimore-Washington International Airports; and
- Inaugurated the Outstanding Public Service to Transportation and Historic Preservation Awards Program, in accord with the Advisory Council on Historic Preservation, which recognizes innovative solutions to transportation problems that achieve historic preservation objectives

International Affairs

International Cooperation Program. The Office of the Assistant Secretary for Policy and International Affairs expanded the Department's international cooperative commitments, including bilateral cooperative arrangements with Brazil and representation in such international organizations as the European Conference of Ministers of Transport, ICAO, the International Maritime Organization (IMO), the Organization for Economic Cooperation and Development (OECD), and the Pan American Railway Congress

DOT's major accomplishments in technical assistance involved food relief activity in Africa. At the direction of the Secretary, the Department undertook a significant effort to address and alleviate transport and distribution problems facing food relief efforts in Chad, Ethiopia, Ghana, Mali, Mauritania, Mozambique, Niger and Zimbabwe.

International Maritime Negotiations. The Department led bilateral maritime negotiations with Brazil, the People's Republic of China, and Japan. Negotiations with Japan raised several issues of interest in the United States, including possible Japanese ratification of the United Nations Code of Conduct for Liner Conferences, constraints on U.S.-flagged container and intermodal movements in Japan, and opportunities for U.S.-flag vessels to participate significantly in Japanese tobacco import transport.

International Aviation. DOT played an increasingly important role in formulating and implementing American international aviation policy, as the Civil Aeronautics Board moved toward "sunset" at the end of 1984. DOT representatives participated in numerous bilateral and multilateral negotiations during 1984 to improve U.S. airline operating opportunities in international markets and to increase the availability of low-cost, convenient air service for the traveling and shipping public. Notably, a multilateral agreement with the member countries of the European Civil Aviation Conference (ECAC) extended liberalized prices 2 years, and an agreement to allow resumption of U.S.-Poland air service was negotiated.

United States Coast Guard

The United States Coast Guard (USCG) is responsible for enforcing or aiding in the enforcement of federal law on the high seas and waters subject to U.S. jurisdiction. These laws govern navigation, shipping, other maritime operations, and the related protection of life and property. The Coast Guard also provides maritime search and rescue facilities. Other duties include: promoting the safety of commercial and recreational vessels; conducting oceanographic research in support of other Coast Guard missions; furnishing icebreaking services; developing, installing, maintaining, and operating maritime aids-to-navigation (ATN); and protecting the marine environment. The Coast Guard is also prepared to function as a specialized part of the U.S. Navy in time of war or national emergency.

The Coast Guard operates a fleet of 247 cutters, 156 aircraft and more than 2,000 boats. It also maintains more than 45,000 aids-to-navigation.

Coast Guard missions were executed by approximately 38,000 military and 5,885 civilian personnel. They were supported by a 12,000-member Coast Guard Reserve and nearly 39,000 civilian volunteer members of the Coast Guard Auxiliary.

International Affairs

The Coast Guard provided training to 134 students from 36 countries at its training centers and operating units in the U.S. Five international cadets, one each from Barbados and Ghana and three from the Philippines, graduated from the Coast Guard Academy, while 17 cadets from 7 countries continue their studies. Coast Guard Mobile Training Teams were dispatched on temporary duty to Haiti, Yemen, Grenada, Costa Rica and Iceland to train local maritime forces in Coast Guard related skills.

Three Technical Assistance Field Teams were sent to the Caribbean nations of Antigua, Dominica, and St. Lucia for one year to facilitate those governments establishing coast guard organizations.

In 1984, the International Maritime Organization (IMO) convened the International Conference on Liability and

Compensation for Damage in Connection with the Carriage of Certain Substances by Sea. The conference considered draft provisions for: 1) convoking the International Convention on Liability and Compensation (CLC) in Connection with the Carriage of Noxious and Hazardous Substances by Sea (NHS); 2) amending the 1969 International Convention on Civil Liability for Oil Pollution Damage; and 3) revising the 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND).

The Conference was unable to agree on the proposed NHS Convention, and referred the matter back to the IMO for further work. However, the Conference adopted two protocols revising the CLC and FUND Conventions. The adopted texts of these protocols were quite satisfactory to the U.S. delegates, especially with respect to the high levels of liability limits and compensation prescribed and the expansion of the Conventions' scope to the Exclusive Economic Zone.

Search and Rescue

Search and Rescue (SAR) continues to be a major Coast Guard mission and the traditional role most associated by the public with the Coast Guard. The objective of SAR is to save lives and prevent personal injury and property damage in the maritime regions of the United States. This program uses about one-fourth of Coast Guard operating funds and demands an even greater share of the time of its multi-mission personnel. In 1984, the Coast Guard responded to over 66,000 calls for help, saving over 5,500 lives and assisting an additional 130,000 persons.

Continued emphasis on the professionalism of SAR personnel and the modernization of shore and air stations helped improve the execution of SAR operations. A Coast Guard helicopter rescue swimmer program was initiated. When fully implemented, an estimated 35 lives per year could be saved that otherwise would have been lost. The Coast Guard and the Navy examined allowing the Coast Guard to assume Navy SAR responsibilities at some Naval Air Stations.

The SAR Satellite System. (SARSAT) saved over 200 lives. SARSAT was developed by the U.S., France, Canada, and the Soviet Union to ascertain distress signals and improve world-wide search applications. The Coast Guard continues to encourage other nations to approve the International Convention on Maritime Search and Rescue and to initiate regional SAR plans and cooperation.

Drug Interdiction

The Coast Guard seized 223 vessels for narcotics trafficking, and over 2.8 million pounds of marijuana. Establishment of the National Narcotics Border Interdiction

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System in June 1983 began a coordinated nationwide effort to curb the flow of drugs across the border. The Coast Guard is a major participant in this program. Increased DOD involvement also enhanced law enforcement efforts. The Coast Guard cutters dedicated to the Haitian Migrant Interdiction Operation (HMIO) effectively contributed to the total drug interdiction effort, as did the cutters on which Academy cadets are deployed for summer training. The Coast Guard is also an active participant in the Organized Crime Drug Enforcement Task Force.

Aliens and Refugees

The Coast Guard, working with the Haitian Navy, placed special emphasis on patrols to stop illegal Haitian aliens from entering the United States. The HMIO, a collaborative endeavor of the Coast Guard and the Haitian Navy primarily aimed at interdicting those engaged in the illegal trafficking of undocumented migrants, continues largely successful. Commencing in October 1981, the Coast Guard had stopped a total of 189 Haitians from: entering the U.S. illegally during 1982, 810 in 1983, and an additional 1,320 as of September 30, 1984.

Fisheries Law Enforcement

In addition to its fisheries management duties under the Magnuson Fishery Conservation Management Act, the Coast Guard enforces the Lacey Act and other statutes regarding marine mammals, endangered species, and marine sanctuaries. Coast Guard fishery enforcement during the year included 3,268 boardings; 216 written warnings; and 241 civil penalty actions. The Coast Guard impounded 7 foreign vessels and one domestic vessel. Assessed civil penalties totaled \$1,228,000 for the year.

Enforcement of domestic regulations required 43 percent of the Coast Guard's fisheries law enforcement effort. Foreign fishing, which involved 57 percent of the law enforcement effort, is the primary concern in the Exclusive Economic Zone waters off Alaska, and a major concern in all areas. Conflict between fishing groups, domestic or foreign, required considerable Coast Guard attention, including on-scene intercessions, inquiries, and management of fixed-gear reporting systems.

Aids to Navigation

The Office of Navigation continues to undertake managerial improvements in both its Short Range Aids-to-Navigation (SRAN) and radionavigation programs.

The Office instituted the Waterways Analysis and Management System (WAMS) to provide a tool for positive and logical appraisal, planning, and management of the SRAN program and its resources. It is a decentralized approach stressing the managerial responsibilities

of district commanders, while the Office of Navigation, as Program Manager and Program Director, sets policy, provides guidelines and establishes standards for overall direction of the program.

Bridge Administration

Advances streamlined the approval of bridge permits. The Coast Guard signed a Memorandum of Understanding (MOU) with the FHWA, and drafted a similar document for review by the FRA.

In accordance with the Truman-Hobbs Act, work continues on the Point Pleasant Canal/New Jersey Department of Transportation Highway 88 Bridge in Point Pleasant, New Jersey, and the Illinois River/Peoria and Pekin Union Railroad Bridge in Peoria, Illinois.

During 1984, the Coast Guard issued 104 bridge permits and 47 drawbridge operation regulations, including one bridge permit issued pursuant to the International Bridge Act of 1927.

Commercial Vessel Safety

Continued modernization of the U.S. merchant fleet with technologically advanced vessels has caused fundamental changes in traditional shipboard organization. The Coast Guard has worked closely with the marine industry to ensure that these vessels operate safely as well as economically and efficiently while maximizing flexibility in assigned manning levels. The Coast Guard has proposed revisions of the manning statutes that would match these manning requirements and technologies. The Coast Guard has also proposed a legislative initiative that would assure the public that operators of vessels providing commercial assistance to disabled craft meet certain minimal qualifications.

The Coast Guard started about 10,500 investigations of marine casualties. These investigations resulted in the completion and submission of 6,138 reports of marine casualties involving 8,048 vessels. Three marine boards of investigation convened during the year: to investigate the loss of the drilling ship GLOMAR JAVA SEA, the loss of the tankship AMERICAN EAGLE, and the fire aboard the passenger ship SCANDINAVIAN SEA. An additional 1,386 investigations that might result in the suspension and revocation of mariners' licenses, certificates or documents, commenced during the year.

Supporting major casualty investigations, the Coast Guard conducted several comprehensive technical studies in safety areas such as intact and damaged stability, vessel hull strength, fire protection, and lifesaving appliances. Investigators used these studies to evaluate the adequacy of current standards.

In July 1984, in an effort to supplement and improve current communications channels and to prevent marine casualties, the Office of Merchant Marine Safety

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established a nationwide toll-free telephone number to enable merchant mariners and others to advise the Coast Guard of hazardous or unsafe conditions aboard U.S. merchant vessels. This system has been well utilized, with the majority of the calls containing substantive information.

Coast Guard personnel worked with other DOT staff to develop the voluntary Marine Safety Reporting Program (MSRP). Modeled after the Aviation Safety Reporting System (ASRS), MSRP would collect safety-related information on "near-mishaps" involving commercial vessels.

The Coast Guard established a Fishing Vessel Safety Task Force to reduce the number of injuries and casualties on uninspected commercial fishing vessels. Plans are being devised for a voluntary vessel standards program and safety awareness/education course for fishermen and fishing vessel operators.

The Coast Guard continues to emphasize its longstanding policy of non-competition with free enterprise in cases where there is no danger to life or property. Increased public awareness of this policy has provided an incentive for the private sector to take on such cases, which usually involve towing and simple repairs, and has fostered a greater safety-awareness among recreational boaters.

Marine Environmental Response

The Coast Guard continues to play a significant role in responding to oil and chemical pollution cases along the U.S. coastline as well as throughout the inland waterways.

The Coast Guard responded to over 8,000 oil spills and over 600 chemical incidents. As part of the National Oil and Hazardous Substance Pollution Contingency Plan, the Coast Guard operates the National Response Center, which is open 24 hours a day and provides a nationwide toll-free number to report spills of oil and hazardous chemicals. In addition, chemical response equipment and the nationwide medical monitoring system were enhanced for Coast Guard field units.

Waterways Management

On April 30, 1984, the Coast Guard published inland waterway navigation rules for the connecting waters between Lake Huron and Lake Erie. These rules modernized and simplified requirements for vessels transiting the Detroit and St. Clair Rivers and Lake St. Clair. The rules are compatible with Canadian Coast Guard rules applicable to their portions of these waters.

In keeping with the Trans-Alaskan Pipeline Authorization Act requirement to operate a Vessel Traffic Service (VTS) in the port of Valdez, Alaska, the Coast Guard replaced the original VTS radar system in August 1984 with a cost-effective standard system. This endeavor should net an estimated \$6.8 million reduction in

maintenance costs over the 10-year life-cycle of the equipment. The increased capabilities of the new system will help preserve the VTS's perfect safety record in aiding the large numbers of loaded supertankers that transit this environmentally sensitive area daily.

Port and Environmental Safety

Significant progress came with modification of the MARPOL Treaty on October 2, 1983. The Treaty is designed to reduce operational and accidental discharge of oil and oily wastes from tankers on the high seas. This Treaty is the culmination of years of effort by the U.S. in the international arena, and the Coast Guard is the principal agency enforcing its provisions.

Ice Operations

DEEP FREEZE 84 was marred by an unfortunate incident. On January 1, 1984, the icebreaker WESTWIND was beset in the ice about 20 miles north of the Antarctic Circle and, as a result, sustained considerable damages. Despite the setback, DEEP FREEZE 84 carried on largely as scheduled as the icebreaker POLAR SEA resupplied Palmer Station and broke McMurdo Channel in routine operations. POLAR SEA also served as a platform for various assigned scientific projects.

The icebreaker NORTHWIND participated in Naval Fleet Exercises between February 14 and May 6, 1984. This was a successful operation which involved careful planning and close coordination with U.S. Navy commands.

Domestic Ice Operations were, with one notable exception, normal for an average ice year. An unusual combination of temperatures and northerly winds of abnormal duration caused an extremely heavy flow of ice from Lake Huron into the St. Clair River. By April 5, the flow of ice was clogging the mouth of the river. During the next 24 days, 265 ships (which experienced an average delay of 5 days) were assisted by the icebreaker MACKINAW, four 140-foot icebreaking tugs, and the Canadian Coast Guard Cutters DES GROSSILLIERS and GRIFFON. Two 180-foot buoytenders were used for ice management in the lower river and tug boats ferried 3,881 persons to and from Harsens Island.

The International Ice Patrol season ran from March 22 to September 7, 1984. Aircraft and ships sighted a record 2,202 icebergs south of 48 degrees North latitude. The record number of iceberg sightings resulted both from colder-than-normal conditions and increased iceberg detection from the use of NA/ASP-135 Side Looking Airborne Radar (SLAR), introduced the previous year. The all-weather reconnaissance capability of SLAR and its increased range over visual reconnaissance greatly enhanced the iceberg detection capability of the Ice Patrol.

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In July 1984, an interagency panel completed the U.S. Polar Icebreaker Requirements Study (PIRS) to define and quantify the long-term national need for the existing icebreaking fleet. With the completion of PIRS, the Coast Guard was authorized to begin work designing replacement vessels for WIND class icebreakers.

Cutter Construction, Design and Maintenance

Construction of the 1,000 ton Famous Class Medium Endurance Cutters (WMEC) continues. The Tacoma Boatbuilding Company built the first 4 ships of the class; the third cutter (HARRIETLANE) was delivered on May 8, 1984; and the fourth (NORTHLAND) on July 15, 1984. R.E. Derektor of Rhode Island has contracted to build the last nine. The preliminary design of a 600-ton Small Waterplane Area Twin Hull cutter was completed in June 1984.

Shore Construction

Major Shore Projects completed included a 31,000 square-foot industrial supply building at Support Center New York; renovation of an existing warehouse into operational administration and berthing facilities at Station Rockland, Maine; replacement of an 8,100 square-foot firehouse at Support Center Elizabeth City, North Carolina; modification and extension of the Support Center New York ferry slip; a 16,000 square-foot multi-mission station at Tybee, Georgia; a public works facility at Air Station San Diego, including offices and shops; hangar renovation at Air Station Astoria, Oregon; a 56,000 square-foot energy-efficient classroom building at Reserve Training Center Yorktown, Virginia; a new 75,000 square-foot engineering maintenance support facility at Support Center Boston, Massachusetts; and renovation of a 45,000 square-foot, 165-person barracks at Support Center New York.

Research and Development

Coast Guard research and development (R&D) projects address a variety of issues for the good of the Coast Guard, commercial vessel crews, and the American public. Efforts to improve safety at sea progressed in several areas. The Coast Guard's Fire and Safety Test Detachment (FSTD) successfully conducted a rapid response survey (an immediate search for the cause) of a fire aboard the cruise ship SCANDINAVIAN SUN. FSTD hopes to develop this concept into a service they could provide whenever necessary, especially in response to fires aboard Coast Guard vessels.

The Coast Guard developed prototypes for a shipboard environmental Control Unit, a Low Profile Rebreather, and a Portable Personal Monitor to protect marine per-

sonnel who work with, or have been exposed to, hazardous chemicals. Researchers are developing environmental and medical monitoring methodologies for those workers. Coast Guard analysts tested the utility of anti-exposure garments in various sea and weather conditions.

Model tests in the circulating water channel at the Coast Guard Academy investigated the use of drogues to improve the stability of yachts, fishing vessels and inflatable life-rafts. A prototype accelerometer to measure lateral acceleration is being developed at the Coast Guard R&D Center in Groton, Connecticut, for use in recreational boat certification.

The R&D Center developed hardware and software for an automated ATON positioning system. Lasers are studied for use as ATON signal devices; a rotating laser beacon looks especially promising. Testing and data collection continue on the LORAN-C navigation and NAVSTAR global positioning systems to study long and short-term accuracy and stability. An experimental Hybrid Energy System, combining diesel, battery and wind power for maximum efficiency and economy, became the primary power source for the Cape Henry Lighthouse in September.

Military Readiness

The Coast Guard continues to take part in the Joint Chiefs of Staff (JCS) Command Post Exercise (CPX) program as a means to test both its planning process and the utility of its plans. Forty-six commands participated in 2 JCS-sponsored CPX's and 5 JCS-coordinated CPX's.

In the initial phases of the Grenada operations, Coast Guard C-130 aircraft and a 378-foot cutter furnished 36 hours of search and rescue backup. On December 8, 1983, a 4-cutter squadron, three 95-foot patrol boats, and one 180-foot seagoing tender conducted surveillance and coastal patrols. Although the number of vessels was later reduced, a small Coast Guard presence continued for security purposes throughout 1984.

The Navy-Coast Guard (NAVGARD) Board met twice in 1984 and continued to address matters of import and concern to both the Coast Guard and the Navy. Additionally, interservice logistics support was enhanced by the appointment of a Navy Ship's Logistic Manager to coordinate the Navy portion of the rehabilitation program for 378-foot cutters and new acquisitions of 270-foot cutters.

On March 7, 1984, the Secretaries of Transportation and the Navy signed a Memorandum of Agreement (MOA) designating Coast Guard Area Commanders as Maritime Defense Zone (MDZ) Commanders. The Coast Guard and Navy issued joint implementing instructions March 21, 1984, and activated joint planning staffs by the summer of 1984.

Coast Guard Reserve

The Selected Reserve increased to over 12,300, a 2 percent increase over 1983. Eight new reserve units were established, improving program management and enhancing augmentation training and mobilization readiness.

The Coast Guard placed continued emphasis on mobilization readiness, and preliminary figures indicated that the Reserve came within one-half of one percent of meeting its goal in Readiness Exercises. Noteworthy was participation with Army, Navy, and Marine Corps forces, both regular and reserve, in inter-service exercises such as OCEAN VENTURE, LIVE-LINE, GALLANT EAGLE, BRIGHT STAR, and REFORGER.

Reservists continue to receive mobilization training by enhancing active service peacetime missions—over 1.5 million hours in 1984. Of special note was an emergency response when the coastal freighter MV BLUE MAGPIE ran aground near Newport, Oregon. Reservists helped contain and clean up 85,000 gallons of fuel oil and 9,000 gallons of diesel fuel. In New Orleans, 50 reservists participated in round-the-clock safety and security patrols on the Mississippi River during the Louisiana World Exposition. In Los Angeles, 300 reservists formed a significant part of the Coast Guard's waterfront safety and security forces during the Summer Olympics.

Operation Summerstock, the program in which reservists augment search and rescue stations on the Great Lakes, completed its 12th consecutive year with 59 reservists performing more than 6,535 days duty.

About 80 reservists furnished waterside security patrols at each of NASA's 5 scheduled space shuttle launches from the Kennedy Space Center in Florida. These security zones are designed not only to protect the shuttle from potential sabotage, but also to safeguard civilians in the vicinity

Command, Control and Communications

The mission of the Command, Control and Communications (C3) program is to increase the productivity of the Coast Guard in the performance of its duties by aggressive application of information resources management principles and resources

Now 4 years old, the C3 program has integrated Coast Guard electronics, telecommunications and ADP procedures to manage more effectively the Coast Guard's information resources. A nationwide information network will, when completely implemented, produce a timely, efficient, and effective Coast Guard-wide information management system. Standard microcomputers at nearly all levels of the Coast Guard are now employing powerful word processing, database, spread sheet, application development, and data manipulation tools.

Standards for hardware, software, and training have eased the implementation process and contained costs at practical levels. Operational and national defense goals are being met with easily maintained state-of-the-art electronics systems.

Continuing development of a major information management effort that will eventually yield a single Coast Guard data base and data management capability highlighted data management issues. This effort was conducted in the spirit and intent of the Paperwork Reduction Act of 1980. During the past year, the program assisted Coast Guard law enforcement missions at the Summer Olympics and in the Caribbean by providing encrypted voice communications. Major efforts continue to contend with, manage, and support the proliferation of inexpensive and available office automation hardware and software.

Operationally, the C3 program continues to provide the Coast Guard, OST, and other departmental administrations with a wide variety of centralized communications including transportation accident reporting and 24-hour watch standing/relay services.

Health Services

The Coast Guard Health Services Support program oversees budgetary control and management of all funds for care of its active duty population and beneficiary care that formerly resided in the U.S. Public Health Service. The formal Physical Evaluation Board was centralized at headquarters in October 1983.

Title 10 was amended to admit the Secretary as a peer of the Secretaries of Defense and Health and Human Services when running health services programs within their specific departments. The Coast Guard organized Health Care Analysis Staff to study, plan, and implement programs, cost beneficial health care produced or purchased by the Coast Guard, and to develop a system to prevent waste, fraud and abuse in all facets of health care delivery.

Minority Officer Recruiting

Minority officer recruitment remains below desired goals. A persistent problem is the lack of Coast Guard visibility in the minority academic community. The Coast Guard continues recruiting activities for its Campus Liaison Officer (CLO) Program, which offers commissions in the inactive Coast Guard Reserve to tenured faculty members at colleges with significant minority populations. The Coast Guard anticipates having 5 CLO's in place of the beginning of the 1985-1986 school year. On-campus role models in uniform should heighten student awareness of opportunities in the Coast Guard. The Enlisted College

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Student Program has produced 4 minority officers. The number is less than anticipated, but is a positive step. Awareness of the Coast Guard will be improved by having these officers participate in "Job Fairs" and "Career Days" at their respective schools, thus enhancing Coast Guard efforts in minority officer recruiting.

The Coast Guard hosted the Spring 1984 meeting of the Defense Advisory Committee on Woman in the Services

(DACOWITS) in Washington, D.C. As the host Service, the Coast Guard provided a "field trip," a short cruise on the Potomac on the Coast Guard cutter VIGILANT, to better acquaint DACOWITS members with the Coast Guard. DACOWITS members observed search and rescue helicopters and law enforcement demonstrations, and had an opportunity to talk on board with Coast Guard men and women from local units.

Federal Aviation Administration

The Federal Aviation Administration (FAA) is responsible for regulating air safety, ensuring safe and efficient utilization of the national airspace system, and promoting the development of civil aviation. In carrying out these responsibilities, FAA engages in a wide range of activities, including: rulemaking; certification of pilots, aircraft, and airports; establishment and maintenance of facilities; air traffic control; and grants-in-aid to airports.

Aviation Safety

The *Safety Record*. During 1984, U.S. scheduled airlines achieved the lowest accident rate in history and the second lowest fatal accident rate. Carriers were involved in 12 accidents, one of which was fatal, setting a remarkably low 0.161 percent accident rate per 100,000 aircraft hours flown and a 0.013 percent fatal accident rate. In the single fatal accident, a scheduled cargo flight, all 4 persons aboard perished.

All other categories of flying also enjoyed improved safety records, except commuter air carriers, which saw their accidents rise from 17 (in 1983) to 21 (in 1984), while fatal accidents rose from 2 to 7 and fatalities from 11 to 45. The commuter airlines accident rate per 100,000 aircraft hours rose to 1.20 percent (from 1.13) and the fatal accident rate to 0.40 percent (from 0.13). At the same time, on-demand air taxis reduced their accident rate by 25 percent and their fatal accident rate by 39 percent. For general aviation, accident rates improved by about 2 percent, while the fatality rate fell 4.6 percent.

Organizational Changes. In one of the more important organizational changes effected during 1984, FAA removed the Office of Aviation Safety from the executive direction of Aviation Standards and established it as a separate office reporting directly to the FAA Administrator. The new office is assigned greater responsibility in safety matters and will serve as the principal FAA point of contact with the National Transportation Safety Board and the Aviation Safety Reporting System.

Safety Rulemaking. Public hearings were held in September 1984, in Washington, D.C., Chicago, Los

Angeles, and Fort Worth, to obtain the views of the aviation community regarding whether additional regulations should be imposed on ultralights. FAA is evaluating the results of these hearings.

Special rules were adopted governing air traffic operations in the Los Angeles area during the Olympic Games from July 14 to August 26. The rules established an advance airport reservation system for scheduled air carrier and other commercial flights arriving at Los Angeles International Airport.

Civil Aviation Security. The FAA continues endeavors to improve systems for detecting explosives, hidden on passengers, in baggage, or in cargo. During 1984, FAA's Office of Civil Aviation Security significantly increased performance requirements for such detection systems and stopped certain projects that seemed unlikely to yield results capable of meeting the new standards.

Explosives Detection. The FAA also continues to work with more traditional experimental areas of weapon and explosive detection. One of these techniques was thermal neutron activation, in which explosives are bombarded by neutrons that trigger a nuclear reaction unique to the target material, permitting its verification. In previous years, this system had been tested at Pittsburgh and Boston airports and showed promise in detecting explosives in sealed containers. In the fall of 1984, FAA tested the system at the United Airlines cargo facility at O'Hare International Airport in Chicago. More than 2,000 packages were screened by the system. The results, as indicated by preliminary analysis, are encouraging.

In recent years, the FAA has spent much effort trying to develop a device that would routinely detect the vapors of explosives carried by individuals. In 1984, the agency performed design concept studies on 3 competing vapor detection technologies: chemiluminescence, nuclear magnetic resonance, and X-ray absorption. Based on preliminary results, FAA decided to develop a prototype system based on chemiluminescence.

Aviation Security Research. The FAA conducted an assessment of state-of-the-art technologies and started several feasibility studies to identify and evaluate potential alternative techniques. Subjects included a laser opto-acoustic method of detecting fragmented explosive molecules, and another is a fast neutron inelastic scattering technique for recognizing the element composition of explosives. Methods of detecting flammable liquids carried by passengers were also studied. While the vapor signature of gasoline has been identified, commercial vapor detectors now available appear to fall short of the sensitivity and specificity requirements for aviation security use. At the same time, as a complement to its

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ongoing projects to detect bulk and vapor explosives, FAA began a joint effort with industry to explore methods of making explosive devices harder to conceal.

Air Navigation and Air Traffic Control

ATC System Recovery. The air traffic control system, whose capability had been severely limited during the air traffic controller strike of 1981, saw its pre-strike capacity restored during the year. When the controllers, force was minimal, the FAA had imposed landing requirements on airliners at certain airports and flight conditions on general aviation. However, by December 31, 1983, FAA abolished the General Aviation Reservation (GAR) system, which required general aviation pilots to secure an ATC reservation for instrument operations to and from airports in the northeast and north central United States. Meanwhile, it continues to phase out landing restrictions it had imposed on airline flights at 22 major airports. On April 1, 1984, with FAA's removal of Chicago O'Hare and Denver Stapleton from the list of airports with landing restrictions, the last of the strike-related restraints on the flow of air traffic has been eliminated. Flights into Los Angeles International continued to be restricted, but only as a result of the traffic produced by the Summer Olympic Games.

Air traffic activity made significant increases over the previous year. FAA air traffic control towers (ATCTs) handled 57 million aircraft operations, exceeding their 1983 total by 7 percent. Meanwhile, air route traffic control centers (ARTCCs) handled a record number of aircraft flying under instrument flight rules: 31.6 million, or 8 percent more than 1983 and 2 percent more than 1980, the last year preceding the strike. General aviation activity, however, continued the decline that began in 1980 and accelerated in the aftermath of the strike. During the year, FAA flight service stations performed 54.8 million flight services, down 4 percent from the total performed during 1983 and 20 percent since 1979.

National Airspace System (NAS) Plan. FAA continues to enhance its management structure to implement the massive, 450-page National Airspace System Plan. The blueprint, first issued in December 1981, and updated annually, is a technological blueprint for modernizing FAA's air navigation and air traffic control system to meet the projected air traffic activity of the next 2 decades.

In January 1984, the airway modernization program reached a significant milestone when FAA awarded the Martin Marietta Corporation a contract for systems engineering and integration support. Martin Marietta took on the responsibility to see that major components

of the NAS Plan were properly integrated and installed and that they worked as intended, in a timely and cost-effective manner. The contractor's specific tasks included: verifying the soundness and feasibility of the plan and identifying areas for improvement; validating the conceptual design for the air traffic control advanced automation system, that will enable FAA to handle more air traffic more effectively and at less cost than the current system; providing FAA managers with technical support for NAS Plan systems that have already been contracted for; reviewing the performance of contractors; verifying, testing, and assuring proper integration of these systems with other systems; and preparing a "blueprint" of the entire system, showing locations, performance requirements, and system linkages. The contract runs for an initial period of 5 years, but includes options for three- and two-year extensions.

Earlier in the year, FAA awarded the Hazeltine Corporation a \$90.6 million contract to begin equipping airports throughout the country with Microwave Landing Systems (MLSs). These will replace existing instrument landing systems (ILSs), a system which had been designed in the 1940s. The new landing system avoids some of the larger inherent technical problems of the ILS. The MLS signal, for example, is less vulnerable to environmental effects and less sensitive to interference from nearby buildings or terrain. The new system also provides precision guidance over a much wider area than present equipment, permitting more operational flexibility by offering pilots a broader range of approach paths to the runway. This will mean fewer flight delays, cancellations, or diversions because of bad weather. The contract called for Hazeltine to deliver 172 MLS units over a 5-year period, beginning in 1985.

A major ground-to-air element of the NAS Plan is the Mode S Radar Beacon System, a new secondary radar system of advanced ground sensors and radar beacon transponders that will replace the existing air traffic control radar beacon system (ATCRBS). In October 1984, FAA awarded a \$163.3 million contract to 2 corporations, Westinghouse and Burroughs, which are participating in a joint venture, to produce 78 of the Mode S systems, with an option for 49 additional units. Unlike ATCRBS, which has no discrete address capability, Mode S will give controllers a "private line" to any airline cockpit in the air. The new radar beacon system will enable controllers to interrogate transponder-equipped aircraft individually and selectively to determine its position, identity, and altitude, instead of calling all aircraft. This eliminates overlapping and garbled signals that can be a problem in busy terminal areas.

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Advanced Automation Program. Another feature of the NAS Plan is the Advanced Automation System whose major elements include new controller work stations called sector suites. These stations will incorporate new display, communication, and processing capabilities and new computer hardware and software. In August 1984, FAA launched the competition for the Advanced Automation System by awarding 2 competitive design contracts, totaling nearly \$247 million, to IBM and Hughes Aircraft. The contracts called for a three-year design competition to determine which company would produce the Advanced Automation System.

Meanwhile, in July 1984, the competition for the host computer for the new system reached an important stage. IBM and the Sperry Corporation, which had been awarded competitive design contracts in the fall of 1983, delivered their computer systems to FAA for testing and evaluation. FAA is expected to select a winning host computer design in 1985.

Aviation Weather Programs. In July 1984, in the Denver Stapleton Airport area, the FAA and the National Center for Atmospheric Research (NCAR) initiated an operational analysis of a "windshear" detection device that uses Doppler radar. Wind shears, sudden changes in wind direction and speed, often occur during thunderstorms and can imperil an aircraft during the critical periods of landing and takeoff. During the study, NCAR meteorologists issued a daily microburst forecast and kept FAA controllers up-to-date on actual and potential microburst activity within a five-mile radius of Stapleton Airport. Controllers then issued the necessary advisories to pilots.

A microburst is a violent downward rush of air that flattens out when it hits the ground, spreads in all directions, and creates wind shear conditions. Aircraft caught in these conditions first encounter a head wind that causes extra lift as it moves over the wings, which is suddenly replaced by a tailwind that produces a sharp loss of lift that can cause aircraft at low altitude to lose flying speed.

Doppler radar has proved effective in detecting microburst activity in research situations. Unlike conventional radar, Doppler can "see" inside storms and measure changes in wind speed and direction. The Denver area was chosen for the wind shear studies because of a high incidence of microbursts in the area.

Airport Programs

Airport Improvement Program. FAA obligated \$805 million for new grants under the Airport Improvement Program. The money went for 1,077 development pro-

jects and 47 planning projects in the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands.

Of the total obligated, \$416.2 million went for 355 projects at primary airports. A primary airport accounts for .01 percent or more of the total annual airborne passengers in the United States. Another \$150.1 million went for 436 projects at general aviation airports, while \$103.4 million was obligated for 132 projects at reliever airports—terminals specifically designed to attract aircraft traffic away from busy primary airports.

Airport Certification. Airport certification is an important part of FAA's total safety effort. During 1984, FAA reviewed Federal Aviation Regulation 139, "Certification and Operations: Land Airports Serving Certain Air Carriers." Those parts of the regulation dealing with fuel handling, crash, fire, rescue, and emergency plans, bird hazards, snow removal, runway safety area requirements, and the marking or lighting of taxiways were targeted for modification and strengthening. By the end of the fiscal year, 676 airports held FAA safety certificates.

Airport Pavement Research. FAA is making a major effort to establish a Pavement Maintenance Management System (PMMS) by sponsoring a study by the U.S. Army Corps of Engineers.

With the assistance of the U.S. Army Cold Regions Research and Engineering Laboratory at Hanover, New Hampshire, FAA also studied the pavement problems caused by weather conditions in cold climates. Results of a previous study were used to modify pavement design minimizing frost heave and thaw, which weaken pavements. At the same time, the study sought during 1984 to modify asphalts, soils, and other pavement materials to improve their thermal stabilities.

Late in 1984, FAA began to determine the feasibility of developing soft-ground aircraft arresting systems, a project which had its genesis in a recommendation made by the National Transportation Safety Board. Such systems would be incorporated in the extended runway safety area. FAA plans to study various materials—sand, gravel, foam, and others—for their suitability as "soft ground" needed to decelerate aircraft safely. If the soft ground concept proves feasible, FAA will issue a standard to help airports provide such a safety feature at runway ends.

In other runway-related developments, FAA conducted research on equipment that could be used in adverse weather to denote the holding position at intersections of taxiways and/or runways. Current markings on pavements at such intersections are difficult to see in fog or poor weather; hence, FAA will supplement current

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markings with an alternating light known as a "Wig Wag." This light was also developed in Great Britain and tested at London's Heathrow Airport. FAA's research during 1984 concentrated on determining the Wig Wag's optimum flash rate, brightness, lightsize, and positioning.

International Aviation

FAA continues to play an active role in the International Civil Aviation Organization (ICAO), taking part in 20 meetings of technical committees, panels, and study groups to develop international aviation standards and practices.

At the 25th Session of the ICAO Assembly, in Montreal, the FAA-led U.S. delegation mobilized the Assembly's unanimous approval of an amendment to the Convention on International Civil Aviation that banned the use of weapons against civil aircraft. The amendment was prepared in response to the destruction of Korean Airlines flight 007 by Soviet military aircraft.

FAA also conducted research leading to the development of detailed standards for the new Precision Approach Path Indicator (PAPI), adopted by ICAO as the new world standard for approach lights, replacing the long-used Visual Approach Slope Indicator. In preparing to issue specifications for the new system, FAA developed photometric parameters, including brightness, angular coverage, and transition zones. PAPI, which was developed in the United Kingdom, will be required at all U.S. airports that serve international flights.

In other international developments, FAA provided short-term technical assistance and advice to 35 nations and international organizations. The FAA also supported civil authorities in 23 countries under reimbursable agreements and dispatched flight inspection crews to inspect foreign air navigation facilities. In addition, FAA trained 409 individuals from 74 countries, most at the FAA Academy in Oklahoma City.

Also, the FAA joined the State Department, the FBI, and the U.S. Customs Service in training foreign officials in anti-terrorism techniques.

Administration, Organization and Personnel

Air Traffic Controller Staffing. FAA continues its intensive program of controller recruitment and training. The strike resulted in a cut in the controller work force from 16,375 to 4,199. By the end of 1984, however, controller work force employment reached 13,714. Replacing the fired controllers was one of the most unique feats of large-scale staffing for a highly technical occupation. Making FAA's job easier was a new air traffic controller selection test battery which had been developed by FAA research scientists.

Human Resource Management. Maintaining safety, service, and reliability calls for a well managed, highly competent, and committed FAA work force. In 1984, FAA began integrating into its organizational structure a human relations effort, its statement of values expressed by the management philosophy of "One FAA—A Vision of Excellence." The primary goal of this effort is to produce an agency that emphasizes effectiveness, efficiency, and employee satisfaction.

FAA made significant achievements in human resource management:

- The consolidation of Personnel and Training, Labor Relations, and Human Relations under an Associate Administrator for Human Resource Management began in July 1984. One of the purposes of the consolidation is to provide better integration of interrelated functions.

- Skills in human relations management were made part of the selection and performance criteria for managerial and supervisory positions. Applicants for supervisory or managerial positions are asked to submit a statement addressing their human relations qualifications.

- FAA surveyed its employees to obtain their views on areas that required management attention. Results were analyzed and distributed to all employees.

Labor Relations. FAA reached a national labor agreement with the Professional Airways Systems Specialists (PASS) which covered about 8,500 electronic technicians and related occupations, and renegotiated the 1976 national labor agreement with the National Association of Air Traffic Specialists covering about 3,500 flight service station specialists.

Civil Rights and Equal Employment Opportunity

FAA continues to make a special effort to attract minorities and women into its work force. At the end of 1984, FAA's total employment of 47,216 included 13.3 percent minorities and 17 percent women. FAA's objective is to achieve representation of women in its work force commensurate with the civilian labor force. Additionally, FAA hired 218 Hispanics in permanent career positions during 1984. That increased the percentage of Hispanics in the FAA work force from 3 percent to 3.3 percent. Through FAA's Minority Business Enterprise Program, contracts totaling more than \$94.7 million were awarded to business concerns owned and controlled by minorities. Included was a \$20 million contract to a minority business firm for a computerized voice system that will provide weather information to pilots.

Federal Highway Administration

The Federal Highway Administration (FHWA) is responsible for managing the Federal-aid highway program, a federally-assisted, state-administered partnership that provides funding for construction, restoration, and management of the nation's street and highway system. The program is designed to meet specific national objectives, all of which contribute to the improvement of the country's transportation services.

Highway program obligations grew with passage of the Surface Transportation Assistance Act (STAA) of 1982 to \$13 billion in obligations for 1984 compared with \$8.2 billion in 1982 (pre-STAA). The growth followed changes of the form and level of taxes dedicated to the Highway Trust Fund included in the STAA of 1982, making higher authorizations possible. The Act also increased federal emphasis on resurfacing, restoration, rehabilitation, and reconstruction (4R) activities.

Highlights of the Federal Highway Administration's implementation of the Federal-aid highway program in 1984 include:

Cost Avoidance, Reduction, and Efficiency (CARE) Program

The FHWA CARE program includes activities designed to reduce internal administrative support costs, and to foster federal and state activities that resulted in major cost avoidance or greater efficiency and effectiveness. Integral to CARE activities are reduced regulations and reporting requirements, engineering improvements, technology transfer initiatives, and other organizational and program advances. These activities produced a total savings of \$396.3 million, which included cost savings of \$8.4 million, cost avoidance of \$384.4 million, and return on greater efficiency and effectiveness of \$3.5 million in 1984.

While saving funds is one goal in implementing the CARE Program, a number of reported results did not reflect immediate dollar savings but management improvements in procedure or process and, therefore, contributed substantially to FHWA's overall efficiency improvement goals.

Providing maximum flexibility to program offices implementing the CARE program led to a wide variety of cost reduction projects, including many changes made to state projects as a result of FHWA suggestion or review. For example, milling and recycling of existing pavement instead of using more expensive overlays of new surfaces \$5.5 million in Kansas alone, which had 26 projects totaling 379 miles. Other frequently reported cost avoidance measures included: recycling bridge steel, using newly developed materials, and suggesting improved design and construction practices to the states.

Also, concepts of value engineering and alternate design continue to comprise a major element of FHWA's CARE activities. In Georgia, an alternate bridge design and retaining wall design avoided costs of \$7.5 million. Recommended use of a ledge causeway rather than a bridge over a reservoir in New Hampshire reduced project costs by almost \$13 million, and a value engineering study in connection with the design of a drainage system for a portion of I-10 in Arizona, developed an alternative design saving \$45.6 million.

Cutbacks in administrative support costs such as redesign of office space, reduction in telecommunications and printing costs, and other efforts have been similarly implemented. While these actions portrayed more common methods of cost reduction, others reflected proposed changes in regulations, introduction of new technologies at the federal and state level, and other changes with the promise of long-term savings in federal-state highway programs.

Staff at all levels have launched actions to promote the CARE Program. At Washington Headquarters, the CARE Program is organized around a working group of representatives from all major units. These coordinators provide emphasis and support to the program, reconcile CARE reporting, and serve as a link between administrative and program offices. All field elements continue to implement CARE programs tailored to their individual situations. These actions include development of regional CARE plans, the establishment of CARE working groups within regions, and promotion of the program within FHWA and the states.

Regulatory Reform

Consistent with Administration and Department goals, FHWA pursued an active commitment to regulatory reform. By deleting unnecessary requirements and burdensome reporting and record keeping, FHWA has increased the flexibility of the states to comply with program directives where appropriate. FHWA has been striving to reduce construction costs and to improve the efficiency and productivity of program management. Twenty-two final regulations were issued amending existing rules in these areas.

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FHWA helped implement new Department-wide debarment regulations, which became effective May 18, 1984. The major changes broadened the type of misconduct covered, the class of persons affected, and the scope and impact of the measure. This means that any business entity or individual implementing federally financed or assisted contracting, guilty of misconduct covered by the new regulations, could be suspended or debarred. Between November 2, 1983 and November, 30, 1984, forty companies and individuals were added to FHWA's list, virtually all for bid-rigging violations. In addition, 30 requested mitigation of existing sentences.

A major legal development related to this was the decision by the Court of Appeals for the 6th Circuit in Tennessee v. Dole, which held that FHWA could recoup the Federal share of civil recoveries by states regarding excess payments to contractors resulting from bid-rigging.

The FHWA promoted the concept of "one-stop environmental processing" as a means of minimizing environmental/location delays. Since October 1, 1983, the FHWA has worked with 14 other Federal agencies at the Washington Headquarters level to institute one-stop environmental processing. The objectives of the process are: to provide one environmental document and one public involvement process; to integrate environmental standards into normal project development activities; and to unify FHWA environmental, project development, and public involvement procedures with those required by other Federal agencies. In the spring of 1984, the one-stop environmental concept was presented to the American Association of State Highway and Transportation Officials (AASHTO) Executive Committee by the FHWA Administrator.

On July 27, 1984, the Department submitted to The Office of Management and Budget (OMB) a model regulation to be used by all agencies implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

Legislative Initiatives

FHWA did not require major legislation during 1984. However, it needed approval by the Congress for the Interstate Cost Estimate (ICE) and the Interstate Substitute Cost Estimate (ISCE) to apportion Interstate Construction and Interstate Substitute funds.

Lack of congressional action delayed apportionment of these funds until March 1984, when a six-month approval of the ICE/ISCE passed as an interim measure (P.L. 98-229).

Implementation of the STAA of 1982

This was a year of notable achievement, as FHWA used the entire \$12.52 billion of enacted obligation limitation. Apportionments were made October 1, 1983, and again

upon enactment of the "Six-Month Interstate Cost Estimate," March 9, 1984. More funds were obligated this year than in any previous year despite the fact that Congress did not approve the 1983 ICE/ISCE, allowing only one-half the \$4 billion authorized for Interstate construction and one-half the highway substitute funds available for apportionment.

To alleviate the situation caused by Congress not releasing all Interstate funds, the Office of Engineering distributed discretionary Interstate construction and Interstate substitution funds in record time by special effort. Also, much effort was made to expedite preparation of the 1985 ICE so that this funding vehicle could be completed on time.

Twenty-eight states responded favorably to the Facilitate Acceleration through Special Techniques (FAST) projects and initiated 109 FAST undertakings with an estimated cost of \$3.1 billion. This represented a significant increase from February 1984 when 73 projects began.

Program Accomplishments

Interstate. By June 30, 1984, the total Interstate mileage open to traffic was 40,935 including 182 miles built during the prior year. The total now open to traffic represented 96.3 percent of the 42,500-mile Interstate System.

Right-of-Way and Environment. The FHWA right-of-way workload for 1984 was the largest in history with approximately 49,000 parcels of property acquired for highway right-of-way under the Uniform Relocation Assistance and Real Property Acquisition Policies Act. The total cost of acquisition and relocation assistance significantly exceeded \$1 billion. Despite a heavy regular Federal-aid highway program workload, FHWA was asked to advise the Federal Emergency Management Agency (FEMA) on land acquisition and relocation assistance matters regarding its Times Beach, Missouri and Globe, Arizona projects. FHWA, also provided assistance to the Department of the Navy regarding a special relocation assistance review.

FHWA's Office of Chief Counsel provided guidance and support defending the agency in numerous ongoing environmental litigation matters across the country. The average environmental case load remained about 50 cases per year. The FHWA had 51 environmental cases open at the end of 1984. Many of these suits involved complex highway construction projects in and around large cities such as: I-476 (the "Blue Route") in the Philadelphia area, I-30/35 in Fort Worth, I-696 west of Detroit, I-478 (the Westway) in New York City, the Century Freeway in Los Angeles, and the Presidential Parkway in Atlanta.

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Pavement Management. Pavement management remains increasingly important as the Interstate System and many primary system pavements near the end of their service lives. Heavy axle loads, escalating costs and limited revenues have placed greater demands on pavement management systems. FHWA continues to develop and promote better pavement management through presentation of pavement management overview sessions, tri-regional conferences, demonstration projects, and a graduate course in Pavement Management at the University of Texas.

In 1983, FHWA developed national initiatives on pavement rehabilitation. During 1984, key initiative accomplishments included:

- Completion of 25 planned pavement rehabilitation field reviews and distribution of a Rehabilitation Techniques survey and narrative summarizing all rehabilitation techniques used nationwide;
- An FHWA Task Force record of, and priority for the agency's national pavement management information needs;
- Solicitation of industry and AASHTO input and, announcement of Experimental Project No. 9 to obtain performance data on selected rehabilitation techniques;
- Assistance to AASHTO regarding update of its Pavement Design Guide; [Parts 1-2 of the four-part guide are reviewed by the FHWA's Pavement Management Coordination Group (PMCG)];
- Sponsorship of a National Pavement Testing Conference in the spring of 1984, recommendations of which were coordinated with the proposed Strategic Highway Research Program (SHRP);
- Publication of 3 issues of the "Pavement Newsletter," which contributed technology transfer nationwide during 1984; and
- PMGC preparation of a transition plan outlining several activities that FHWA could accomplish during the next 2 to 3 years to help AASHTO implement the SHRP study on Long-Term Pavement Performance.

Design and Construction Monitoring. Adequacy and effectiveness of design and construction monitoring are essential to successful accomplishment of FHWA goals. A two-year in-house study of this subject suggested issuing a revised directive on construction monitoring, a new directive on design monitoring, joint field reviews, and support for training initiatives. Cumulatively, these efforts resulted in more substantive involvement by FHWA engineers in design and construction monitoring, higher quality technical expertise, significant cost savings and better end products.

Value Engineering. Value Engineering (VE) is a useful procedure both for product enhancement and cost reduction. Even though the FHWA continued its VE efforts

in several areas during 1984, its principal endeavor, nevertheless, continues to be promoting value engineering to state highway agencies through training sessions and technical assistance to state and local governments. The National Highway Institute (NHI) sponsored the presentation of 16 VE workshops to 519 participants from various agencies throughout the country. Eighty-eight projects valued at an estimated initial cost of \$591.2 million were included in these workshops. The training teams recommended 210 VE improvements worth an estimated reduction of about \$106.1 million or 18 percent. The calculated return on investment for this workshop is approximately 204 to 1.

Highway Bridge Replacement and Rehabilitation Program (HBRRP). In 1984, FHWA began more than 4,000 HBRRP projects to improve or replace deficient bridges. Of these, 6 are new high-cost major projects under the Discretionary Bridge Program (DBP). The DBP also provided funding for 20 other major bridge projects already under way.

FHWA developed a new workshop on methods to rehabilitate existing highway bridges. The workshop is designed primarily for local personnel responsible for bridges on local highways. Pertinent workshop topics include repair and rehabilitation methods for structures which have experienced fatigue damage, severe corrosion, accident damage or general deterioration. Also included are methods to widen structures too narrow for current and future traffic volumes and methods to upgrade the load capacity of existing bridges.

On 11 major bridge project bids in 1984, alternative design yielded an estimated savings of \$26 million. This represented an average savings of \$2.36 million per project.

International Highway Programs. In addition to providing continuing technical assistance to the governments of Saudi Arabia and Kuwait to develop their highway programs, the FHWA is involved in a major special effort in Saudi Arabia to review construction and design phases of highway work in that country.

New initiatives in international cooperation resulted in an agreement for technical assistance to Uruguay; a five-day seminar on Highway Maintenance in Venezuela sponsored by the Organization of American States; an exhibit for the 10th World Meeting of the International Road Federation in Rio de Janeiro, Brazil, to be held in 1985; and dispatch of a team of experts, at the invitation of the Government of Panama, to evaluate the condition of the "Bridge of the Americas," spanning the Panama Canal.

These activities illustrated to the developing nations the technical capabilities within FHWA and displayed the willingness of the U.S. to share highway technology with other nations.

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Highway and Motor Carrier Safety. The safety-related projects of FHWA include a wide range of educational, promotional, regulatory, inspection and law enforcement activities, as well as programs providing funds to the states for highway safety improvements. Characteristic of achievements in these areas was the initiation of approximately 1,500 hazard elimination projects and approximately 2,100 rail-highway crossing projects for a total of \$483 million. In addition, the states obligated \$449.6 million to Interstate and \$1,129.9 million to non-Interstate Federal-aid highway programs for total recorded highway safety obligations of \$2,062.5 million.

The STAA of 1982 established new national length, width, and weight limits for trucks traveling on the Interstate and qualifying Federal-aid primary system highways. The FHWA accelerated its analysis of the safety records of large trucks to improve the level of understanding of the relationship between large truck safety and the highway environment.

Designation of highways on which larger trucks could operate was published June 5, 1984, including a state-by-state portrayal of those routes that combined with the Interstate System to comprise a national network of highways that are now available to STAA of 1982 defined vehicles.

The Motor Carrier Field Staff conducted 22,590 roadside examinations of vehicles/drivers in 1984. Of these, 6,165 trucks, trailers and buses were taken out of service, on the spot, for being too hazardous to operate on the public highways, and 2,517 of the drivers inspected were taken out of service for serious violations of the Federal Motor Carrier Safety Regulations (FMCSR).

In addition, field staff personnel trained some 1,200 state enforcement personnel in uniform procedures for roadside inspection of commercial vehicles and drivers and for application of standard criteria for placing imminently hazardous vehicles and potentially unsafe drivers out of service.

Research, Development and Technology

The Office of the Associate Administrator for Research, Development and Technology has as its objectives: to find better methods for dealing with operating problems, to reduce costs, to provide needed insight for addressing policy decisions, to investigate technology needed to accommodate future highway systems, and to transfer this information as effectively as possible to the user.

Emphasis remained focused on achieving the greatest use of finite resources, concentrating on current problems associated with maintenance, construction, and operation of the national highway system.

The technology for prudent replacement of bridge decks was further advanced by publishing a two-volume report that outlined technology for stay-in-place forms, full-depth precast decks, and prestressed precast deck segments. A wide variety of connection types and details were evaluated, and suggested design procedures and design examples were presented. A very successful recent use of

this technology is the deck replacement of the Woodrow Wilson Bridge of the Washington, D.C., Beltway.

A number of studies made during the year analyzed the fatigue vulnerability of steel highway bridges. Methods were developed to estimate the remaining fatigue life of bridges which are more accurate than previous methods used. The method was verified by laboratory and field testing.

A production process for Sulphlex (chemically modified sulfur) paving binders was developed and tested in a nominal 0.5 ton-per-day benchscale production plant. This plant achieved a real production capacity of 2.25 tons-per-day, and the contractor, Southwest Research Institute of San Antonio, Texas, increased the efficiency of the process by a factor of 25 over earlier production.

A large research project to produce and evaluate an alternative deicer made excellent progress. The candidate material—calcium magnesium acetate (CMA)—in contrast to standard materials—sodium chloride and calcium chloride—did not corrode reinforcing steel, and should have significantly less environmental impact on flora, fauna and ground water supplies. Efforts have been concentrated on identifying an efficient product process, defining the snow and ice-melting capabilities of CMA, and evaluating precisely its impact on highway materials and the highway environment.

In 1984, the National Highway Institute (NHI) sponsored 82 training courses and made 479 presentations to 15,541 students, an 8 percent increase in the number of presentations. Nearly 12 percent of the participants were FHWA employees, 65 percent state personnel, and 23 percent local or others. In addition, about 40 educational grants are awarded for graduate study in highway safety and various other highway transportation disciplines. Approximately 60 awards are made for undergraduate study in such disciplines as safety and pavement management.

Since 1981, NHI has been engaged in a new program aimed at local transportation agencies. Under this program, state highway agencies and universities, working as teams, formed centers to transfer new technology to the local level. This program, nicknamed "T² for Locals," has been a logical extension of NHI's training mission.

Disadvantaged Business Enterprise

Under the Department's program to increase the participation of minority, disadvantaged, and women-owned businesses (M/D/WBE) in federally-funded transportation projects, FHWA is the lead agency for approving M/D/WBE programs of the state departments of transportation.

To measure compliance, FHWA implemented a new reporting format on October 1, 1984, which shows the Federal-aid share of all Disadvantaged Business Enterprise (DBE) prime contract awards, plus DBE subcontracting commitments by prime contractors. For 1984, the total amount was \$1,218 million, representing 13.1 percent of the Federal-aid share for all prime contracts awarded this year.

Federal Railroad Administration

The Federal Railroad Administration (FRA) is responsible for ensuring a safe, efficient and dependable railroad system. FRA provides policy guidance regarding legislative matters affecting railroad transportation issues, along with issues, standards and regulations to enhance railroad safety. In addition, FRA fosters growth of an efficient and economically viable system for the movement of freight and passengers throughout the country.

Major Accomplishments

The FRA continues its endeavor to return Conrail to private sector ownership. It completed action in several safety regulatory areas and began inquiries into other important safety regulatory issues. Furthermore, work moved toward completion of the Northeast Corridor Improvement Project. Finally, FRA was the host to the 16th Pan American Railway Congress, the first hosted by the United States in over 30 years.

Safety

FRA's efforts to develop and implement regulations for safe practices are supported by an extensive, safety-related research endeavor and enforced by a nationwide field staff of qualified inspectors.

The number of train accidents (not including grade crossing accidents) decreased by 1.7 percent compared with the previous year. Normalized by train-miles (up 6.2 percent), this was a real decrease of 7.4 percent. Total rail-related casualties increased by 16.2 percent compared with the previous year.

Of the total number of fatalities in 1984, 92 percent occurred in a rail-highway accident or involved trespassers (persons not authorized on the railroad facility). There were 649 rail-highway grade crossing fatalities in 1984, an increase of 12.9 percent over the previous year. Trespasser fatalities totaled 499, an increase of 25 percent.

Over 86 percent of the total number of injuries involved railroad employees. There was a 9.7 percent increase in employee injuries in 1984. Employee-on-duty fatalities decreased 3.3 percent.

The following were FRA safety activities and achievements during 1984. FRA held a special safety inquiry in St. Paul to get data from the public in order to assess possible future courses of action to enhance public safety at railroad-highway grade crossings; issued a final rule to protect workers coupling airhoses in rail car classification facilities; issued a final rule on Noise Compliance Regulations revising FRA's noise enforcement procedures; sent to Congress a report concluding that rail passenger service in the U.S. had compiled a superior safety record, resulting both from the rail industry's operational and safety practices and the effect of FRA's safety regulations; modified its existing track safety standards to include 384 miles of track used for commuter and other short-haul passenger service; completed 3 FRA system-wide safety assessments of the operations of a railroad; undertook several management initiatives to increase the on-board strength of the Federal inspection force; and collected \$3.7 million in civil penalties for violations of railroad safety.

Alcohol and Drug Abuse

FRA issued a Notice of Proposed Rulemaking (NPRM) on Alcohol and Drug Use in Railroad Operations and conducted 4 hearings during the year to obtain public comment on the proposed rules. These hearings were held in Denver, Chicago, New Orleans, and Washington, D.C.

Conrail

Consistent with the authority and requirements of the Northeast Rail Service Act of 1981 (NERSA) to transfer Conrail to the private sector, the Department established a formal bidding process which produced 15 offers of purchase. The 3 finalists are: Alleghany Corporation, the Marriott Group, and Norfolk Southern Corporation. The 3 elements of compensation, provided to the Government by each of the finalists, included a cash payment of no less than \$1.2 billion, surrender of Conrail's accumulated tax benefits and negotiated public interest covenants.

By effectively utilizing the provisions of NERSA and the Staggers Rail Act of 1980, Conrail continues to show increased profitability. Conrail aggressively used the pricing freedoms of the Staggers Act to adjust rates, introduce surcharges and initiate new service, and took advantage of the expedited abandonment and labor protection provisions of NERSA.

In 1984, with traffic volume up 4.8 percent—the first increase since 1979—and a significant improvement in its operating ratio from 90.6 percent to 86.5 percent, Conrail's announced earnings hit an all time record of \$500 million.

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Rail Services Structure and Regulatory Initiatives

FRA continues to participate in Interstate Commerce Commission (ICC) proceedings, interpreting the reforms of the Staggers Act, urging that railroads be required to operate in a legal environment similar to the rest of American industry. Thus, FRA supported removing the rail industry's antitrust immunity to set inflation-based increases collectively, and urged that poultry, meat and dairy products traffic be exempt from regulation. Both positions were adopted by the ICC. FRA also participated in proceedings designed to improve the management of flatcars and boxcars.

FRA supported acquisition of the American Commercial Barge Lines by CSX. Evidence prepared and presented by the Department in the ICC proceeding proved key to the Commission's landmark decision permitting a railroad to own and operate an inland water carrier.

During 1984, FRA obligated \$45 million for railroad rehabilitation and improvement projects under Title V of the Railroad Revitalization and Regulatory Reform Act of 1976. This aid was given mainly to keep regionally important rail service on lines such as the former Rock Island system and the Milwaukee Road. Earlier, Title V funding was directed chiefly at enhancing improvements along high-density main lines of the national rail system. FRA's aggregate investment in railroad rehabilitation and improvement projects under Title V was \$728 million.

FRA's distribution of assistance to states under the Local Rail Service Assistance Program was more responsive to urgent local rail service improvement needs. In contrast to the entitlement distribution of previous years, authorizing legislation provided that a portion of unobligated carry-over funds could be granted to states on a discretionary basis to support specific critical projects.

Labor-Management Cooperative Program

The FRA encouraged labor-management program, a cooperative program intended to improve railroad operations, continues on several railroads. The program involves labor and management in developing, implementing, and evaluating experimental changes in operations and practices. After completing the experiments, labor and management will have the option of adopting the proposed changes permanently. The emphasis of the program has been directed toward increasing employee participation in the efficient operation of the railroad, promoting voluntary alcohol and drug prevention programs and supporting safety training. Active projects took shape on the Soo Line/Milwaukee Road, Chicago's METRA (the first

program of this type on a commuter railroad), and railroads in New England.

Railroad Assistance

The Milwaukee Road. The Trustee of the bankrupt Chicago, Milwaukee, St. Paul and Pacific Railroad decided in 1979 that revitalizing the entire 10,000-mile system was impractical and instituted a program to abandon unprofitable lines and restore profitable ones to a 3,900 mile "core" system, ending in a return to profitability in 1982.

In April 1984, pursuant to court authorization, the Trustee negotiated the sale of the operating rail properties with 2 competing bidders, the Soo Line Railroad Company and the Chicago and Northwestern Transportation (C&NW) Company.

The Department actively participated in the ICC's review of the Milwaukee reorganization plan. While taking a neutral transportation position on the core railroad's purchase by either the Soo, or C&NW, DOT aggressively attacked the Trustee's treatment of FRA's claims in the reorganization plan. After the Court denied the request of the Department of Justice (DOJ) for a stay, pending appeal of the bankruptcy court's order authorizing a sale to the Soo, DOJ filed suit against the Trustee in bankruptcy court alleging numerous instances of default under FRA's financial agreements with the Trustee. Soon after, the Soo, having assumed the Trustee's obligation, settled FRA's outstanding claims on terms very favorable to FRA.

Pan American Railway Congress

For the first time in over 30 years, the United States hosted the Pan American Railway Congress, the meeting of members of the Pan American Railway Association dedicated to fostering understanding and cooperation among the Western Hemisphere's railroad communities. The Congress drew delegates, not only from the Western Hemisphere, but from around the world. The theme of the Congress was "Railways and the Quality of Life," and delegates heard papers and discussions on how railroads can be used to better the quality of life in the Pan American countries. In the Declaration of Washington, the Congress reaffirmed its resolve to promote international cooperation and understanding among the various rail communities.

In conjunction with the Congress, the FRA sponsored an international rail equipment exposition where the latest in rail technologies and equipment were on display. In addition, there was a rail industry dinner where delegates could meet their counterparts from the U.S. in a social setting, and there was a special FRA inspection trip from Washington to Harper's Ferry, West Virginia for the delegates.

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Washington, D.C.'s Union Station

The Department continues its efforts to transform Washington, D.C.'s Union Station into a retail and office complex, and to restore the station to its role as a transportation center for the capital city.

The Department provided \$40 million in District of Columbia Interstate Highway substitute project funds to finance completion of a parking garage over the station's railroad tracks. The garage would include 1,300 spaces on 4 levels and Metrobus connections and tour bus parking on the fifth level. Once completed, the garage will be managed by the Union Station Redevelopment Corporation or a contractor.

The Department announced that Equity Associates/La Salle Partners/Williams Jackson Cavanaugh had been chosen to redevelop the station into a retail center. Also, Harry Weese & Associates was selected as the architect/engineer to design the rehabilitation of the building.

As currently planned, there will be nearly 175,000 square feet of retail development on the main floor, mezzanine and basement levels, and 80,000 square feet of office space, a new railroad station, and access to Washington's Metro Rail System.

The Northeast Corridor Improvement Project

FRA continues its work upgrading intercity passenger rail travel on the 456-mile Washington-Boston Northeast Corridor. The \$2.19 billion Northeast Corridor Improvement Project (NECIP), created by the Railroad Revitalization and Regulatory Reform Act of 1976, will enable Amtrak to improve travel time, reliability, ride quality, and safety when completed.

In 1984, FRA spent \$241 million on NECIP, bringing total expenditures to over 80 percent of the \$2.2 billion appropriated. Almost all design activity and about 80 percent of the construction activity has been completed. Projects completed include elimination of at-grade crossings between Washington, D.C. and New Haven, Connecticut; construction of 4 maintenance-of-way facilities; restoration of 5 railroad stations; repair of 8 tunnels; renewal or replacement of 159 bridges; and virtually complete rehabilitation of the track.

Completion of several key projects during 1984 contributed to Amtrak passenger convenience, improved ride quality, and consistent on-time performance in the Northeast Corridor. These include: establishment of wheel turning capability at the New York and Washington Service Facilities; completion of a car wash at the Washington Service Facility; rehabilitation of the Pelham Bay movable bridge; completion of the Brill/Arsenal (54th Street) Interlocking in Philadelphia, which allowed the Philadelphia

Airport High Speed Line to connect with the Northeast Corridor; Metro Park station improvements; and site improvements and rehabilitation of Baltimore's Penn Station.

National Railroad Passenger Corporation (Amtrak)

In 1984, Amtrak continued its recent trend of operation and financial improvement. The number of passengers carried by the railroad multiplied 5 percent to 19.9 million, passenger-miles increased 7 percent to 4.6 billion, and revenue per-passenger-mile rose 4.5 percent. Amtrak's financial performance also improved.

Net Federal obligations for operating and capital grants and labor production decreased 5 percent to \$701 million, operating revenues increased 14 percent to \$759 million, the revenue to cost ratio rising from .54 to .56.

A number of factors helped explain these improvements. Amtrak's new Auto Train service between Virginia and Florida, which carried 55,000 passengers, is one of the few routes outside the Northeast Corridor to earn more than its short term avoidable costs. New labor agreements on the Auto Train and on the Northeast Corridor improved productivity and reduced costs. New revenue diversification products, such as completion of a fiber optics network between Washington, D.C. and New York, and performing track and ship maintenance on a contractual basis brought in new revenue. Interest expenses were cut by \$87 million because of the restructuring of Amtrak's Federal debt.

Amtrak also increased its safety efforts as the result of a series of accidents in the summer of 1984. On-time performance fell slightly, from 81.3 percent in 1983 to 80.1 percent in 1984. This is due in part to extreme weather conditions and increased track work on the contract lines.

Research and Development

FRA's safety-oriented research and development (R&D) program is now administering projects meeting one or more of the following criteria:

Direct support of the federal regulatory mission. Research in this category is necessary to enable FRA to evaluate regulatory issues, proposals, and petitions in a comprehensive, credible, and factual manner, and to technically support federal enforcement of railroad safety rules and other special investigations.

Anticipation of major safety threats in order to avoid catastrophic accidents. This research is designed to uncover potential safety problems and develop safety standards, guidelines, or performance requirements. These

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would include testing countermeasures far enough in advance to preclude the inadvertent emergence of unacceptable safety threats to the public and railroad employees.

Potential for the voluntary adoption of safety improvements. Safety improvements can be voluntarily adopted by the industry, provided the high risk or cost burden can be borne, in part, through a cooperative, shared government-industry action for correcting a developing safety problem.

In support of FRA's regulatory mission, R&D initiatives in 1984 included: small-scale impact tests on steel tank car heads to evaluate the effectiveness of different materials in preventing inadvertent head punctures during accidents; a metallurgical analysis of several tank cars involved in a derailment to see if structural flaws, before the accident, were a contributing factor; establishing a task force acknowledging that alloy rail involved in an accident had an apparently lower fracture toughness than standard rail, and making recommendations for corrective action.

R&D bids in 1984 focusing on accident prevention included: a feasibility study of a prototype "Acoustic Signature Inspection System" for inspecting railroad wheels; successful demonstration of the feasibility of applying electromagnetic acoustic transducers to improve detection of rail flaws; evaluation of reflective (passive) markers as effective rear-end-of-train markers; tests and preparation of an operations manual for a locomotive track hazard detector; tests of boxcars to determine the safety limits of shifting plywood lading; a methodology for estimating the risk of transporting a particular dangerous commodity over a specific railroad routing; and the development of criteria to assess the safety of concrete tie installations.

Voluntary programs included: a program with the U.S. Air Force to develop guidelines for emergency personnel reacting to rail accidents involving hazardous materials, and development of a joint government-industry field test program to determine the causes and progression of critical bearing failures occurring on commuter cars.

Testing at the Transportation Test Center (TTC) in Pueblo, Colorado, continues to support high speed vehicle-

track interaction studies, track buckling and rail integrity standards. The three-year government-industry research program, to improve wheel safety performance and establish a basis for guidelines for design and operation progressed. Also under way are new freight car and truck design tests to determine their safety limits before entering widespread service.

FRA continues active participation in the Track-Train Dynamics program, jointly sponsored by the FRA, the Association of American Railroads, the Railway Progress Institute and the Canadian government.

The FRA and the railroad industry also co-sponsored the operation of the Facility for Accelerated Service Testing (FAST), a 4.8 mile closed loop track at the TTC. This facility permits research to obtain life-cycle safety performance data for both vehicle and track components by operating a freight train over the loop under controlled conditions. FAST reduces the time required to obtain safety information through a variety of experiments that could not otherwise be safely conducted.

Civil Rights

FRA continues to aggressively recruit minorities for placement within the organization, and to work closely with railroads to help develop minority business enterprise programs, and investigate complaints of discrimination.

As a result of continuing monitoring efforts, 20 desk audits of state and railroad recipients were conducted, 5 on-site MBE certification reviews performed, and 2 MBE review visits to the New Jersey Transit Authority were made to help New Jersey Transit and its subcontractors develop minority business enterprise programs in accordance with regulatory requirements.

Alaska Railroad

Negotiations continued between the Department and the State of Alaska to set the date of transfer and the sale price for the Federally-owned Alaska Railroad. This followed a departmental affidavit that Alaska had met the initial conditions of the Alaska Railroad Transfer Act (ARTA) of 1982. As required by ARTA, Alaska established the Alaska Railroad Corporation as the entity to operate the railroad.

National Highway Traffic Safety Administration

The National Highway Traffic Safety Administration (NHTSA), created by the Highway Safety Act of 1970, administers safety programs under the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966, and consumer programs established by the Motor Vehicle Information and Cost Savings Act, as amended.

NHTSA is authorized to reduce fatalities, injuries, and economic losses resulting from motor vehicle crashes by setting and enforcing safety performance standards for motor vehicles, and through grants to state and local governments enabling them to create, develop and implement their highway safety programs more effectively.

The Traffic Safety Program and Current Trends

The 1984 nationwide traffic death toll increased slightly for the first time since 1980. 44,241 persons died in traffic accidents, a 4 percent increase from the 42,589 killed in 1983.

The fatality rate, the number of deaths per 100 million vehicle miles traveled, remained the same as in 1983 at 2.6, but was a 7 percent improvement over the 2.8 rate for 1982 and 21 percent better than the 1980 rate of 3.3.

Alcohol abuse continues to be the number one highway safety problem in this country. Failure to use safety belts resulted in approximately twice as many fatalities and injuries as would have occurred had everyone used a belt.

An analysis of the 1984 data shows that motor vehicle accidents cost nearly \$70 billion each year. This estimate includes property damage, lost productivity, medical costs, legal and insurance expenses, as well as administrative expenses of public assistance programs.

Program Emphasis

In April 1983, NHTSA published its "Safety Priorities Plan," a balance between motor vehicle technology and driver/passenger behavior. Its efforts in 1984 continue to focus on this balanced approach.

NHTSA's safety belt campaign continues to involve all levels of the public and private sector persuading, informing and educating the American people about the benefits of wearing safety belts. The programs not only address safety belt and child safety seat usage, but were also expanded to increase the public's favor and acceptance of automatic protection (air bags and automatic safety belts).

Eleven communities began comprehensive programs to encourage safety belt use. In addition, more than 50 communities have safety belt use programs and more are being planned.

NHTSA considered other technical possibilities to improve motor vehicle safety, including side-impact and frontal protection. During the past year, NHTSA emphasized improving its ability to accurately identify safety-related defects in motor vehicles and to assure their repair in the shortest possible time.

Regulatory Reform Actions

Child Passenger Safety. On August 30, 1984, NHTSA and the FAA consolidated their child seating regulations, creating a common standard. NHTSA issued a final rule amending Standard No. 213, "Child Seating Systems," so that child safety seats can be certified for use in either motor vehicles only or both motor vehicles and aircraft.

Glazing Innovations. On November 16, 1983, NHTSA amended Standard No. 205, "Glazing Materials," to permit installation of a plastic-coated windshield which could reduce facial injuries caused by broken glass. The material is allowed in all windshields and windows of vehicles with permanent non-convertible roofs.

Lighting. In response to appeals from General Motors and Volkswagen, NHTSA issued a proposal to extend the range of types of headlamps that could use replaceable bulbs. The proposal would allow vehicles to be equipped with 2 lamps using 2 bulbs in each lamp, or with 4 using one bulb in each lamp.

A Notice of Proposed Rulemaking (NPRM) was issued which would allow motorcycles to use modulating headlights during daytime to make them more conspicuous than motorcycles not now equipped with them.

Controls and Displays. On July 24, 1984, NHTSA issued a final rule amending several requirements of Standard No. 101, "Controls and Displays," by providing recognizable international symbols, such as the bugle for the horn and the light bulb with rays for headlamps.

NHTSA issued a final rule on August 31, 1984, to amend Standard No. 123, "Motorcycle Controls and Displays," allowing greater flexibility in mounting the manual fuel control shut-off valve.

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Harmonization of Safety Regulations. A final rule implemented changes to Standard No. 108, "Lamps, Reflective Devices and Associated Equipment," which would help harmonize U.S. and European lighting specifications.

NHTSA issued an amendment to Standard No. 123, "Motorcycle Controls and Displays," permitting specific symbols to be used in place of words already required to identify motorcycle controls and displays. The symbols, similar to those required by the International Standards Organization, should reduce compliance costs by promoting international harmonization. The additional symbols indicate engine stop, choke, electric starter, lights, horn, turn signal, neutral indicator, upper beam indicator and the fuel tank shut-off valve.

Research continues on a program to develop new test procedures and performance requirements for an internationally harmonized brake standard. The goal of this program is to develop a new standard that would ultimately replace Standard No. 105, "Hydraulic Brake Systems," as it applies to passenger cars. This new standard would be compatible with the new international braking standard being developed by the Economic Commission for Europe.

Motor Vehicle Safety

Crashworthiness. NHTSA continues research on test procedures and vehicle design characteristics to reduce the number and degree of human injuries, emphasizing these crashworthiness priorities: driver and front seat passenger protection, improved frontal structures, side-impact protection, pedestrian protection and rollover-crash occupant ejection.

Regarding driver protection, reviews continue on steering assembly characteristics of motor vehicles and data analysis to determine what benefits could be achieved in practical use. Similarly, computer simulations use instrument panel and windshield data to identify potential and reasonable levels of improved occupant protection.

Frontal structures research focused on developing analytical procedures to evaluate safety improvements that could reduce the probability of injuries to occupants. Development and testing continued on fixed barriers, moving impact barriers, improved test dummies, rollover test devices, and better test tools and procedures.

Side-impact research, conducted in 1984, included: crash tests to evaluate the effects of interior side door padding and increased side strength, and crash tests into poles to determine the effects of side modifications, crash computer model analyses to assess the injury effects of potential countermeasures, the results of which were published in reports and papers.

Automatic Crash Protection. On July 17, 1984, the Department of Transportation published a final rule amending Standard No. 208, "Occupant Crash Protection," mandating automatic crash protection devices in passenger cars on a phased-in schedule, beginning September 1, 1986, and for all cars built for the U.S. market after September 1, 1989.

If states representing two-thirds of the nation's population were to enact mandatory safety belt usage laws, meeting minimum qualifications set forth in the regulations before April 1, 1989, the requisite for automatic protection would no longer apply.

Air Bag Retrofit Demonstration Program. In 1983 and 1984, NHTSA demonstrated that both original air bag systems and retrofitted air bag systems would operate as intended in a crash. Air bag restraint systems are installed in state police vehicles in Arizona, Wisconsin, Maryland, Ohio, California and Mississippi by September 1984. Each state has 75 to 100 vehicles in the test fleet. The states agreed to furnish NHTSA with air bag maintenance records and accident data.

NHTSA and the General Services Administration (GSA) contracted with the Ford Motor Company to purchase about 5,000 model year 1985 Tempos equipped with air bags on the driver's side. The goal is to put air bag equipped vehicles on the road to establish their efficiency, to familiarize the public with air bag technology, and to hasten the development of affordable air bag systems.

Heavy Vehicles. NHTSA's heavy vehicle evaluation established and demonstrated procedures to reinforce truck and bus safety by boosting their crash avoidance and crashworthiness potential.

During 1984, work continues on assembling performance results, requirements and test procedures, and improving the stopping capability of both air and hydraulic brakes on heavy vehicles; developing and producing educational films to help truck drivers better understand how tractor-trailer combinations operate; and identifying manufacturers and users of heavy vehicles and their ability to develop, refine and produce safety-related equipment.

Highway Safety

Occupant Protection. NHTSA continues its comprehensive program to increase safety belt and child safety seat use and provides states and communities with the leadership and technical assistance to reduce the drunk driving problem.

Safety belts have the greatest potential for immediate and dramatic reduction of deaths and injuries resulting from automobile accidents. Despite their availability in

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nearly every passenger car in the country and their effectiveness when worn, only about 14 percent of motorists used them in 1984.

NHTSA's National Occupant Protection Program used the influence, credibility and communication skills of employers, schools, and civic and social organizations to develop comprehensive safety belt/child safety seat public information programs.

NHTSA produced 8 public service announcements (PSAs), some with private sector funding. Support from the news media, along with PSAs and print materials, netted greater public attention to the issue.

Interest in child safety seats has grown dramatically in recent years. Nine states passed child passenger protection laws during the year, bringing the total to 4 and the District of Columbia. Based on NHTSA's 19-city survey, child safety seat usage increased to about 45 percent for children up to age 4, compared with 27 percent in 1983.

NHTSA found that only 40 percent of child safety seats are being used correctly. NHTSA developed educational materials to encourage the correct use of child safety seats.

Public attitude toward highway safety issues in general, and belt use laws in particular, has been changing, as shown by the enactment of the first mandatory use law in New York. Additional state laws are expected to result from the Secretary's July 1984 decision on automatic crash protection which encourages state belt laws.

Alcohol. NHTSA found that fatalities in which the driver was intoxicated at the time of the accident dropped from more than 14,000 in 1980 to 11,000 in 1984, a decline of 24 percent. The total number of drivers killed declined by 11 percent in the same period.

Even though comprehensive community-based strategies have begun to pay dividends, in July 1984 the President signed legislation encouraging states to raise the legal drinking age to 21. This legislation directed the Secretary of Transportation to withhold a percentage of highway funds from states failing to enact laws establishing age 21 as the minimum drinking age. States could lose 5 percent of their Federal-aid highway construction funds if they do not raise the legal age to 21 by October 1, 1986, and they could lose an additional 10 percent by October 1, 1987, if they have not complied.

Traffic Records. Traffic records play a vital role in the highway safety effort. They provide the documentation essential to develop, implement and evaluate countermeasures such as selective enforcement and highway engineering improvements. They form the information base for managing highway safety programs at all levels of government.

NHTSA helped states develop and implement the Accident Data Improvement Plan (ADIP) to improve the quality of data contained in accident record systems. As a result, 33 states (up from 22 in 1979) improved alcohol data collection and 48 states (up from 41 in 1979) improved their occupant protection safety equipment data collection.

Alabama completed a model records project that incorporated NHTSA's recommended principles and technological concepts. This system will be used as a model which can be implemented in other states.

National Driver Register. The National Driver Register (NDR) is a remarkable, computerized index of state reports on drivers whose driving privileges have been denied, suspended or revoked. Applications for driver licenses are routinely checked against the NDR to determine the applicant's driving history in other jurisdictions, and to prevent unsafe drivers from obtaining a license from another state.

During 1984, the NDR completed the design of the Problem Driver Pointer System: (PDPS) which provides instant access capability for states to probe the national database.

Police Traffic Services. Law enforcement agencies continue to develop a systematic approach of managing their traffic safety problems by upgrading programs that focus on serious offenses, such as driving while intoxicated (DWI), speeding, child/passenger safety, and other violations.

Specific activities include: seminars and workshops on NHTSA priority programs for law enforcement officials and managers; distribution of model training courses in DWI detection and enforcement, usage of occupant protection devices, and the use of radar equipment for speed enforcement; and development of model policies and procedures for police agencies to improve management of current traffic safety problems.

Emergency Medical Services. Prompt, appropriate medical care and rapid transport to a trauma center can mean the difference between life and death for thousands of traffic accident victims. Data available from several trauma centers across the country indicated significant reductions in multiple trauma deaths within a year of implementing a true trauma system. Emergency Medical Services (EMS) pre-hospital systems complement the resources of a sophisticated trauma center.

In 1984, NHTSA began to change the direction of its EMS activities to involve all private, professional and government organizations in the development of standards; to promote trauma systems which combined pre-hospital and hospital elements of emergency care; to

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manage information and trauma registry development; and to inform and educate the public about injury prevention and reduction.

EMS achievements in 1984 included: 121 EMS organizations and interest groups chartered a national voluntary standards body for EMS to develop uniform national voluntary guidelines which would stipulate the EMS provisions of the Highway Safety Act, and standardize quality of pre-hospital care across jurisdictional boundaries; 2 EMS seminars conducted by the National Council of State EMS Training Coordinators, where over 150 EMS coordinators and administrators participated in meetings to analyze existing EMS curriculum materials and make recommendations to NHTSA for future training requirements; and continued leadership and development of the Military Assistance to Safety and Traffic (MAST) Program. The MAST program makes available U.S. military aeromedical resources to transport civilian emergency patients in need of medical care. MAST flew 2,148 missions transporting 2,308 emergency patients.

Motorcycle Safety. Motorcycle accidents accounted for 4,608 fatalities during 1984, an increase of 343 deaths over 1983. Factors which contributed to motorcyclist fatalities were motorists violating the motorcyclist's right-of-way, the failure of riders to wear safety helmets, a lack of safe riding skills and alcohol use by motorcyclists and other motorists.

NHTSA held a series of 12 world-wide workshops for Department of Defense ground safety personnel. The workshops focused on motorcycle safety, alcohol and restraint use, and are designed to increase traffic accident countermeasure programs within the armed services.

The number of states implementing NHTSA-approved motorcycle operator licensing programs increased with 37 states using the Model Operator's Manual (MOM), sponsored by NHTSA and the Motorcycle Safety Foundation, 29 states using the knowledge test, and 17 using the Motorcycle Operator Skills Test.

Driver Licensing. Young drivers, ages 15 to 24, comprise 20 percent of the licensed driver population and 33 percent of all fatalities. The leading cause of death for teenagers between ages 15-19 is motor vehicle accidents. Sixteen and seventeen-year old drivers have more than twice the average number of accidents in their first year of driving and have 4 times as many accidents per-mile-driven as do adult drivers. Causes include: driving inexperience, lack of adequate driving skills and other factors (primarily alcohol related).

The Maryland State Motor Vehicle Administration completed evaluation of a model provisional driver licensing program developed by NHTSA. This program is designed to control the manner in which beginning drivers acquire

driving experience. The assumption is that by limiting driving to low-risk situations and supervising periods of practice, young drivers should acquire safe driving skills and therefore minimize the threat to themselves and the public. The Maryland program produced at least a 10 percent reduction in accidents, and an estimated 20 percent reduction in convictions among drivers operating with provisional licenses.

Twenty-one states currently contain provisions in their laws for special licensing of persons under some specified age, usually persons under 18 years of age. Six states have nighttime restrictions or curfews for drivers 16-17 years of age.

55 MPH Speed Limit. All states continue to enforce the 55 mph national speed limit; however, enforcement and punishment levels differ in the states.

As required by the Surface Transportation Assistance Act of 1982, the Secretary of Transportation contracted with the National Academy of Sciences (NAS) for a thorough investigation of the human and economic benefits of the 55 mph speed limit. Completed in the fall of 1984, the study concluded that the 55 mph speed limit is one of the most effective traffic safety policies implemented and that it reduced substantially the number of fatalities on the nation's highways (estimated between 2,000 and 4,000 fewer deaths annually).

Review of 55 mph compliance data submitted by states for 1984 indicates that 3 states, Maryland, Arizona and Vermont, are not in compliance. Final decisions regarding federal funding for these states will be made after hearings and appeals which are allowed under DOT regulations.

Consumer Activities

Bumpers. After beginning an experimental consumer information program on bumpers to develop objective and meaningful data on the damage susceptibility of automobiles in low-speed, front and rear end collisions, NHTSA produced a laboratory test methodology in 1984 to evaluate the performance of bumper systems in reducing or eliminating vehicle damage in low-speed laboratory crashes. In 1984, eight model year 1983 vehicles were tested and the results demonstrated a reasonable relationship to general insurance claims data.

New Car Assessment Program. Title II of the Motor Vehicle Information and Cost Savings Act required the Department of Transportation to furnish comparative information on new cars by make and model in 3 areas: crashworthiness, damageability, and ease of diagnosing and repairing electrical and mechanical systems. This experimental program has not only increased consumer awareness of differences in new car crashworthiness, but

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also encouraged some manufacturers to improve the crash performance of their cars.

In the frontal tests, cars are crashed at 35 mph into a fixed rigid barrier. Each vehicle carries 2 instrumented adult dummies in the front wearing both lap and shoulder belts. During the tests, measurements are made of the severity of impact to the head, chest and thighs of each dummy.

The 1984 program included station wagons, multipurpose vehicles, pickup trucks, convertibles and vehicles from other popular market classes. An important consideration in these tests was the repeatability of test results when 2 or more identical vehicles were crashed. During the year, NHTSA finished a program to assess the repeatability and reproducibility of the 35 mph frontal barrier crash tests. Engineering analyses of the data identified 4 components of crash test variability—the test facility, the test dummy, the test procedures and the test vehicle. This information was used to improve test procedures.

Auto Safety Hotline. NHTSA's toll-free Auto Safety Hotline provided recall information, received motor vehicle safety defect complaints and furnished consumers with information about enforcement actions, fuel economy ratings, crash test results, tire safety and care, child safety seats, drunk driving, federal odometer laws, motor vehicle safety standards and other safety topics.

Defect Investigations/Recalls

Enforcement. There were 154 safety recall campaigns in 1984, involving 6.1 million vehicles. Twenty-four of the campaigns, comprising approximately 3.3 million motor vehicles, involved action taken by NHTSA. In addition to these recalls, 3.6 million units of motor vehicle equipment and 36,000 tires were recalled.

Major Recall Campaigns. NHTSA effected major recall campaigns involving: the 1981 Ford Escort and Mercury Lynx driver's front seat back attachment; the 1977 Ford Thunderbird, LTD II, Ranchero, and Cougar, and the 1978/9 Granada/Mercury Cougar, and Monarch engine cooling fans; the 1980/81 Honda Prelude undercarriage corrosion; the 1980 Subaru passenger car steering system corrosion; and the 1982/83 Nissan Sentra windshield wiper system.

Compliance Testing. NHTSA tested 198 vehicles for 324 performance requirements related to 13 federal motor vehicle safety standards and regulations. In addition, 1,527 tires and 2,317 equipment items, including safety belts, lighting and brake hoses were subjected to performance tests relating to 9 safety standards and regulations. The 1984 testing resulted in one tire failure and a 27 percent failure rate for the other equipment.

Some of the major vehicle and equipment recalls included: 87,468 vehicles because lighting equipment failed to conform to Standard No 108, "Lamps, Reflective Devices and Associated Equipment"; 878,080 turn signal and hazard warning flashers, investigated under 2 cases, for failure to meet the requirements of Standard No. 108; 16,600 turn signal lamps for failing to comply with Standard No. 108; 40,000 cans of brake fluid for failure to meet the requirements of Standard No. 116, "Hydraulic Brake Fluids"; 44,643 mopeds for tires that failed to meet the requirement of Standard No. 119, "New Pneumatic Tires for Vehicles Other Than Passenger Cars"; 530,000 vehicles for deficiency in conforming to Standard No. 210, "Seat Belt Assembly Anchorages"; and 9,000 child seats for failure to comply with Standard No 213, "Child Restraint Systems." Civil penalties of \$8,500 were assessed in 3 cases of nonconformity with the safety standards.

Odometer Tampering. NHTSA continued its odometer enforcement program, confirming odometer fraud in 79 investigations conducted in 24 states. The investigations found that the mileage had been rolled back on 399 vehicles. Four cases involving large-scale odometer tampering were turned over to the U.S. Department of Justice for criminal prosecution. In addition, 27 cases were transferred to state enforcement agencies and the rest NHTSA referred to consumers so that they might take civil action to recover damages.

Litigation

Uniform Tire Quality Grading. On November 11, 1983, the D.C. Circuit Court of Appeals heard oral arguments in *Public Citizen v. Steed*, a petition to review NHTSA's amendment to the Uniform Tire Quality Grading Standards which indefinitely suspended the requirements for grading tire treadwear. On April 24, 1984, the Court vacated the suspension, holding that NHTSA's action was arbitrary and capricious. On September 27, 1984, the Court granted Public Citizen's motion to enforce the judgment, and ordered NHTSA either to implement the treadwear grading requirement immediately or to seek a revision of the Court's mandate that would provide a reasonably prompt schedule for reinstatement of the standard.

Automatic Restraints (Standard 208). *State Farm v. Dole*; *New York State v. Dole*; *National Association of Insurance Commissioners v. Dole*, consolidated cases filed in the D.C. Circuit Court of Appeals, seeking judicial review of the Secretary's July 11, 1984, decision to require installation of automatic restraints on model year (MY) 1990 vehicles, with a phase-in beginning in MY 1987, unless states with two-thirds of the nation's population

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had enacted qualifying mandatory seat belt use laws by then. At the end of the fiscal year, the case is still in its preliminary stages.

Age 21 Drinking Law. In *South Dakota v. Dole* and *Ohio Retail Permit Holders Association v. Dole*, South Dakota and an Ohio liquor dealers, trade association filed separate complaints (in September and August 1984, respectively) challenging legislation enacted by Congress in June 1984, that provided for withholding a percentage of Federal-aid highway funds from states that failed by October 1, 1986, to enact legislation establishing 21 as the minimum drinking age for all alcoholic beverages. Both complainants asked for judgments, declaring that the legislation violated the 10th and 21st amendments to the U.S. Constitution, and injunctions restraining DOT from withholding federal highway funds for noncompliance with the minimum drinking age requirement. The government was preparing its motion for summary judgment, defending the constitutionality of the Age 21 statute, at the end of the fiscal year.

Traffic Safety Statistics

NHTSA's National Center for Statistics and Analysis develops and operates data collection and analysis to support its motor vehicle and highway safety activities. Representative and reliable accident data bases are essential to identify and analyze traffic safety problems and to assess the effectiveness of programs that deal with them.

The Center developed several accident data systems and conducted major studies of accident and accident exposure data. It also provided information on traffic safety to other agencies of the federal government, state and local governments, citizens, industry, researchers and the international safety community.

The Center's National Accident Sampling System: (NASS) provided detailed and nationally representative data on a sample of all police-reported traffic accidents.

Each year, NASS investigates approximately 11,000 accidents at 50 sites across the country.

The Fatal Accident Reporting System (FARS) makes data available from police reports and other official sources on all fatal traffic accidents.

Significant 1984 achievements included the following. NHTSA evaluated changes in child safety seat usage and child fatalities following the adoption of state child passenger protection laws; studied socio-economic factors on traffic fatalities, including the role of alcohol in traffic accidents, driver inexperience in causing mishaps, the relative fatality risk of different-sized vehicles and other topics; conducted roughly 200 special investigations of fatal collisions involving school buses, cars equipped with air bags, vehicles with special safety equipment and vehicles with alleged safety defects; examined statistics on head/neck injuries in accidents to determine relationships between crash forces, occupant motion and injuries; provided monthly and bimonthly fatality trend reports giving timely notice to DOT staff, the states, 130 police jurisdictions and field accident investigators; published semiannual comprehensive fatal accident reports and publication of FARS and NASS annual reports; and responded to more than 3,000 requests for information.

Administration

Internal Control System. In accordance with the requirements of the Federal Managers Financial Integrity Act, NHTSA modified its organization for evaluating and reporting internal jurisdictions for safeguarding resources, assuring accuracy and reliability of information and adherence to laws, regulations and procedures. In 1984, management assessed 121 such procedures, and based on these assessments, conducted 27 in-depth control reviews.

Minority Business Enterprise. NHTSA achieved 166 percent of its \$3.6 million Minority Business Enterprise goal.

Urban Mass Transportation Administration

The Urban Mass Transportation Administration (UMTA) coordinates public mass transportation projects for the Department. UMTA programs are the primary source of federal financial assistance for planning, developing, and improving public transportation systems.

Policy Guidance

During 1984, UMTA formulated two policy statements. The first established objective criteria to rank applications for mass transit grants for major capital investments. The second policy statement proposed implementation of provisions in the Urban Mass Transit Act calling for the maximum feasible entrepreneurial participation in plans and programs funded by UMTA.

Major Capital Investment Policy. On May 18, 1984, UMTA disseminated a revised Major Capital Investment Policy. The policy statement established UMTA's criteria for evaluating proposals for fixed guideway systems, new starts, and extensions of existing systems. The policy describes the detailed process that applicants should follow to be eligible for federal financial assistance for major capital investments. It also defined the process UMTA would follow in evaluating and funding such proposals.

Private Sector. During 1984, UMTA's Office of Budget and Policy developed initiatives to increase competition and to encourage greater participation by the private sector in providing urban mass transportation services.

UMTA published a private sector policy guidance in October 1984, "Private Enterprise Participation in the Urban Mass Transportation Program," in the Federal Register (49 FR 41310). The announcement provided instructions to grantees and to private operators about the provisions of the Urban Mass Transportation Act of 1964 which called for maximum feasible participation of private enterprise in plans and programs funded under the Act.

Safety Requirements For Buses. In 1984, UMTA initiated a review of its safety requirements for buses purchased with federal funds. The concern was that UMTA bus safety standards applied exclusively to Advance Design Buses. In an Advance Notice of Proposed Rule-making, UMTA addressed these requirements and requested comments in other related areas such as what the financial impact would be on manufacturers and grantees if the safety requirements were proposed for all buses.

Capital Assistance Programs

Transit Assistance Grants. In 1984, funding appropriated for UMTA's various transit assistance programs totaled \$4.2 billion, a minor decrease of about \$200 million from the previous year.

Major Capital Investment. In July 1984, UMTA and the Santa Clara County Transit District agreed to fund the construction of the Guadalupe Corridor Light Rail Project and the Downtown San Jose Transit Mall. The contract provided for discretionary grant funds through 1986 and formula grant funds through 1987. The total cost of the endeavor was \$406.9 million. Of this amount, the full funding contract called for \$205.8 million to be provided from discretionary funds, \$51.9 million from formula funds, and \$149.2 million from non-federal sources.

Urban Discretionary Grants. Urban discretionary grants are made primarily for rail modernization projects, new rail systems and extensions, and for acquisition of new buses and facilities. More than \$1.25 billion was available for discretionary grants in 1984, more than one quarter of the total federal transit program. Of this \$1.25 billion, \$50 million went for planning assistance grants and \$25 million for elderly and handicapped assistance grants.

Urban Formula Grants. Urban formula grants provide both capital and operating assistance to the nation's transit systems. Nearly \$2.4 billion was appropriated for UMTA's formula grants in 1984, including \$870 million for operating assistance and \$70 million for transit projects in rural areas. Formula grants are the primary source of federal funding for bus purchases.

Interstate Transfer Grants. During 1984, \$295.4 million was appropriated for transit projects under the interstate transfer program. The funds represent interstate highway projects that are withdrawn and replaced by mass transit projects.

Washington Metro. Other 1984 appropriations included \$250 million for construction of the Washington, D.C. METRO subway system.

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Transportation Assistance Programs

Grantee Procurement Training Program. In 1984, UMTA embarked on a program to provide procurement training to its more than 700 grantees. This program helps them establish sound procurement techniques for more cost effective and efficient expenditure of public funds. UMTA offered 3 to 5 courses each year and the positive course ratings demonstrate the success of the training program.

Public Transportation Studies. UMTA initiated several studies to examine the causes of poor performance in the urban public transportation market. These studies examined the nature of federal aid programs and their impact on local incentives and decision making, labor problems, local economic regulation, and management practices.

Public Transportation Report. UMTA issued a comprehensive report to Congress in September 1984, entitled "The Status of the Nation's Local Public Transportation: Conditions and Performance." The report analyzed the transportation needs, problems and trends in urban public transportation, and provided data on the performance of the industry.

Labor Protection Provisions. UMTA completed an examination of the adverse impact of the Section 13(c) labor protection provisions of the Urban Mass Transportation Act of 1964. Section 13(c) requires that the Secretary of Labor certify that "fair and equitable arrangements" have been made to protect the interests of transit employees from negative impacts of financial assistance provided by UMTA.

While this protection has accomplished its purpose, administration has created certain problems. A study by the Urban Institute found that implementation of Section 13(c) had: (a) resulted in delays of UMTA-funded projects; (b) frustrated innovation, particularly attempts to improve productivity and introduce new services, making greater use of the private sector; and (c) enabled labor unions to gain new rights, for example, guarantees not to reduce the size of the collective bargaining unit, and to fill all new jobs from its ranks.

Transit and Highway Planning Improvement Study. UMTA contracted with the Rice Center for Urban Mobility Research to review the local joint transit and highway planning process. This review was conducted to assess weaknesses of the process and to recommend ways to enhance successful implementation of the federal joint planning guidelines. The following areas are highlighted for particular attention: (a) the role of the private sector; (b) creative ways to finance transit and highway improvements; (c) investment trade-offs between transit and highways; and (d) the local decision-making process, particularly where both federal and local influences affect it.

Section 15. UMTA published the 5th Annual Report from the Section 15 Reporting System, furnishing detailed summaries of financial and operating data submitted annually to UMTA by the nation's mass transit systems. The report provided public mass transportation systems, federal, state, and local governments, and the public with information to help them make transportation investment decisions.

Civil Rights

Disadvantaged and Women Business Enterprises. Disadvantaged business enterprise (DBE) participation is required by a provision of the Surface Transportation Assistance Act of 1982 in federally-assisted transit projects. Beginning this year, UMTA set requirements that transit agencies receiving federal funds set women business enterprise (WBE) goals of at least 3 percent.

DBEs and WBEs increased their share of participation in mass transit programs in 1984. About \$293 million in federally-assisted contracts was awarded to DBEs in 1984 by UMTA grant recipients. This included 14.9 percent of the \$2 billion in UMTA funds awarded by local grantees for transit projects. An added \$73 million (3.7 percent of the total) was awarded to WBEs.

UMTA also successfully increased DBE/WBE participation in its own direct procurement program. In 1984, DBEs received \$5.2 million, or 27 percent, through UMTA direct procurement of the total \$19.2 million expended.

Maritime Administration

The Maritime Administration (MARAD) manages programs that facilitate the development, promotion, and operation of the U.S. merchant marine. MARAD is also charged with organizing and directing emergency merchant ship operations.

To carry out these responsibilities, MARAD:

- Provides financial aid and other programs assisting the American maritime industry;
- Sponsors research and development projects to promote the productivity and competitiveness of American ship builders and ship operators;
- Conducts promotional and marketing programs to increase shipper support for U.S.-flag vessels in foreign trade;
- Operates the U.S. Merchant Marine Academy at Kings Point, New York, and provides support to 6 state maritime academies;
- Negotiates bilateral maritime agreements and participates in international maritime conferences; and;
- Maintains a National Defense Reserve Fleet (NDRF) for timely deployment in national emergencies.

During 1984, the Maritime Administration continued vigorous support of maritime regulatory reform and initiated new legislation to promote and increase the competitiveness of the U.S. merchant marine. Through ongoing programs, administrative initiatives and other action, further steps were taken to stimulate the American maritime industry.

Major Maritime Legislation

On March 20, 1984, the President signed the Shipping Act of 1984, which provided more even-handed care for U.S.-flag carriers competing with foreign-flag carriers, and safeguarded the investment of U.S. exporters and importers.

Another significant legislative action is Public Law 98-595. This grants the Secretary of Transportation added flexibility in administering the Title XI Federal Ship Financing Guarantee Program, which authorized the Government to guarantee private-sector loans to finance

or refinance the construction or reconstruction of U.S.-flag vessels. This law provides the Secretary with the authority to assume debt obligations after an obligor defaults and provides more stringent criteria for use in evaluating Title XI applications.

Administrative Initiatives

The Title XI Program met economic difficulties in several segments of the maritime industry, most notably energy-related offshore drilling and inland waterway operations. The number of foreclosure actions initiated to protect the government's interest increased, as did the complexity of pursuing these actions under the Bankruptcy Code.

The Operating-Differential Subsidy Program continued to receive attention as MARAD pursued efforts to simplify and improve administrative and contractual processes, forwarding several legislative proposals to Congress.

Shipbuilding Research and Development

Between 1972 and 1984, MARAD's Shipbuilding Research Program, in both its technical content and industry support, continually expanded. A major research achievement in 1984 was the implementation and demonstration of a new concept for hull construction called "process lanes," by which work flowed past individual stations where specific work was performed in the fabrication and assembly of hull units.

Cargo Handling R&D. With MARAD's aid, 5 U.S.-flag carriers formed the Cargo Handling Cooperating Program in 1984. The purpose of this venture is to increase productivity in handling marine cargo through new technological applications. The design, funded by industry and MARAD, completed a simulation model for long-term planning and assessed the technology for adaptation and application.

Among the promising applications are: microwave container verification equipment, radio frequency transmission of voice and data for real-time container inventory control, laser disc storage of terminal interchange documents, and robotics for accurately aligning the container crane spreader with containers.

International Maritime Activities

During 1984, maritime delegations from the United States and the People's Republic of China met twice. The U.S. purpose was to negotiate a mutually beneficial arrangement which, among other things, would resolve cargo and operational difficulties encountered by U.S.-flag operators in the China trade. The talks did not bring about a new maritime pact, and the prevailing bilateral agreement terminated December 17, 1983.

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The Maritime Administrator led an interagency delegation which met with Brazilian counterparts in Rio de Janeiro to renegotiate the U.S.-Brazil Equal Access Agreement. This agreement governed, among other things, the access of each party's national flag lines to government-controlled cargo moving in the bilateral trade. The discussion resulted in a modification and extension of the agreement until December 1985.

MARAD officials also participated in consultations in Tokyo, as part of an interagency delegation to establish a dialogue with Japan on bilateral and multilateral shipping issues. These included Japan's intention to ratify the U.N. Code of Conduct for Liner Conferences, constraints on U.S.-flag container and intermodal movements in Japan, and carriage of U.S. tobacco exports to Japan. The talks yielded some progress in the intermodal area and a better understanding of the concerns of the Japanese regarding other issues.

MARAD Statistical Update

In selected program areas and administrative actions, MARAD reported net outlays of \$384.3 million in ship operating-differential subsidies to American-flag owners of 112 liner vessels and 24 bulk vessels engaged in U.S. waterborne export/import trade in 1984.

MARAD also reported:

- Conditionally approved financing guarantees totaling about \$177 million covering 288 vessels under Title XI of the Merchant Marine Act of 1936, as amended. Based on prior Title XI commitments, guarantees were placed on 113 vessels during this time;
- As of September 30, 1984, guarantees-in-force under the MARAD Title XI Program amounted to approximately \$7 billion
- During calendar year 1983, U.S.-flag ship owners deposited \$416 million in tax-deferrable Capital Construction Fund accounts;

- At the end of this reporting period, 386 ships were moored at National Defense Reserve Fleet (NDRF) anchorages which MARAD maintains at James River, Virginia; Beaumont, Texas; and Suisun Bay, California;

- The Ready Reserve Force (RRF), a joint operation of MARAD and the U.S. Navy, is a selected group of 45 NDRF vessels which can be activated for sealift operations on 5 to 10 days notification; and

- The U.S. Merchant Marine Academy awarded degrees to 238 graduates at its June 1984 commencement, nearly 83 percent of whom found employment on commercial vessels or went on active duty in the U.S. Navy or the Coast Guard.

U.S. Fleet, Industry Status

On September 30, 1984, the privately owned, ocean-going U.S.-flag merchant fleet was comprised of 501 ships with a total cargo-carrying capacity of 21.1 million dwt.

This fleet carried 5.8 percent of the 630.4 million long tons of commercial cargoes moved in the nation's ocean-borne foreign trade in calendar year 1983, compared with 4.6 percent of 675.5 million tons in 1982.

At the end of 1984, there were 13,648 shipboard billets in the privately owned, ocean-going U.S.-flag merchant fleet, down from 16,708 a year earlier.

Production worker employment at commercial yards in active U.S. shipbuilding base in July 1984 averaged 79,721, compared with 80,579 in July 1983.

Eight deep-draft commercial vessels totaling 243,180 dwt. were delivered by American shipyards in 1984, compared with 16 new ships of 330,860 dwt. in 1983.

The estimated average employment in the U.S. longshoremen's industry as of September 30, 1984, was 30,623, down from 33,725 in September 1983.

Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation (SLSDC) constructed the U.S. facilities for the St. Lawrence Seaway navigation project when it was created in 1954. Since 1959, when the Seaway opened to ocean-going ships, the Seaway Corporation has been responsible for the operation, maintenance, and development of that part of the Seaway which lies within the territorial limits of the United States.

Unlike most government agencies, the Corporation is self-sustaining. All operation, maintenance, administrative and capital improvement costs are paid with revenues obtained from tolls charged to vessels which transit the system.

Seaway Trade and Traffic

A total of 475 million metric tons of cargo passed through the Seaway locks in 1984. This volume represented a 5.4 percent increase over 1983, and 1984 marked the second consecutive year of significant Seaway traffic gains. The largest cargo gains occurred in iron ore, coal, iron and steel, and containers.

The Corporation instituted a series of innovative trade and traffic development initiatives to stimulate increased use of the entire Great Lakes Seaway system.

In late 1984, the SLSDC reached agreement with the Seaway Authority of Canada to extend the 1984 toll freeze through the 1985 navigation season.

The Corporation obtained input from over 1,000 Seaway users on ways to increase trade and traffic by sponsoring 12 Seaway Port Listen-In meetings for 15 U.S. Great Lakes ports. Based upon the results of the Port Listen-

Ins, the SLSDC developed a five-point Seaway Action Plan which stressed the need for cost containment, worldwide marketing, improved government relations, targeting of cargoes, and expanded information sharing.

Activities and Accomplishments

The Seaway Corporation sponsored a regional commemoration of the St. Lawrence Seaway's 25th Anniversary, including: a June ceremony at the Eisenhower Lock in Massena, New York; a Presidential proclamation designating 1984 "the Year of the Seaway;" and issuance of a Seaway anniversary commemorative postage stamp.

In June, the SLSDC implemented a new Seaway Nightcast message service to notify subscribers of Seaway vessels with available cargo space.

The Seaway Corporation conducted export seminars in cooperation with the Commerce Department at 5 Great Lakes ports.

Administration

In 1984, the Corporation's policy headquarters was relocated to the DOT headquarters building in Washington, D.C., resulting in reduced and consolidated office space. A Seaway Corporation "Office of Trade and Traffic Development" was created at the Washington headquarters.

A Washington-based Federal Seaway Working Group was formed to improve coordination among the federal agencies serving the Great Lakes.

The Seaway Corporation in 1984 also effected the following management, cost control and human resource improvements:

- Realigned and streamlined the Corporation's organizational structure;
- Appointed a Labor-Management Committee to facilitate communications between Corporation management and American Federation of Government Employees, Local No. 1968;
- Negotiated a new three-year labor contract, saving an estimated \$500,000;
- Developed a Five-Year Capital Plan aimed at improving lock facilities and navigation safety; and
- Improved cash management by expanding the Corporation's deposits in minority banks across the nation under the Administration's Minority Bank Deposit Program. In 1984, interest income from these deposits rose to \$722,376—a 108 percent increase over 1983.

Research and Special Programs Administration

The Research and Special Programs Administration (RSPA) has broad responsibilities for improving safety and efficiency in all modes of transportation. RSPA's responsibilities include: maintaining a national safety program to protect against risks involved to life and property related to the transportation of hazardous materials in commerce; developing and enforcing regulations necessary to ensure the safe transportation of hazardous liquids and natural gas by pipeline; providing research and analytical support to all DOT administrations and other federal agencies; conducting comprehensive training programs in transportation safety and security; ensuring civil transportation preparedness in the event of a national emergency; coordinating DOT policy with research and development of civil and military radio-navigation systems for consumption by land, air, and marine users; and developing, coordinating, and planning comprehensive transportation statistics and information programs.

Hazardous Materials

RSPA is the national focal point for ensuring the safety of the public and the environment from the dangers associated with transporting hazardous materials. To address this objective, RSPA:

- Established the National Hazardous Materials Transportation Advisory Committee (NHMTAC), a 21-member organization drawn from the hazardous materials transportation and manufacturing industries, and state and local governments. This multidisciplinary advisory committee was established to provide a national forum to identify and discuss concerns about hazardous materials, to formulate solutions and to make recommendations to the Secretary;
- Promoted national uniformity in the hazardous materials inspection process by developing a series of "how to" guides. These documents, "Guide for the Inspection of Hazardous Materials Shipments" and "Guide for the Inspection of Radioactive Materials Shipments," were

developed by the State Hazardous Materials Enforcement Development (SHMED) Program and made available to all federal and state enforcement personnel;

- Supported state responsibility for hazardous materials inspection and enforcement, through financial and technical assistance incentives ordered by the SHMED Program. Under SHMED, participating states enter into one- to three-year contracts with the Department to develop and implement hazardous materials enforcement programs. During 1984, at the peak of the program, 25 states participated. All adopted federal hazardous materials regulations, thereby advancing nationwide uniformity in hazardous materials regulation and enforcement; and
- Sought to resolve confusion and compliance problems experienced by shippers and carriers of hazardous waste by adopting a uniform Hazardous Waste Manifest, developed with EPA. This manifest accommodates EPA's waste manifest criteria in the Resource Conservation and Recovery Act to DOT's shipping paper standards in the Hazardous Materials Transportation Act.

Pipeline Safety

RSPA is also responsible for ensuring safe pipeline transport of natural gas and hazardous liquids, and the safety of liquefied natural gas facilities. RSPA directs a continuously reviewed and updated safety regulatory program to address changes in the state-of-the-art and to improve safety. RSPA directs a total enforcement program throughout the 50 states, the District of Columbia, and Puerto Rico. Field headquarters are located at Washington, D.C.; Atlanta, Georgia; Houston, Texas; Kansas City, Missouri; and Lakewood, Colorado. RSPA also conducts a research program which supports rulemaking and enforcement programs.

Some of the accomplishments of the pipeline safety program in 1984 include:

- Amending the pipeline safety regulations in 5 distinct areas, the most significant being complete revision of gas pipeline leak, failure and annual reporting requirements to reduce the burden on industry;
- Providing an ongoing federal/state cooperative program with 50 jurisdictions, including distribution of \$4.5 million of funds earmarked for the 49 jurisdictions requesting them;
- Enforcing the regulations through the inspection of 3,877 gas pipeline operators and 98 hazardous liquid pipeline systems, identifying 17,809 instances of non-compliance, initiating 143 enforcement actions, issuing 2 hazardous facility orders, imposing \$253,950 in penalties, and collecting \$25,150 in resolution of enforcement cases;

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- Conducting research into safety issues such as liquefied natural gas dispersion distance forecast; appraisal of girth weld defect tolerance methodologies; minimizing stress in lowering pipelines while in repair; studying integrity of high-strength, low-alloy pipe for arctic climates, assessing pipeline safety testing and inspection methods; and
- Conducting pipeline safety training for 1,666 persons, the largest number in recent years, as DOT launched an extensive outreach program to the states, in addition to the resident courses at the Transportation Safety Institute. In 1984, 16 states hosted these seminars.

Safety and Security Training

The Transportation Safety Institute (TSI), under the direction of RSPA, continues to offer far-reaching training programs to improve the nation's transportation safety and security. TSI conducted 233 classes/seminars in 57 different training courses for federal, state, and local officials, as well as for some industrial and international delegates. At the request of the modal sponsors, TSI staff developed 13 distinctly new courses this year.

Three of the nine program areas exceeded all previous student attendance records. The Hazardous Materials Safety Program, the Transportation Security Program, and the Highway Traffic Safety Program had their busiest training year. During the year, TSI conducted one or more training programs in each of the 50 states.

The State Department's Anti-Terrorism Assistance Training Program began in April with the signing of a reimbursable agreement between State and the FAA, on behalf of TSI, to fund the approach. The three-phase program consisted of Phase I—Executive Briefings; Phase II—Assessment of Training Needs; and Phase III—Formal Training at TSI.

Increased participation in the Mass Transit Safety and Security Program required adding an instructor on a full-time permanent basis in 1984. TSI trained 11,612 persons, a 51 percent increase over the 7,682 students trained the previous year.

Emergency Transportation

RSPA directs a Departmental civil emergency transportation program that provides for the continuity of government contingency planning in national and regional emergencies, including those affecting national defense. RSPA provides the Departmental Emergency Coordinator, and is principal liaison with the Federal Emergency Management Agency (FEMA) and other federal, state, regional, and private sector emergency preparedness groups.

In 1984, RSPA finished the DOT plan for coordinating and implementing the National Radiological Emergency

Preparedness Plan; developed and conducted annual emergency preparedness training at DOT Emergency Organization (EO) quarters in 10 regions, including Alaska, taken by over 400 National Defense Executive Reservists and Mobilization Designees; began a national headquarters annual training program for all Office of the Secretary Mobilization Designees assigned to the Headquarters DOT EO; completed the final operating arrangements for the DOD-DOT Contingency Response Program, providing identification of civil transport shortfalls for DOD surface and domestic air movements during a mobilization period and, in the event of a shortfall, provided for application of the Secretary's Defense Production Act authority to meet it; made available full support for all federal, civil, and military national security exercises, including those related to NATO.

RSPA reestablished contact with Canadian transportation emergency preparedness planners and initiated a program for a continuing U.S./Canada interface which would address common areas of emergency transport objectives; continued strong U.S. support for NATO's Civil Emergency Preparedness Program, particularly the NATO Civil Aviation Planning Committee, whose principal U.S. envoy was furnished by the Office of Emergency Transportation; and continued DOT representation in the activities of the Emergency Mobilization Preparedness Board, chaired by the National Security Council.

Navigation

Communications and radio-navigation are major factors in a transportation system's safety and efficiency. The Secretary is the principal federal official providing navigation support to the civilian sector of the United States. Completion and use of navigation systems are the joint responsibility of the Federal Aviation Administration and the U.S. Coast Guard. RSPA is responsible for coordinating long-range plans. It also acts as the principal executive agency for the Secretary in preparing the Federal Radio-navigation Plan.

Principal achievements in navigation during 1984 included: preparing a DOT preliminary recommendation on the future Radio-navigation Systems Mix; coordinating and publishing the 1984 edition of the Federal Radio-navigation Plan; and completing a study on the reliability and integrity of the Global Positioning System.

Transportation Information

RSPA provides Department-wide coordination of transportation data and information. The continuing aim is to reduce costs by minimizing resources the Department requires, maximizing use of existing data, and cutting the

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burden on the public to provide information. In 1984, the Secretary's safety initiatives needed timely distribution of multi-modal safety information. Answering this need, RSPA varied the design and format of the Department's annual safety report, the Transportation Safety Information Report, a valuable tool in promoting transportation safety that is now produced quarterly.

University Research

To mobilize the resources of the academic community effectively on high-priority problems critical to long-term national transportation issues, RSPA funds a DOT-wide program of university research. The program encourages the university community to focus many of its economic, scientific and technical skills on important transportation issues in an interdisciplinary atmosphere that fosters excellence. That knowledge, in turn, helps the Department promote innovation, develop policy, and encourage systems improvement. The 1984 program funded projects involving safety, economic regulation, maintenance and construction, advanced technology, and systems studies.

Transportation Systems Center

RSPA's Transportation Systems Center (TSC), an integral part of DOT located in Cambridge, Massachusetts, is funded through negotiated agreements with the Office of the Secretary, DOT's operating administrations and other federal agencies. These negotiated agreements also define TSC's operational parameters. TSC's programmatic activities include, but are not limited to: 1) providing government expertise to establish program requirements and priorities, e.g., the FAA National Airspace System (NAS) Modernization Program and the Coast Guard Command, Control, and Communication (C3) program; 2) developing and overseeing federal databases essential to transportation safety regulation, international negotiation of airline landing rights, and policy development and analysis; and 3) assessing those critical transportation issues requiring immediate Departmental response.

The Center's major accomplishments for 1984 include:

Engineering Support to NHTSA Crashworthiness Research. TSC support for NHTSA's vehicle crashworthiness research centered around activities that would help moderate expenses. TSC's achievements included analyzing and classifying: the crash pulses to which vehicle occupants are subjected; intrusions into passenger compartments; the motion of occupants during crashes and the resultant forces on their bodies; and test data on the human neck for understanding of head and neck injuries.

Aviation Safety Analysis System (ASAS). The FAA has had problems making the most efficient use of available

aviation safety-related data for the reduction of aviation accidents. TSC supported FAA by designing and developing an improved nationwide Aviation Safety Analysis System which will save over \$4 million annually, while ensuring high safety standards.

In 1984, TSC completed development and proficiency of Mark I Aviation Safety Analysis System modules on the prototype system verifying their ability to master ASAS criteria prior to national implementation. TSC furnished a complete system: communication requirements report to integrate ASAS into the overall FAA communication system: plan. TSC completed Field Office Modernization with "user friendly" software installed on the specified system.

Command and Control Research and Development. Steady increases in Coast Guard multi-mission duties, without commensurate gains in revenue, made it vital to get greater functional efficiency. Central to all operational missions is Command and Control (C2), through which data is obtained, processed and disseminated to decision makers in a timely, accurate, and appropriate fashion.

To meet these objectives, TSC continues to outline the needs of the following Coast Guard programs: Commercial Vessel Safety, Military Readiness, Radio-navigation Aids and Reserve Training. In addition, TSC has nearly completed the operating programs for Bridge Administration and Recreational Boating Safety.

In conjunction with these activities, TSC completed installation and operational testing and examination of the C2 Test Bed, which provides for enhanced data entry, communication, and reports and record processing for the Search and Rescue mission in the Chesapeake Bay region.

Flow Control Improvements. TSC provided critical assistance to FAA's Air Traffic Control Command Center for managing the national air traffic flow to minimize in-the-air flight delays. TSC initiated the flow control communication network and air traffic controller interface system.

Search and Rescue Satellite System Development (SARSAT). SARSAT is an international cooperative effort to develop and demonstrate a satellite aided Search and Rescue system. TSC and the U.S. Coast Guard demonstrated and assessed the system for U.S. maritime use. The TSC/Coast Guard team completed the Demonstration and Evaluation Plan, the Test Implementation Plan, and the Data Reduction and Analysis Plan. TSC also helped integrate SARSAT into existing Coast Guard Search and Rescue operations. The Coast Guard rescued at least 200 people in the first year due to alerts and location data supplied by the SARSAT and Soviet COSPAS systems.

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Hazardous Materials Transport. In 1984, TSC completed 3 tasks for RSPA enhancing its safety regulation activities. 1) TSC assessed the safety performance of intrastate hazardous liquid and highly volatile liquid pipelines, and produced a report on the benefits and costs of proposed federal regulation of the safety of intrastate hazardous liquid pipelines; 2) judged the impact of imposing performance standards on packaging and containers used for hazardous materials which led to a report of RSPA evaluating the impact of the proposed performance standards; and 3) evaluated selected aspects of highway transport of hazardous materials.

Transportation Statistical Data and Information. Transportation statistical data and other information collected by the federal government are used by all levels of government and the private sector. DOT uses such data to analyze and understand complex national transportation problems and to establish transportation policy. DOT organized RSPA as the lead agency to collect, assemble, and distribute technological, statistical, economic and other data relating to domestic and international transportation.

In 1984, TSC produced several documents containing vital national transportation statistics, including enhanced safety statistics, organized and managed a centralized information reference aid, developed a prototype report and an on-line data retrieval system, providing transportation indices for researchers, and supported OST by furnishing multi-modal transportation statistics to the United Nations, Economic Commission for Europe.

Human Factors in Cockpit Safety. TSC provided F.A.A.'s Office of the Associate Administrator for Aviation Standards with a coordinated research plan to investigate the relationship between human performance and cockpit safety. In formulating the plan, TSC got active cooperation of airframe manufacturers, air carriers, professional pilots, and other experts on cockpit safety. The highly praised plan is the first comprehensive look at cockpit safety problems.

Policy Support. TSC helped the Office of the Secretary prepare 2 Reports to Congress. In 1984, DOT and the ICC

completed and submitted to the President and Congress a study of intercity bus terminals, mandated by the Bus Regulatory Reform Act of 1982. TSC supported OST with the development and implementation of the carrier and bus terminal surveys underlying the study.

The Surface Transportation Assistance Act of 1982 mandated a DOT study of the benefits and costs of a limited access highway network for 110-foot multiple trailer combinations of uncaped gross weight controlled by the bridge formula, the number of axles and existing axle load limits. In 1984, TSC developed forecasts of improved productivity, potential price changes for truck transport services, and resultant market shifts from rail to highway resulting from such a system. TSC also estimated the total change in national annual payment for transportation services and the net fuel consumption. The results of the TSC Truck/Rail competition analysis are included in the Secretary's Report to Congress.

In addition to program achievements, TSC annually performs several major unscheduled investigations of critical national transportation issues requiring immediate Departmental attention. Activities from 1984 include:

Technical Assessment of Federal Aviation Administration's Advanced Automation Program. Responding to a request from the Deputy Secretary of Transportation, TSC provided the Transportation Systems Acquisition Review Council with a comprehensive technical assessment of the Advanced Automation Plan's ability to alleviate short-term capacity limitations of the present system, and also to provide the advanced automation base required for future expansion and modernization of the entire air traffic control system.

Technical Assessment of Amtrak Passenger Train Derailment. On November 12, 1983, an Amtrak passenger train derailed in Marshall, Texas, resulting in 4 fatalities. At the request of FRA, TSC led a task force to conduct a technical evaluation of a segment of rail which shattered during that accident. The task force also assessed the conceivable risks associated with similar rail installations and named actions needed to reduce them.

Appendix

TABLE I. U.S. Department of Transportation Budget Authority, Obligations, and Outlays, Fiscal Year 1984.

(in millions of dollars)

<i>Organization</i>	<i>Budget Authority</i>	<i>Obligations</i>	<i>Outlays</i>
Office of the Secretary	92	80	75
United States Coast Guard	2,780	2,537	2,529
Federal Aviation Administration	4,651	4,065	3,819
Federal Highway Administration	13,858	13,259	10,569
Federal Railroad Administration ¹	1,063	1,062	1,281
National Railroad Passenger Corporation	(819)	(701)	(735)
National Highway Traffic Safety Administration	226	186	198
Urban Mass Transportation Administration	4,268	4,521	3,779
Maritime Administration	457	479	507
Saint Lawrence Seaway Development Corporation	—	8	—
Research and Special Programs Administration	20	13	8
Office of the Inspector General	27	25	22
SUBTOTAL	27,443	26,235	22,782
Proprietary Receipts from the Public	-(70)	—	-(70)
TOTALS	27,373	26,235	22,712

¹ To facilitate comparison, excludes nonrecurring \$1,222 million payment of Amtrak loan guarantee default.

NOTE: Columns may not add due to rounding.

TABLE II. U.S. Department of Transportation Employment in Authorized Full-Time Permanent Positions, Fiscal Year 1984.

<i>Organization</i>	<i>Employment</i>
Office of the Secretary	840
United States Coast Guard	44,451 ¹
Federal Aviation Administration	46,471
Federal Highway Administration	3,472
Federal Railroad Administration	1,386 ²
National Highway Traffic Safety Administration	615
Urban Mass Transportation Administration	517
Maritime Administration	1,000
Saint Lawrence Seaway Development Corporation	191
Research and Special Programs Administration	670
Office of the Inspector General	448
TOTAL	100,061

¹ Includes 5,738 civilian and 38,713 military positions.

² Includes 585 Alaska Railroad Positions.

TABLE III. U.S. Department of Transportation Full-Time Civilian Minority and Female Employment, 1974-84.

<i>Year</i>	<i>Total</i> ¹	<i>Minority</i> ¹	<i>Percent</i>	<i>Total</i> ²	<i>Female</i> ²	<i>Percent</i>
1974	65,098	6,773	10.4	62,723	10,898	17.4
1975	68,241	7,647	11.2	64,588	11,373	17.6
1976	71,679	8,989	12.5	65,758	11,745	17.9
1977	72,809	9,573	13.1	74,289	12,833	17.3
1978	71,972	9,623	13.4	73,471	12,752	17.4
1979	71,040	9,807	13.8	72,139	12,650	17.5
1980	69,998	10,169	14.5	71,092	13,166	18.5
1981	58,018	9,325	16.1	58,220	12,093	20.7
1982	58,357	8,967	15.4	59,138	11,160	18.9
1983	58,948	9,272	15.7	59,684	11,435	19.2
1984	60,226	9,688	16.0	60,226	12,245	20.0

¹ Minority employment figures and related totals exclude employees in Hawaii and Guam.

² Female employment figures and related totals cover white collar positions only for the years 1974-75, general schedule positions only for 1976, and all employees for the years 1977-84.

NOTES:

1. Minority data are as of May 31 for 1974-76 and September 30 for all other years .
2. Female data are as of October 31 for 1974-75; May 31 for 1976; and September 30 for all other years.
3. Source of the data for 1974-75 was the Civil Service Commission.
4. Source of the data for 1982-84, *DOT Employment Facts* (OST).

TABLE IV. U.S. Coast Guard Financial Statement, Fiscal Year 1984.

<i>Appropriated Funds</i>	<i>Funds Available¹</i>	<i>Total Obligations</i>	<i>Unobligated Balance²</i>
Operating Expenses	1,690,542,456	1,690,132,908	409,548
Acquisition, Construction & Improvements	965,610,534	433,972,000	530,045,769
Alteration of Bridges	11,894,962	8,182,673	3,712,289
Retired Pay	315,200,000	313,515,261	1,684,739
Reserve Training	55,355,000	55,316,464	38,536
Research, Development, Test and Evaluation	23,793,000	19,456,000	4,076,447
National Recreational Boating Safety	12,750,000	12,500,000	250,000
Pollution Fund	25,788,435	3,965,934	21,822,501
Offshore Oil Pollution Compensation Fund	3,049,673	299,165	2,750,507
Deepwater Ports	8,935,632	1,724	8,933,908
TOTAL	<u>3,112,919,692</u>	<u>2,537,342,129</u>	<u>573,724,244</u>
<i>Reimbursements</i>			
Operating Expense	63,000,000	54,093,609	8,906,391
Acquisition, Construction, & Improvements	1,672,000	60,272	1,611,728
Reserve Training	57,069	57,069	—0—
Research, Development, Test and Evaluation	1,289,668	928,000	312,475
TOTAL	<u>66,018,737</u>	<u>55,138,950</u>	<u>10,830,594</u>
<i>Trust Funds</i>			
Coast Guard General Gift Fund	159,548	3,612	155,936
Surcharge Collection, Sale of Commissary Stores	432,656	262,000	200,533
Coast Guard Cadet Fund	4,284,640	4,284,640	—0—
TOTAL	<u>4,876,844</u>	<u>4,550,252</u>	<u>356,469</u>
<i>Intra Governmental Revolving Funds</i>			
Coast Guard Supply Fund	87,384,466	86,944,494	439,972
Coast Guard Yard Fund	98,511,873	47,141,277	51,370,596
TOTAL	<u>185,896,339</u>	<u>134,085,771</u>	<u>51,810,568</u>
<i>Accrued Gross Expenditures—All Years</i>			
	<i>Total</i>	<i>Direct</i>	<i>Reimbursable</i>
Operating Expenses	1,718,544,516	1,662,674,294	55,870,222
Acquisition, Construction & Improvements	463,842,697	459,071,003	4,771,694
Alteration of Bridges	14,751,436	14,751,436	—0—
Retired Pay	311,512,361	311,512,361	—0—
Reserve Training	55,092,516	55,031,826	60,690
Research, Development, Test and Evaluation	21,753,419	20,440,959	1,312,460
National Recreational Boating Safety	10,607,304	10,607,304	—0—
Pollution Fund	2,807,447	2,807,447	—0—
Coast Guard General Gift Fund	3,730	3,730	—0—
Surcharge Collections, Sale of Commissary Stores	232,123	—0—	232,123
Coast Guard Cadet Fund	4,282,640	—0—	4,284,640
Coast Guard Supply Fund	86,616,532	—0—	86,616,532
Coast Guard Yard Fund	37,110,238	—0—	37,110,238
Offshore Oil Pollution Compensation Fund	286,918	286,918	—0—
Deepwater Ports Liability Fund	1,120	1,120	—0—
TOTAL	<u>2,727,446,997</u>	<u>2,537,188,398</u>	<u>190,258,599</u>

TABLE IV. U.S. Coast Guard Financial Statement, Fiscal Year 1984 (concluded).

¹ Funds available include unobligated balances brought forward from prior year appropriations as follows:

Alteration of Bridges	3,294,962
Acquisition, Construction, and Improvements	
Appropriated Funds	291,841,340
Reimbursements	18,928
Research, Development, Test & Evaluation	
Appropriated Funds	931,718
Reimbursements	961,512
Deepwater Ports Liability Fund	7,935,328
Pollution Fund	20,995,863
Coast Guard General Gift Fund	141,629
Surcharge Collections, Sale of Commissary Stores	170,411
Coast Guard Supply Fund	468,010
Coast Guard Yard Fund	51,295,860
Offshore Oil Pollution Compensation Fund	2,049,672
National Recreational Boating Safety	250,000
TOTAL	<u>379,755,233</u>

² Unobligated balances remain available for obligation in fiscal year 1985 as follows:

Acquisition, Construction & Improvements	531,657,497
Research, Development, Test & Evaluation	4,388,922
Alteration of Bridges	3,712,289
Pollution Fund	21,822,501
Coast Guard General Gift Fund	155,936
Surcharge Collections, Sale of Commissary Stores	200,533
Coast Guard Supply Fund	439,972
Coast Guard Yard Fund	51,370,596
Offshore Oil Pollution Compensation Fund	2,750,507
Deepwater Ports Liability Fund	8,933,908
National Recreational Boating Safety	250,000
TOTAL	<u>625,682,661</u>

TABLE V. Hijacking Attempts on U.S. and Foreign Aircraft, Including General Aviation Aircraft, Calendar Years 1973-83.

<i>Aircraft Category</i>	<i>Year</i>										
	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
U.S.	2	7	12	4	6	13	13	22	8	10	19
Foreign	20	19	13	14	26	14	14	19	24	22	15
TOTAL	22	26	25	18	32	27	27	41	32	32	34

TABLE VI. U.S. Airline Accidents, Fatalities, Aircraft Hours Flown, and Accident Rates, Calendar Years 1973-83.¹

<i>Year</i>	<i>Accidents</i>			<i>Aircraft Hours Flown</i>	<i>Accident Rates²</i>	
	<i>Total</i>	<i>Fatal</i>	<i>Fatalities</i>		<i>Total</i>	<i>Fatal</i>
1973	36	8	221	5,898,575	0.610	0.136
1974	43	7	460	5,474,495	0.767	0.110
1975	31	2	122	5,422,665	0.572	0.037
1976	22	2	38	5,587,601	0.394	0.036
1977	21	3	78	5,800,843	0.362	0.052
1978	21	5	160	6,031,743	0.348	0.083
1979	24	4	351	6,700,322	0.358	0.060
1980	15	0	0	6,797,578	0.221	0.000
1981	25	4	4	6,571,288	0.380	0.061
1982	15	3	233	6,440,163	0.233	0.047
1983	22	4	15	6,649,009	0.331	0.060

¹ Includes accidents involving deregulated all cargo air carriers and commercial operators of large aircraft when those accidents occurred during scheduled operations.

² Per 100,000 aircraft hours flown.

NOTE: Beginning in 1981, the National Transportation Safety Board discontinued the practice of citing passenger fatality rates.

TABLE VII. U.S. Commuter Air Carrier Accidents, Fatalities, Aircraft Hours Flown, and Accident Rates, Calendar Years 1979-83.¹

<i>Year</i>	<i>Accidents</i>			<i>Aircraft Hours Flown</i>	<i>Accident Rates</i> ²	
	<i>Total</i>	<i>Fatal</i>	<i>Fatalities</i>		<i>Total</i>	<i>Fatal</i>
1979	52	14	66	1,169,921	4.44	1.28
1980	38	8	37	1,175,588	3.23	0.68
1981	31	9	34	1,240,764	2.50	0.73
1982	26	5	14	1,299,748	2.08	0.38
1983	18	2	11	1,510,908	1.19	0.13

¹ Includes accidents involving all-cargo air carriers when those accidents occurred during scheduled commuter operations. All-cargo air carriers no longer meet the CAB definition for "Commuters." May also include accidents involving carriers whose FAA operating specifications permit scheduled revenue operations, but who have not received a CAB fitness determination. Rates are based on all accidents including some involving operators not reporting traffic data to the CAB.

² Per 100,000 aircraft hours flown.

TABLE VIII. U.S. Air Taxi Accidents, Fatalities, Aircraft Hours Flown, and Accident Rates, Calendar Years 1979-83.

<i>Year</i>	<i>Accidents</i>			<i>Aircraft Hours Flown</i>	<i>Accident Rates</i> ¹	
	<i>Total</i>	<i>Fatal</i>	<i>Fatalities</i>		<i>Total</i>	<i>Fatal</i>
1979	160	30	77	3,684,321	4.34	0.81
1980	170	45	103	3,617,724	4.70	1.24
1981	157	40	94	2,895,827	5.42	1.38
1982	135	31	72	3,256,763	4.15	0.95
1983	140	27	62	2,574,883	5.44	1.05

¹ Per 100,000 aircraft hours flown.

TABLE IX. U.S. General Aviation Accidents, Fatalities, Aircraft Hours Flown, And Accident Rates, Calendar Years 1974-83.¹

Year	Accidents			Aircraft Hours Flown	Accident Rates ²	
	Total	Fatal	Fatalities		Total	Fatal
1974	4234	689	1327	27,773,500	15.2	2.47
1975	4001	636	1258	28,799,000	13.89	2.20
1976	4023	662	1226	30,476,000	13.19	2.17
1977	4083	663	1280	31,577,508	12.93	2.10
1978	4218	721	1558	34,887,178	12.08	2.06
1979	3825	638	1237	38,641,268	9.90	1.65
1980	3597	622	1252	36,401,663	9.88	1.71
1981	3502	654	1282	36,803,200	9.52	1.78
1982	3231	589	1182	32,094,623	10.07	1.84
1983	3075	555	1064	31,048,000	10.00	2.00

¹ All operations other than those operated by commuter air carrier and air taxi aircraft under 14 CFR 121 and 14 CFR 135.

² Per 100,000 aircraft hours flown.

NOTE:

1. Suicide and sabotage accidents excluded from rates as follows:

Total—1976-4, 1977-1, 1978-2, 1980-1, 1982-3, 1983-1,

Fatal—1976-1, 1977-1, 1978-2, 1980-1

2. Includes air carrier fatalities when in collision with General Aviation aircraft.

TABLE X. Federal-Aid Highway Obligations, Fiscal Years 1974-84.

(dollars in millions)

Funding Category	Year											TOTAL
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983 ⁴	1984 ⁴	
Interstate	2,901	4,015	2,616	3,298	3,191	4,442	3,380	3,926	3,659	6,061 ⁴	4,777	42,266
ABC ¹	516	425	194	46	17	7	—	—	—	—	—	—
Primary ²	620	1,266	725	1,174	1,320	1,440	1,605	1,752	1,489	2,052	2,365	15,808
Secondary ³	285	483	332	287	364	360	395	456	387	602	612	4,563
Urban	340	368	564	657	854	739	774	892	732	878	892	7,690
Bridge	38	181	116	196	171	611	770	983	979	1,389	1,512	6,946
Safety												
Construction	25	263	368	326	332	338	344	338	318	362	483	3,497
Emergency Relief	149	144	115	85	105	135	280	122	120	66	61	1,382
Other ^r	312	599	1,127	896	781	552	529	551	505	1,417	927	8,196
TOTAL ^r	5,186	7,744	6,157	6,965	7,135	8,624	8,077	8,975	8,189	12,825	11,629	91,506

¹ Prior to fiscal year 1975, ABC figures include primary, secondary, and urban funds. After fiscal year 1974, ABC figures include urban extension, primary, and secondary funds.

² Prior to fiscal year 1975, primary figures include rural primary and priority funds. After fiscal year 1974, primary figures include rural primary, priority primary, discretionary priority primary, and consolidated primary funds.

³ Secondary figures include only rural secondary funds.

⁴ Interstate includes Interstate construction and Interstate 4R.

^r Revised

**TABLE XI. Federal Highway Administration Motor Carrier Safety Inspection Activity,
Calendar Years 1975-83.**

<i>Year</i>	<i>Inspections Performed</i>	<i>Vehicles Taken Out of Service</i>	<i>Drivers Taken Out of Service</i>
1975	16,372	4,961	425
1976	16,907	5,574	456
1977	18,730	6,985	558
1978	25,695	9,978	597
1979	26,127	10,779	1,980
1980	29,110	9,600	3,000
1981	40,747	13,143	4,184
1982	35,825	11,489	3,160
1983	24,721	5,547	1,260

NOTE:

In 1982 and prior years, each defect found was reported as a separate vehicle when, in fact, some vehicles had more than one defect. Starting with 1983, only the actual number of vehicles taken out of service were counted.

TABLE XII. Summary of U.S. Train Accidents and Casualties, Calendar Years 1974-83.

Category	Year										% Change	
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1982-83	1975-83
Number of Train Accidents ¹												
Collisions	1,551	1,002	1,370	1,363	1,476	1,425	1,201	776	572	418	-26.92	-58.28
Derailments	8,513	6,328	7,934	8,075	8,763	7,482	6,442	4,366	3,383	3,004	-11.20	-52.53
Other	630	711	944	926	1,038	833	808	639	634	484	-23.66	-31.93
TOTAL TRAIN ACCIDENTS	10,694	8,041	10,248	10,362	11,277	9,740	8,451	5,781	4,589	3,906	-14.88	-51.42
Number of Casualties in Accidents of all Types												
Trespassers Killed	565	524	457	458	492	516	566	582	501	472	- 5.79	-9.92
Trespassers Injured	674	703	766	689	746	805	728	761	671	683	+1.79	-2.84
Passengers Killed	7	8	5	4	13	6	4	4	9	4	-55.56	-50.00
Passengers Injured	574	1,307	998	503	1,252	1,001	593	409	387	502	29.72	-61.59
Employees on Duty Killed	140	110	100	114	122	101	97	65	78	61	-21.79	-44.55
Employees on Duty Injured ²	15,620	47,318	57,889	61,028	65,071	66,924	56,331	47,838	36,032	30,416	-15.59	-35.72
All Other Persons Killed	1,196	918	1,068	954	1,019	806	750	633	531	536	- 0.94	-41.61
All Other Persons Injured	3,950	4,978	5,678	5,647	5,476	5,396	4,594	3,995	3,185	3,218	- 1.04	-35.36
TOTAL NUMBER OF PERSONS KILLED	1,908	1,560	1,630	1,530	1,646	1,429	1,417	1,284	1,119	1,073	- 4.11	-31.22
TOTAL NUMBER OF PERSONS INJURED ³	20,818	54,306	65,331	67,867	72,545	74,126	62,246	53,003	40,275	34,819	-13.55	-35.88

¹ Monetary reporting threshold prior to 1975 was \$750, in 1975 it was increased to \$1,750, in 1977 it was increased to \$2,300, 1979 to \$2,900, and 1981 to \$3,700.

² Includes lost time cases only prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements, including cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

³ Includes occupational illnesses.

TABLE XIII. Summary of Accidents and Casualties at Public Rail-Highway Crossings, Calendar Years 1974-83.

<i>Accidents¹ and Casualties²</i>	<i>Year</i>										<i>% Change</i>	
	<i>1974</i>	<i>1975</i>	<i>1976</i>	<i>1977</i>	<i>1978</i>	<i>1979</i>	<i>1980</i>	<i>1981</i>	<i>1982</i>	<i>1983</i>	<i>1982-83</i>	<i>1975-83</i>
<i>Accidents at Highway Grade</i>												
<i>Crossings Involving Motor Vehicles</i>												
Total Accidents	3,089	10,925	11,700	11,849	11,999	11,108	9,422	8,232	6,882	6,370	-7.44	-41.69
Number of Persons Killed	1,128	788	978	846	929	727	708	623	526	483	-8.17	-38.71
Number of Persons Injured	3,166	3,600	4,343	4,455	4,120	4,019	3,534	3,020	2,417	2,372	-1.86	-34.11
<i>Total Rail-Highway Grade Crossing Accidents and Resulting Casualties</i>												
Total Accidents	3,278	11,354	12,144	12,299	12,435	11,552	9,763	8,546	7,158	6,562	-8.33	-42.21
Number of Persons Killed	1,220	978	1,114	944	1,021	834	788	697	580	542	-6.55	-44.58
Number of Persons Injured	3,260	4,168	4,831	4,649	4,256	4,172	3,662	3,121	2,508	2,467	-1.63	-40.81
<i>Railroad Casualties</i>												
<i>Passengers on Trains</i>												
Number of Persons Killed	0	1	0	0	0	0	0	0	0	0	—	-100.00
Number of Persons Injured	18	96	57	25	18	2	24	4	1	45	4,400.00	-53.13
<i>Employees on Duty</i>												
Number of Persons Killed	3	5	5	11	2	7	0	1	3	1	-66.67	-80.00
Number of Persons Injured	102	117	195	202	180	160	122	110	116	99	-14.66	-15.38
<i>Total Railroad Casualties</i>												
Number of Persons Killed	3	6	5	11	2	7	0	1	3	1	-66.67	-83.33
Number of Persons Injured	120	213	252	227	198	162	146	114	117	11	23.08	-32.39

¹ All impacts between on-track equipment and highway users were reported beginning in 1975. Prior to 1975, such impacts were reported only if they resulted in a reportable casualty or in \$750 in damages to railroad on-track equipment, signals, track, track structures, or roadbed.

² Include lost time cases only prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements—including cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

TABLE XIV. Amtrak Passengers, Passenger Miles, Daily Train Miles, Revenues, Costs, Deficit and Ratios, Fiscal Years 1974-84.

Category	Year											%Change	
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1983-84	1974-84
Passengers (millions)	16.7	15.8	16.9	19.2	18.9	21.4	21.2	20.2	19.0	19.0	19.9	+4.74	+19.16
Passenger Miles (billions) . . .	4.4	3.7	3.8	4.3	4.0	4.9	4.6	4.8	4.2	4.2	4.6	+9.52	+ 4.55
Daily Train Miles (thousands)	77.0	80.8	85.7	86.7	86.4	86.5	81.1	84.1	78.5	79.8	79.4	- 0.50	+ 3.12
Operating Revenue (\$ millions)	240.1	246.5	277.8	311.2	313.0	381.3	436.8	612.2	630.7	664.4	758.8	+14.21	+216.03
Corporate Costs (\$ millions)	24.9	35.6	56.4	56.8	60.2	45.3	50.5	84.1	145.2	120.0	36.9	-69.25	+48.19
Operating Costs (\$ millions)	413.2	524.2	665.8	784.2	830.1	952.8	1,102.8	1,252.5	1,280.6	1,349.4	1,485.2	+10.06	+259.44
Total Costs (\$ millions)	438.1	559.8	715.5	842.4	890.3	998.1	1,153.3	1,336.6	1,425.8	1,469.4	1,522.1	+ 3.59	+247.43
Deficit ¹ (\$ millions)	195.9	313.3	437.7	531.2	577.3	616.8	716.5	724.4	795.1	804.9	763.3	- 5.17	+289.64
Revenue/Costs Ratio ²	0.563	0.456	0.405	0.386	0.365	0.415	0.431	0.421	.50	.54	.56	+3.70	- 0.53

¹ Deficit before federal operating payments, but after state subsidies.

² Interest and depreciation removed from Total Costs before calculating the ratio.

TABLE XV. Summary of U.S. Motor Vehicle Activities and Fatalities, Calendar Years 1973-83.

Year	Licensed Drivers (millions)	Registered Motor Vehicles (millions)	Vehicle Miles Traveled (billions)	Traffic Fatalities ¹	Fatality Rate ²
1973	121.6	130.0	1,313	54,052	4.12
1974	125.6	134.9	1,281	45,196	3.53
1975	129.8	137.9	1,328	44,525	3.35
1976	134.0	143.5	1,402	45,523	3.25
1977	138.1	147.3	1,467	47,878	3.26
1978	140.8	153.6	1,545	50,331	3.26
1979	143.3	157.3	1,529	51,093	3.34
1980	145.3	161.6	1,528	51,091	3.34
1981	147.1	164.1	1,556	49,301	3.17
1982	150.3	165.2	1,592	43,945	2.76
1983	154.2	169.4	1,658	42,589	2.57
% Change 1973-83	+26.8	+30.3	+26.3	-21.2	-37.6
% Change 1982-83	+ 2.6	+ 2.5	+ 4.1	- 3.1	- 6.9

¹ Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

² Fatalities per 100 million vehicle miles.

TABLE XVI. Summary of U.S. Monthly Traffic Fatalities, Motor Vehicle Mileage, and Fatality Rates, Calendar Years 1978-83.

Category and Year	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nor	Dec
Fatalities ¹												
1978	2,733	2,657	3,511	3,950	4,384	4,633	4,999	4,998	4,782	4,795	4,385	4,504
1979	3,075	3,116	4,072	4,123	4,376	4,505	4,663	4,706	4,698	4,665	4,373	4,721
1980	3,432	3,271	3,645	3,731	4,482	4,935	4,848	5,401	4,498	4,350	4,257	4,241
1981	3,579	3,383	3,654	3,959	4,210	4,343	4,815	4,924	4,252	4,258	3,966	3,958
1982	2,888	2,768	3,305	3,523	3,886	3,826	4,293	4,220	3,947	4,094	3,520	3,675
1983	2,875	2,695	3,079	3,257	3,669	3,703	4,146	4,155	3,987	3,970	3,552	3,501
% Change 1978-83	+ 5.2	+ 1.4	-12.3	-17.5	-16.3	-20.1	-17.1	-16.9	-16.6	-17.2	-19.0	-22.3
% Change 1982-83	- 0.5	- 2.6	- 6.8	- 7.6	- 5.6	- 3.2	- 3.4	- 1.5	+ 1.0	- 3.0	+ 0.9	- 4.7
Mileage ²												
1978	109.6	106.8	124.8	122.5	134.1	138.6	147.9	149.1	131.1	132.6	123.4	124.3
1979	114.4	109.7	131.4	125.9	132.4	131.2	134.9	139.9	127.6	131.6	123.4	123.2
1980	117.0	107.8	125.8	126.3	131.9	132.3	136.9	139.3	128.1	133.2	124.0	125.4
1981	116.5	110.2	128.3	129.0	134.8	136.1	141.8	144.0	131.7	133.7	125.3	124.9
1982	109.8	107.5	128.2	129.8	140.3	142.1	152.2	153.3	136.3	138.8	127.1	127.1
1983	119.4	111.8	132.8	132.7	143.6	146.7	156.8	157.7	139.9	144.0	133.7	129.8
% Change 1978-83	+ 8.9	+ 4.7	+ 6.4	+ 8.3	+ 7.1	+ 5.8	+ 6.0	+ 5.8	+ 6.7	+ 8.6	+ 8.3	+ 4.4
% Change 1982-83	+ 8.7	+ 4.0	+ 3.6	+ 2.2	+ 2.4	+ 3.2	+ 3.0	+ 2.9	+ 2.6	+ 3.7	+ 5.2	+ 2.1
Fatality Rate ³												
1978	2.49	2.49	2.81	3.23	3.27	3.34	3.38	3.35	3.65	3.62	3.55	3.62
1979	2.69	2.84	3.10	3.27	3.31	3.43	3.46	3.36	3.68	3.54	3.54	3.83
1980	2.93	3.03	2.90	2.95	3.40	3.73	3.54	3.88	3.51	3.27	3.43	3.38
1981	3.07	3.07	2.85	3.07	3.12	3.19	3.40	3.42	3.23	3.18	3.17	3.17
1982	2.63	2.57	2.58	2.71	2.77	2.69	2.82	2.75	2.90	2.95	2.77	2.89
1983	2.41	2.41	2.32	2.45	2.56	2.52	2.64	2.64	2.85	2.76	2.66	2.70
% Change 1978-83	- 3.2	- 3.2	-17.4	-24.1	-21.7	-24.6	-21.9	-21.2	-21.9	-23.8	-25.1	-25.4
% Change 1982-83	- 8.4	- 6.2	-10.1	- 9.6	- 7.6	- 6.3	- 6.4	- 4.0	- 1.7	- 6.4	- 4.0	- 6.6

¹ Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

² Billions of vehicle miles.

³ Fatalities per 100 million vehicle miles.

Sources: Vehicle Mileage—Highway Statistics Division, FHWA. Mileage is based on estimates from automatic traffic recorder data supplied to FHWA. Fatalities—Fatal Accident Reporting System, NHTSA.

TABLE XVII. Summary of Reported Gas Pipeline Failures and Casualties, Calendar Years 1973-83.

<i>Year</i> ¹	<i>Distribution Lines</i>			<i>Transmission and Gathering Lines</i>			<i>Totals</i>		
	<i>Failures</i>	<i>Fatalities</i>	<i>Injuries</i>	<i>Failures</i>	<i>Fatalities</i>	<i>Injuries</i>	<i>Failures</i>	<i>Fatalities</i>	<i>Injuries</i>
1973	893	33	333	471	2	19	1,364	35	352
1974 ¹	1,017	20	314	460	4	20	1,477	24	334
1975	979	8	220	394	6	17	1,373	14	237
1976	1,036	53	319	543	10	47	1,579	63	366
1977	1,530	29	420	466	7	30	1,996	36	450
1978	1,555	20	320	533	11	86	2,088	31	406
1979	1,520	33	313	450	12	93	1,970	45	406
1980	1,467	9	269	529	2	41	1,996	11	310
1981	1,128	10	73	495	6	6	1,623	16	79
1982	1,189	20	222	520	10	41	1,709	30	263
1983	1,127	10	220	453	2	25	1,580	12	245
<i>% Change</i>									
1973-83	+26	-70	-34	-4	0	+32	+16	-66	-30
<i>% Change</i>									
1982-83	-5	-50	-1	-13	-80	-39	-8	-60	-7

¹ Figures for years after 1973 include information from telephone reports which were not included in 1972 and 1973 figures.

TABLE XVIII. Summary of Reported Liquid Pipeline Accidents and Casualties, Calendar Years 1973-83.

<i>Year</i>	<i>Accidents</i>	<i>Fatalities</i>	<i>Injuries</i>	<i>Commodity Loss (Barrels)</i>
1973	273	7	8	379,365
1974	256	10	11	293,643
1975	255	7	15	319,423
1976	209	5	5	255,037
1977	238	3	19	228,429
1978	256	3	10	280,794
1979	251	4	13	548,669
1980	219	3	12	289,445
1981	239	5	32	214,384
1982	200	0	6	221,411
1983	161	6	9	384,670

TABLE XIX. Hazardous Materials Incidents, by Mode, Calendar Years 1973–83.

<i>Year</i>	<i>Air</i>	<i>Highway</i>	<i>Railway</i>	<i>Water</i>	<i>Other</i>	<i>Total</i>
1973	49	5,467	409	12	65	6,002
1974	157	7,612	616	26	17	8,428
1975	152	9,891	676	32	18	10,769
1976	90	10,772	982	13	32	11,889
1977	130	14,250	1,500	50	20	15,950
1978	231	16,548	1,191	47	5	18,022
1979	284	15,978	1,215	34	13	17,524
1980	233	14,484	1,327	42	29	16,115
1981	160	7,704	1,131	7	58	9,060
1982	97	5,647	831	9	3	6,587
1983	67	4,879	996	12	2	5,828

TABLE XX. Hazardous Materials Casualties (Deaths and Injuries), by Mode, Calendar Years 1973–83.

<i>Year</i>	<i>Air</i>	<i>Highway</i>	<i>Railway</i>	<i>Water</i>	<i>Other</i>	<i>Total</i>
1973	6	353	155	3	13	530
1974	9	299	606	17	4	935
1975	4	514	96	2	66	682
1976	4	633	200	1	0	838
1977	9	738	234	0	0	781
1978	43	614	508	10	1	1,176
1979	13	715	228	1	2	959
1980	8	495	131	1	3	638
1981	7	424	221	0	18	670
1982	0	105	36	1	0	142
1983	3	126	68	0	0	197

TABLE XXI. Selected Maritime Data, Fiscal Years 1981—84.

<i>Activity</i>	<i>1981</i>	<i>1982</i>	<i>1983</i>	<i>1984</i>
Construction Differential Subsidies				
Number of new ships contracted for	3	0	0	0
Total ships under construction	31	12	1	1
Total expenditures (millions of dollars)	208.1	185.0	35.5	13.7
Operating Differential Subsidies ¹				
Companies with long-term contracts	22	23	24	23
Ships covered	163	168	164	136
Total subsidy paid (millions of dollars)	334.6	400	368.2	384.3
Ship Financing Guarantees ²				
Vessels Covered	3,313	4,358	4,373	4060.0
Shipboard lighters covered	2,118	2,118	2,118	1,975
Principal covered by guarantees (millions of dollars)	7,935.6	8,123.6	6,491	7,303.2
Government Owned Ships In The National Defense				
Reserve Fleet	317	303	304	386
U.S.-Flag Oceanborne Trade				
Long tons carried in U.S.-flag ships (millions of tons)	34.2	31.1	36.7	29.4
Percent of foreign trade carried in U.S.-flag ships	4.5	4.6	5.8	4.3

¹ Calendar year basis.

² Includes prior year activities.

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