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PART I



Fiscal Year 1967

DEPARTMENT OF TRANSPORTATION

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FIRST ANNUAL REPORT

Part I—The Department

Fiscal Year 1967



U.S. DEPARTMENT OF TRANSPORTATION

Washington, D.C.

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DEPARTMENT OF TRANSPORTATION

Washington, D.C. 20590

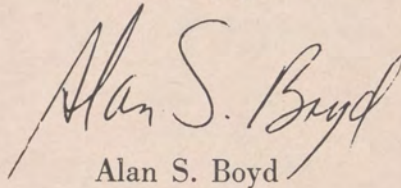
November 26, 1968

The President
The White House
Washington, D.C. 20501

Dear Mr. President:

This is Part I of my report on the activities of the Department of Transportation during Fiscal Year 1967, as required by Section 11 of the Department of Transportation Act. Part II containing additional information about the activities of the Federal Aviation Administration will be sent to you soon.

Faithfully yours,

A handwritten signature in dark ink, reading "Alan S. Boyd". The signature is written in a cursive style with a large, sweeping initial "A".

Alan S. Boyd

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FOREWORD

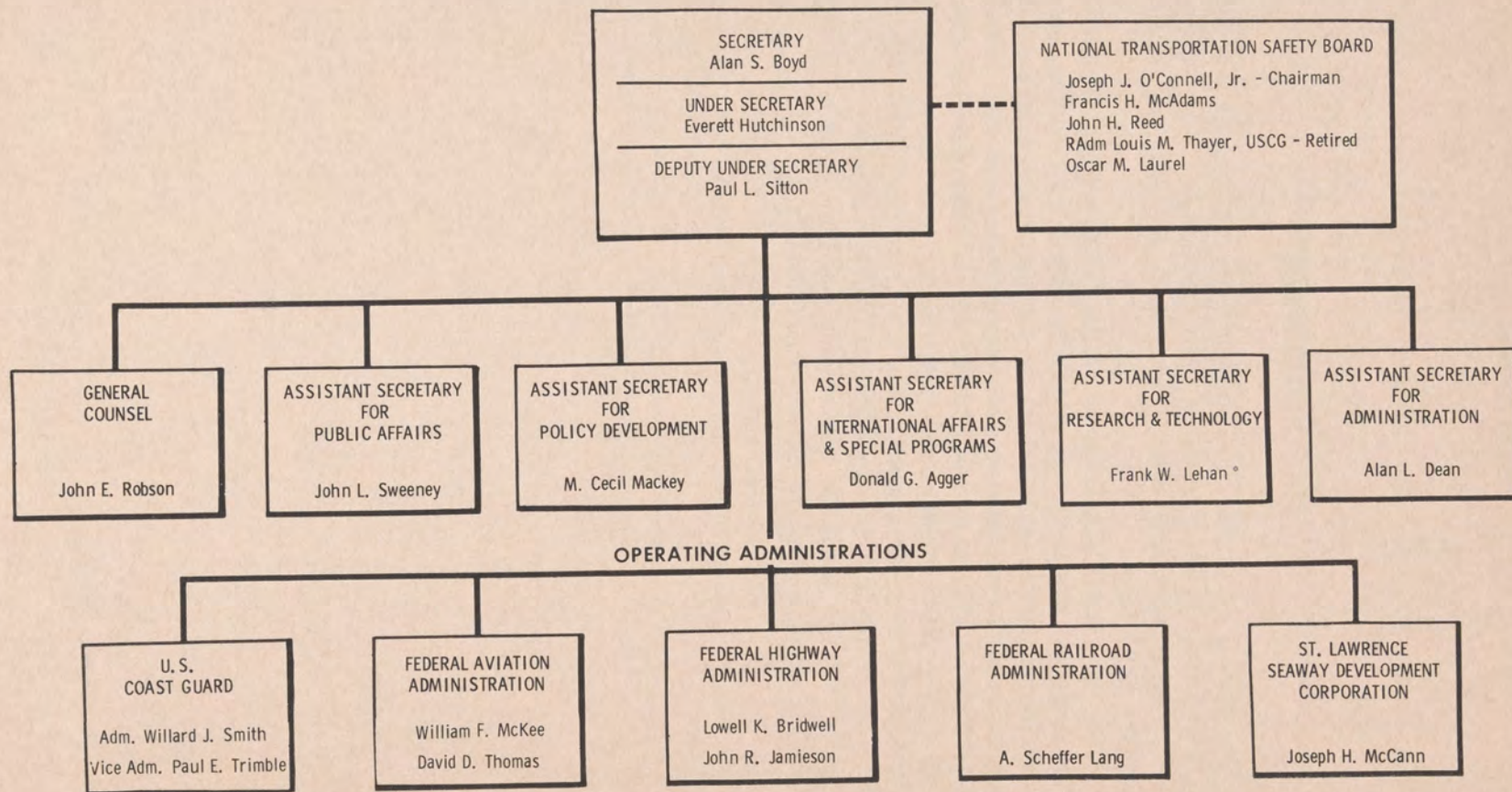
On October 15, 1966, the President signed Public Law 89-670, creating a Department of Transportation. On January 5, 1967, the first Secretary of Transportation took office. On April 1, 1967, the Department was officially activated.

This, the First Annual Report of the Secretary of Transportation to the President and the Congress, covers the fiscal year ending June 30, 1967. It therefore touches only briefly on the first three months of the new Department of Transportation—its organization and the initial efforts to implement its policies and programs. Most of the operating administrations now under the Secretary of Transportation were, however, transferred in active status from other arms of the Executive Branch and the report covers their operations and accomplishments for the entire fiscal year. Under the terms of the Act, the newly created National Transportation Safety Board, although within the Department, reports separately.

ORGANIZATION DEPARTMENT OF TRANSPORTATION

JUNE 30, 1967

111A



* Appointed December 18, 1967

Chapter I

THE NEW DEPARTMENT

Introduction

The vitality of this nation—its productivity, progress, and protection—rests in large measure upon its national transportation system.

Any breakdown in any part of the transportation process has immediate effects, even thousands of miles away. Such a failure may have only a minor effect—the inconvenience of a missed flight, or of misrouted baggage. Or it may have an almost catastrophic effect; witness the acute shortages generated by a rail stoppage or shipping strike.

In either case, the importance of the nation's transportation system is evident in virtually all aspects of public and private endeavor.

In the United States this complex industry accounts for nearly one-fifth of the \$800 billion gross national product. One out of seven working Americans is involved in transportation-related activities.

Our transportation system contributes more than \$47 billion annually in Federal and State taxes. It provides employment for more than 9 million workers.

And it is the only major transportation system in the world operated by private entrepreneurs rather than under government ownership.

Highly developed and diversified, it has served the public interest well, helping this nation prosper through efficient utilization of manpower and resources.

State of National Transportation

Yet, as a result of its sporadic growth, characterized by development and expansion of first one kind of transportation and then another, without overall direction, the system is out of balance. Segments of the system have often increased man's mobility at the expense of his environment.

Too often, it fails to provide either convenience or efficiency in the movement of travelers or goods from one means of transportation to another.

The transportation system is beset by problems brought about by explosive growth and untamed technology.

Too often, it is unsafe. More lives have been lost on our highways than in all the wars this Nation has fought.

Today, there are 95 million motor vehicles in the U.S.; by 1990 there will be at least 156 million cars, trucks and buses on America's streets and highways. The Federal Highway Administration estimates that it will take nearly \$31 billion each year between 1973 and 1985 to build and maintain highways to keep those vehicles rolling.

Commercial air travel will nearly triple by the mid-1970's, with nearly a million passengers a *day* boarding planes. It is estimated that \$3 billion will be needed for airport construction to accommodate the traffic flow by 1972.

General aviation aircraft in use will jump from the present 100,000 to 175,000.

In 1966, the railroads hauled some 750 billion ton-miles of freight. By 1975, this figure will exceed a trillion ton-miles.

Our motor carriers moved 400 billion ton-miles of freight in 1966. This figure will exceed 600 billion by 1975.

For oil pipelines, inland water carriers, and air cargo carriers, the story is much the same: enormous projected increases in volume of freight transportation.

Similarly, international transportation requirements are climbing steeply. Sea and air cargo movements to and from the United States are likely to double within 10 years.

And all of this growth must take place in a time of dynamic change which finds the population of the Nation not only growing but shifting.

By 1975 our population of 200 million will expand to 230 million, with more than 75 percent concentrated in urban areas—including half located in three-corridor metropolitan complexes. This increasing urbanization will further compound our difficulties in attempting to meet transportation needs of our urban areas and at the same time protect our cities.

Responsibilities of the Department

In creating the Department of Transportation, President Johnson and the Congress, recognizing these problems, made it clear that this country can no longer tolerate haphazard growth of land, sea and air transport.

The new Department reflects an overwhelming national consensus that transportation must be treated as a single resource, vital to the economic, social and political health of the Nation and to its defense.

The new Department, at the same time, is charged with the major endeavor of improving safety in transportation—a responsibility reflected in virtually every one of its activities or programs.

Congress, in Public Law 89-670, spelled it out this way:

"The general welfare, the economic growth and stability of the Nation and its security require the development of national transportation policies and programs conducive to the provision of fast, safe, efficient and convenient transportation at the lowest cost consistent therewith and with other national objectives, including the efficient utilization and conservation of the Nation's resources."

Responsibilities of the new Department, set out in the enabling legislation, include:

- To assure the coordinated, effective administration of the transportation programs of the Federal Government;

- To facilitate the development and improvement of coordinated transportation service, to be provided by private enterprise to the maximum extent feasible;
- To encourage cooperation of Federal, State and local governments, carriers, labor, and other interested parties toward the achievement of national transportation objectives;
- To stimulate technological advances in transportation;
- To provide general leadership in the identification and solution of transportation problems;
- To develop and recommend to the President and the Congress for approval national transportation policies and programs to accomplish these objectives with full and appropriate consideration of the needs of the public, users, carriers, industry, labor and the national defense.

All programs must give due attention to preservation of natural beauty.

A singular responsibility, transferred from the Interstate Commerce Commission, is to administer the Uniform Time Act of 1966, fostering and promoting the adoption and observance of uniform time within and throughout the various time zones. The Department works in close cooperation with all the States in an effort to resolve the problems that arise relative to new boundaries and to adjustment to the time change.

With the passage of the Transportation Act of 1966, a variety of people and agencies within the Government were brought together to get the new Department underway.

Putting Together A New Department

On April 1, 1967 members of Congress, officials of the Department of Transportation and the Smithsonian Institution, representatives of the transportation industry and many thousands of interested citizens turned out on the Capital Mall at Washington, D.C. for a day-long series of events observing the first official day of existence for the Department of Transportation.

This "Opening Day" celebration came five and a half months after President Johnson, on October 15, signed the Act creating the new department.

In this relatively short time the Nation's twelfth Cabinet-level department had been put together.

It brought under one administrative roof more than 30 transportation agencies or functions previously scattered throughout government (see organization chart, page 9); some 95,000 employees, the great majority of them in the then Federal Aviation Agency and the Coast Guard; field forces operating at some 3,000 locations in the United States and in 40 foreign countries; and a combined annual budget approaching \$6 billion, of which approximately \$4 billion was derived from the Highway Trust Fund.

Reasonable timing provisions in the enabling Act and the diligent efforts of two special task forces during the formative period permitted most of the key officers of the Department to be selected, appointed and on duty when the Department was officially activated.



Department of Transportation opening day ceremonies, Washington, D.C.
the old . . .



and the new.

Soon after signing the Transportation Act, President Johnson, on November 6, 1966, announced his intention to appoint then Under Secretary of Commerce for Transportation Alan S. Boyd as Secretary of the new Department.

On January 6, 1967, the President, with consent of the Senate, installed Mr. Boyd as the twelfth member of his Cabinet. The new Secretary brought to the Department a wide and varied legal, governmental, and transportation background.

A native of Florida, he had served successively in Florida State government as counsel to the Turnpike Authority and Chairman of the State Railroad and Public Utilities Commission. In 1959 he was appointed to the Federal Civil Aeronautics Board. He left the CAB in 1965 to accept appointment by President Johnson as Under Secretary of Commerce for Transportation.

The President appointed Everett Hutchinson of Texas as Under Secretary of Transportation. A lawyer, Hutchinson served in the Texas Legislature, was Assistant Attorney General of Texas, and in 1955 was named to the Interstate Commerce Commission where he served 10 years. At the time of his appointment to DOT, he was President of the National Association of Motor Bus Owners.

In addition to the Office of the Secretary, the new Department comprises five operating divisions:

- The United States Coast Guard, transferred from the Treasury Department.
- The Federal Aviation Administration, previously the independent Federal Aviation Agency.
- The Federal Highway Administration, including the Bureau of Public Roads, formerly in the Commerce Department; the National Highway Safety Bureau, and the Bureau of Motor Carrier Safety.
- The Federal Railroad Administration, consisting of the Bureau of Railroad Safety, the Alaska Railroad and the Office of High-Speed Ground Transportation.
- The Saint Lawrence Seaway Development Corporation, transferred from Commerce Department supervision.

The new National Transportation Safety Board is in the Department but independent of the Secretary in substantive matters. Safety functions of most of the transportation regulatory agencies were transferred to the NTSB.

The Transportation Act provides for Presidential appointment of four Assistant Secretaries of Transportation and the General Counsel; the Commandant of the Coast Guard, and the Aviation, Highway, Railroad, and Seaway Administrators.

A fifth Assistant Secretary of Transportation for Administration is appointed by the Secretary with the President's approval.

The top level managerial team put together in the early months of departmental organization included:

Office of the Secretary

Assistant Secretary for Policy Development, M. Cecil Mackey, of Alabama. He is responsible for economic analyses, overall policy review, systems analyses, planning, program review, and gathering of transportation statistics.

Assistant Secretary for Public Affairs, John L. Sweeney, of Michigan. He is responsible for congressional affairs, public information, industry and labor liaison, resource conservation, equal opportunity and relations with other Federal agencies and with State and local governmental units.

Assistant Secretary for International Affairs and Special Programs, Donald G. Agger, of Maryland. He is responsible for international industrial cooperation, facilitation, international transportation, emergency transportation planning, telecommunications, and technical assistance.

Assistant Secretary for Research and Technology, Frank W. Lehan,¹ of California. He is responsible for research and development generally, safeguarding the handling of hazardous material, noise abatement and transportation information planning.

Assistant Secretary for Administration, Alan L. Dean, of Virginia. He is responsible for personnel and training, management systems, the Department's budget, audit, investigations and security, logistics and procurement policy, and general administrative operations.

General Counsel, John E. Robson, of Illinois. He is the Secretary's advisor on all legal matters affecting the Department.

The Administrations

Federal Aviation Administration, William F. McKee, of Virginia, Administrator. The FAA is responsible for implementing the Department's aviation programs. These responsibilities for air safety and efficiency begin at the drawing board when aircraft are being designed and continue to the men who dispatch the aircraft from airports, the pilots who fly them, the mechanics who maintain them and the specialists who control them in flight.

Federal Highway Administration, Lowell K. Bridwell, of Ohio, Administrator. The FHWA is responsible for the Federal-Aid Highway Program, the National Traffic and Motor Vehicle Safety Program and the National Highway Safety Program. These responsibilities represent an interest in automobile and commercial vehicle safety that ranges from driver education to vehicle design to highway improvement. Within this Administration is the important Bureau of Public Roads, which administers all Federal-aid highway programs, including the 41,000-mile Interstate Highway system now about 60 percent complete.

Federal Railroad Administration, A. Scheffer Lang, of Minnesota, Administrator. This Administration has responsibility for three basic pro-

¹Appointed December 18, 1967.

grams—operation of the government-owned Alaska Railroad, railroad and pipeline safety and the Office of High-Speed Ground Transportation. The latter program includes high-speed rail passenger demonstration projects.

Coast Guard, Admiral Willard J. Smith, of Michigan, Commandant. The Coast Guard enforces or assists in enforcing Federal laws on ships or waters subject to the jurisdiction of the United States. Other duties include providing search and rescue services, ice-breaking, maintaining ocean stations for meteorological and oceanographic studies, and administering a merchant marine safety program. In time of war, the Coast Guard operates as part of the Navy. The Great Lakes Pilotage Administration, located within the Coast Guard, regulates pilotage on the Great Lakes.

St. Lawrence Seaway Development Corporation, Joseph H. McCann, of Michigan, Administrator. The corporation is responsible for controlling and operating the St. Lawrence Seaway in cooperation with Canada.

National Transportation Safety Board

National Transportation Safety Board, Joseph H. O'Connell, Jr., of Maryland (Chairman); Oscar M. Laurel of Texas; Francis H. McAdams, of the District of Columbia; John H. Reed, of Maine; and Louis M. Thayer, of Florida. Appointed for 5-year terms, the board members are charged with investigating and determining the cause of aircraft, railway, highway and pipeline accidents and with drafting recommendations for the promotion of transportation safety.

Organizational Concepts

Getting the Department of Transportation running in an orderly and smooth manner was a major task in the final 3 months of fiscal year 1967.

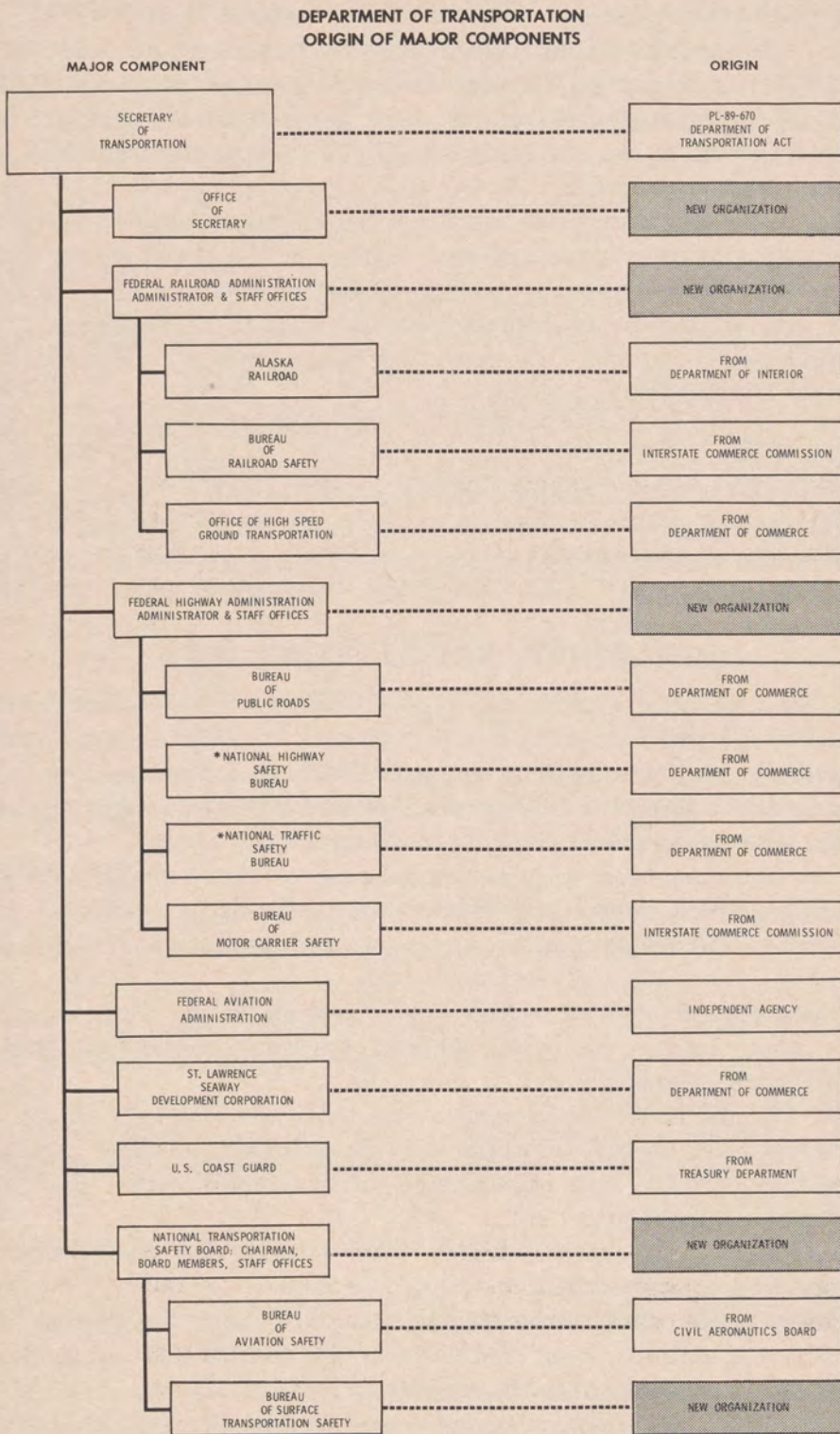
One of the first actions was a departmental order assigning appropriate responsibilities and authority to the heads of the operating Administrations. Thus, programs and services previously inaugurated were continued without interruption.

The central management concept of the Department is that its operating functions will be performed by the Administrations, organized by mode, and headed by officials reporting directly to the Secretary.

The Office of the Secretary is expected to focus its attention, insofar as practicable, on matters of policy, program and management that require Secretarial leadership and a Department-wide perspective, or those that must be pursued on an intermodal basis.

The Department is, therefore, highly decentralized; the great bulk of line authority and program responsibility is exercised by the various Administrators under delegations from the Secretary.

The Assistant Secretaries and the General Counsel are primarily staff officers to the Secretary rather than links in the chain of command. Each Assistant Secretary has a functional assignment through which he assists the Secretary in matters of Department-wide scope but does not exercise line control over the operating administrations. This arrangement is similar



* Combined June 6, 1967 into the National Highway Safety Bureau

to the approach taken by the Defense Department and differs markedly from systems in which Assistant Secretaries function as supervisors or coordinators of line bureaus.

The Department's obligations divide themselves generally as follows:

- At the intermodal level, to sponsor analysis, planning, and action with respect to such matters as coordinated long-range programing and financing, integrated area project plans, facilitation of commerce between transport modes and media, and regulation in the transshipment of hazardous materials.
- At the national, and where pertinent international, level to provide leadership and coordination in such matters as the development, gathering, and dissemination of transportation information; the development and utilization of technological advances; the formulation of comprehensive national transportation plans and of proposals for national transportation policies.
- At the operating level, to continue the established services of the various components of the Federal Railroad Administration, the Federal Highway Administration, the Federal Aviation Administration, the St. Lawrence Seaway Development Corporation, and the United States Coast Guard and to expand or limit these services as necessary in the public interest.

HIGHLIGHTS, FISCAL YEAR 1967

During the first three months major policy efforts of the Department of Transportation centered on measures to improve safety and better relate transportation to the total environment, particularly in urban areas.

At the legislative level, the Department pushed for passage of gas pipeline safety, noise abatement, and highway beautification bills.

Safety is and has been a principal mission of the Federal Aviation Administration which guides and protects the traffic of our airways; and of the Coast Guard which patrols our coasts and protects our vessels on the high seas.

With passage of the Motor Vehicle and Highway Safety Acts, the promotion of safety on our highways assumed greatly increased importance in terms of Federal responsibility.

The first Federal motor vehicle safety standards affecting such things as braking, safety belts, energy absorbing steering columns, and crash padding were issued in January and promulgated in final form in the first few weeks of the new Department.

In anticipation, auto makers already were incorporating many of the safety features on current models.

In addition to the effort toward safer autos and safer "packaging" of auto-passengers, the Department also has vital concern in the improvement of highway safety programs at the State levels.

To carry out the Congressional mandate of the Highway Safety Act, the Department on June 27, 1967, issued the first 13 national highway safety standards.

Under the Act, Federal funds are available to help the States improve their traffic and highway safety programs in accordance with national standards issued by the Department.

The 13 standards range from periodic re-examination of drivers and vehicles to programs for improvement of traffic control devices.

The standards reflected extensive consultation between the Department, the States, local communities, interested organizations and individuals, and the National Highway Safety Advisory Committee.

During this period the Department, through the Federal Highway Administration, also instituted a program to eliminate high-accident locations on existing highways.

A national survey indicated that some 20,619 such locations, including many railroad grade crossings, could be corrected for about \$2.1 billion.

Congress, reflecting the growing concern over the impact of highway construction upon the communities of our Nation, wrote into the Department of Transportation Act a requirement for consideration of environmental factors in decisions affecting route location of Federally aided highways.

The Department took early action to implement this mandate, proposing a fresh approach to highway construction, particularly in and around our cities, the scene of major freeway problems.

Secretary Boyd made clear his belief that highways or freeways must be "an integral part of the community, not a cement barrier or concrete river which threatens to inundate an urban area."

On June 3, 1967 the Secretary announced establishment of "a central point in the Department for development of a new urban transportation program which will give primary consideration to the total needs of the city rather than to its purely transportation needs or any single aspect of these needs."

This was followed by a policy decision to authorize Federal highways funds for use in forming design concept teams to help solve problems delaying construction of urban segments of the Interstate system.

Failure to resolve urban highway routes has resulted in years of delay, costing millions of dollars, in many of the Nation's most important cities.

The design concept team brings into the initial planning process all affected elements of the community—traffic and safety engineers, architects, city planners, sociologists, economists, and interested citizens.

Under this team approach, the total needs of the community, rather than economy alone, will be taken into consideration.

As fiscal year 1967 ended, the Department was preparing to help finance such planning teams in Baltimore, Chicago and other cities where freeway revolts had resulted in near stalemate.

While the official structure of the Department had existed only 3 months at the end of the fiscal year, most of the modal agencies had been in operation during the entire fiscal year. There follows a summary of their activities, together with a detailed report of each Administration.

United States Coast Guard

The Coast Guard operated twenty-six 82-foot patrol boats in Vietnamese waters to support the Navy in its effort to prevent infiltration of men and materiel to Viet Cong forces in South Vietnam; also assigned five of its large high-endurance cutters and numerous specialized personnel to Vietnam.

Its Automated Merchant Vessel Report System (AMVER) was expanded in both the Atlantic and Pacific oceans; over 2,200 lists of surface positions were furnished for emergency use. Several classes were trained in the new Search and Rescue School at Governor's Island. Assistance was provided to 2,984 vessels and 740 aircraft, and 3,028 lives were saved through Coast Guard efforts.

Some 30,100 vessels were inspected and approvals were granted for more than 34,000 vessel plans. Investigations were conducted in more than 4,800 cases of casualties relating to vessels.

Constant attention was directed to continued enforcement of laws concerning fishing, conservation, neutrality, navigation, and related matters, with enforcement usually conducted by patrols of either surface or air units. Increased time and effort were devoted to oceanography, for which some vessels are equipped as floating laboratories.

The Coast Guard completed two new Loran A stations and took delivery of extensive additions to its fleet, including three cutters and numerous smaller craft.

In a stepped-up training effort, 98 Ensigns were commissioned from the Coast Guard Academy and 421 candidates were graduated from the Officer Candidate Schools. Thousands of enlisted men completed a variety of in-service training courses. At the close of the fiscal year, the Coast Guard included almost 4,000 officers and about 31,000 enlisted men.

Federal Aviation Administration

Aircraft activity both at airport traffic control towers (ATCT's) and at air route traffic control centers (ARTCC's) operated by FAA set new records. At ATCT's, aircraft operations (landings and takeoffs) numbered 47.9 million, up 16 percent from 41.2 million in fiscal year 1966; at the ARTCC's, they numbered 15,067,727, up 11 percent from 13,534,883 in fiscal year 1966.

For general aviation, accident and fatality rates did not change significantly. For the air carriers, however, they were lower in calendar year 1966 than for any other year since 1954; 0.045 accidents per million miles flown, 0.004 fatal accidents per million miles flown, and 0.16 passenger fatalities per hundred million passenger-miles.

To increase the likelihood of occupant survival after a transport airplane crash, FAA issued a notice of proposed rule-making in fiscal year 1967 involving several amendments to the Federal Aviation Regulations. Carrying forward a process begun in fiscal year 1966 as a result of accident investigations, the proposed FAR amendments called for new operating

procedures and new standards for transport aircraft in key areas affecting crashworthiness and emergency evacuation.

To effect earliest possible relief of the air traffic control overload at New York, the most advanced equipment and procedures immediately available are being installed. Such equipment and procedures came from prototype configurations of the National Airspace System (NAS) air traffic control subsystem that were recently tested at Indianapolis and Atlanta (the SPAN and ARTS tests of previous FAA annual reports). The interim en route, or center, configuration was commissioned at the New York ARTCC in February 1967 and placed in limited operation. Problems with this configuration were being worked on at year's end. As for the terminal configuration, installation was completed during the fiscal year, and at year's end it was undergoing operational tests.

NAS En Route Stage A is the sophisticated configuration of equipment and procedures for ARTCC's—more advanced than the SPAN version being utilized at the New York center. During fiscal year 1967, assembly of the first operational field model was completed at FAA's Jacksonville (Fla.) ARTCC, and testing of major components was begun.

Progress on the TRACON (Terminal Radar Approach Control) configurations, the advanced equipment and procedures for terminals, included: for the TRACON M (the most sophisticated configuration, designed for high-density metropolitan areas), completion of a system description and an operational specification, near-completion of the functional specification for the software (computer programs, procedures, and the like), and good progress on the hardware, which will be largely adapted from the NAS En Route Stage A; for DAIR (Direct Altitude and Identity Readout), the configuration for low-density terminal areas and award of a contract in May 1967 for nine prototypes.

FAA continued to provide air traffic control services and other support to Vietnam-related air traffic in the Pacific, both military and civil. The civil air carrier airlift which began in January 1966 with five participating contracting airlines had expanded to include 20 contract airlines by the beginning of fiscal year 1967. It dwarfed the trans-Pacific airlift developed for the Korean War which, using both military and civil aircraft, transported 92,000 passengers and 30,600 tons of cargo during its peak year. By contrast, in the single month of December 1966 the civil contract carriers of the Southeast Asia airlift carried 99,980 passengers and 37,400 tons of cargo. During the whole of fiscal year 1967, they carried 996,709 passengers and 177,680 tons of cargo.

At the end of fiscal year 1967, FAA had 20 technical assistance groups in 22 foreign countries, sponsored by three other government agencies. The group in Vietnam was enlarged to assist with operations at Tan Son Nhut near Saigon, frequently the busiest airport in the world.

President Johnson decided in April 1967 that the United States should proceed with the prototype development phase (Phase III) of the U.S. Supersonic Transport development program. Good progress was made.

Federal Highway Administration

By the close of fiscal year 1967, more than 24,000 miles of the National System of Interstate and Defense highways were in use; total mileage of primary and secondary highways and their urban extensions in use under the ABC program reached 212,564; and the special highway program to further Appalachian regional development was well advanced.

A major effort involved the merging of the National Traffic Safety Bureau into the National Highway Safety Bureau to further the coordinated, vigorous implementation of the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966.

Under the Highway Beautification Act, more than 6,000 scenic projects or easement acquisitions were authorized; 27 States signaled progress in the program to establish outdoor advertising controls, and over a thousand junkyards were removed from the motorist's view.

Transportation planning staffs in approximately half the 231 metropolitan areas involved had completed their analyses under the comprehensive transportation—land use planning programs.

A study was completed and submitted to Congress recommending establishment of a Federal-aid revolving fund for advance acquisition of rights-of-way for the Federal-aid highway system, primarily to reduce costs.

A study was submitted to Congress recommending procedures and fair practices in relocation of persons and groups displaced as a result of the Federal-aid highway program.

A National Highway Needs Study was nearing completion, which includes a review of the existing Federal-aid systems and consideration of needed changes, an analysis of present and anticipated future deficiencies in the rural and urban highway networks, and a discussion of highway financing.

A study called "Analysis of the Functions of Transportation" (AFT) was begun to provide policymakers and decision-makers with a rational overall transportation planning tool.

Significant steps toward improved safety of highways, vehicles and driver performance included:

- Strengthening by the Bureau of Motor Carrier Safety of regulations governing motor vehicle drivers in interstate commerce, inspections and maintenance of commercial motor vehicles, and transportation of hazardous materials; initiation of a program to advise the Bureau of Public Roads of accident-related highway conditions.
- In the cooperative Bureau of Public Roads—State highway department Spot Improvement Program, completion by the States of the inventory of high-accident locations on the Federal-aid systems. Projects to correct hazardous conditions at 1,300 locations were programed, bringing the total to 2,800.
- Activation of pilot projects in several cities under the related TOPICS program (Traffic Operations Program to Improve Capacity and Safety)

which permits extension of Federal-aid to State-designated city arteries for specified traffic engineering improvements.

- Adoption of a new manual that establishes guidelines for removal of certain built-in hazards on existing highways, and sets improved safety standards for new facilities; other actions to reduce the incidence and severity of run-off-the-road accidents.

Additionally the following steps were taken to implement the National Traffic and Motor Vehicle Safety Act and the Highway Safety Act:

- The National Highway Safety Bureau developed the 20 initial Federal Motor Vehicle Safety Standards issued on January 31, 1967.
- The first set of performance standards for State and community highway safety programs was issued by the Secretary of Transportation on June 27, 1967. The 13 standards are essential in carrying out the provisions of the Highway Safety Act.
- The Bureau sought compliance by the manufacturers of motor vehicles and equipment with the requirement that they notify purchasers and the Department of Transportation of safety-related defects in their products. The notices received by the Department were made available for public perusal.
- Work was begun under provisions of the National Traffic and Motor Vehicle Safety Act which provide legal authority to enforce vehicle and equipment performance standards.
- Applications for safety program planning projects were received from 21 States by July 1, 1967. Cost of the projects totaled \$1,652,414, the Federal share being \$903,000.
- More than 70 safety research and development contracts were awarded to universities, private research groups, and other organizations.
- The National Motor Vehicle Safety Advisory Council was appointed to advise the Secretary on the motor vehicle safety standards and program. A majority of the 17 members represent the general public; the remainder, as required by law, represent motor vehicle and equipment manufacturers and dealers.
- The President appointed the 29-member National Highway Safety Advisory Committee to advise and consult with and make recommendations to the Secretary and the Federal Highway Administrator on highway safety matters.

Federal Railroad Administration

In an intensive safety program, the FRA:

- Initiated a thorough and systematic review of railroad safety problems; and
- Initiated a review of present safety enforcement activities with a view toward more efficient and economical administration.

To continue implementation of the High Speed Ground Transportation Act of 1965, the FRA pursued research and development projects and

demonstration projects, particularly in the Northeast Corridor, to determine the contributions that high-speed ground transportation can make to more efficient and economical inter-city transportation systems.

The Department of Transportation accepted four fully instrumented rail research cars and FRA initiated a comprehensive test program on a special 21-mile track of the Pennsylvania Railroad mainline between Trenton and New Brunswick, New Jersey. The research cars have been run frequently at speeds over 150 mph to obtain important data on the operation of rail service at high speeds.

Manufacture by the Budd Company of 50 electrically propelled railroad cars for use in the Washington-New York demonstration on the Pennsylvania Railroad neared completion.

The first of two gas-turbine trains to be leased from United Aircraft for use in the Boston-New York City demonstration scheduled to begin in fiscal year 1968 was almost ready for testing. The cars incorporate many new design features, including an innovative suspension system enabling the train to achieve much higher speeds on sharp curves than is possible with conventional equipment.

Special rail cars and terminals have been designed for a new kind of railroad service to carry automobiles and their passengers on long-distance trips. Present plans propose an 18-month demonstration of the new service between Washington, D.C. and Jacksonville, Florida.

A contract was awarded for the construction of a full-scale, experimental 2,500 h.p. linear induction motor, and design studies were advanced for a tracked air cushion vehicle (TACV).

The FRA cooperated with other agencies in collecting comprehensive origin-destination data on users of the three Washington-Baltimore airports. Emphasis was on airport ground access travel.

Net losses of the Alaska Railroad—attributed primarily to the 1964 earthquake—were reduced by some \$300,000. The railroad added auto-on-flatcar facilities and extended its passenger train service.

Legal means were adopted to simplify handling of the heavy load of rail safety cases—more than 700 in various stages of litigation transferred from the Interstate Commerce Commission and new cases developed during the period of transfer.

Saint Lawrence Seaway Development Corporation

The Seaway again broke records in 1966, as 49,249,358 tons passed through the waterway, up from 43,382,864 tons in 1965.

Operations began 15 days ahead of schedule, extending the season from April 1 to December 15, 1966. Improved revenues permitted increased payments to the U.S. Treasury from \$4,700,000 in fiscal year 1966 to \$5,100,000 in 1967.

A study of the deterioration of concrete at the Eisenhower Lock indicated that major repairs will be required.



U.S. Coast Guard icebreaker *Westwind* breaking passage for freighter on rescue mission.

Chapter II

UNITED STATES COAST GUARD

Since its inception in 1790, the Coast Guard Service had been a part of the Treasury Department. On April 1, 1967, the U.S. Coast Guard became a major component of the newly formed Department of Transportation.

The Coast Guard is responsible for enforcing or assisting in the enforcement of Federal laws on the high seas and waters subject to the jurisdiction of the United States. These laws govern navigation, shipping, and other maritime operations, and the related protection of life and property. The Service also coordinates and provides maritime search and rescue facilities for marine and air commerce and the Armed Forces. Other functions include promoting the safety of merchant vessels, conducting oceanographic research, furnishing icebreaking services, and developing, installing, maintaining, and operating aids to maritime navigation. The Coast Guard has a further responsibility for maintaining a state of readiness to function as a specialized service of the Navy in time of war or national emergency.

A number of new responsibilities were assumed by the Coast Guard this year. The vessel documentation and admeasurement functions (previously carried out by the Bureau of Customs) were transferred to the Coast Guard by Treasury Department Order No. 167-81 effective February 24, 1967. The functions formerly performed by the Army Corps of Engineers involving vessel anchorages, drawbridge operations, locations and clearances of bridges over navigable waters, and offshore marine oil pollution were assumed on April 1, 1967, as well as the Great Lakes Pilotage Act which was formerly under the Department of Commerce.

Management Improvement

The Coast Guard reported \$37,955,000 in recurrent and one-time savings during fiscal year 1967—more than double the savings of the previous year—in response to the President's Cost Reduction/Management Improvement Program. Some of the major actions are summarized below.

Foremost among the projects reported was a major reorganization of Coast Guard Search and Rescue facilities along the East and Gulf Coasts, which resulted in savings estimated at \$14,617,000 stemming from a number of interrelated actions. Acquisition of surplus Bates Field in Alabama from the Air Force made available needed additional training and operational facilities, thus permitting cancellation of plans for building at least one more air station along the Gulf Coast and for expanding existing air units. Further, Coast Guard air stations in Bermuda and at Argentia, Newfoundland, were closed, with the search and rescue and ice patrol functions of these units being taken over by the air station at Elizabeth City, North

Carolina. These closings released a number of air and surface units for assignment elsewhere, thus leading to a substantial cost avoidance by cancelling planned expenditures for facilities now unnecessary.

Two more icebreakers, the CGC *Edisto* and the CGC *Southwind*, were rehabilitated, extending their service life an estimated ten years and eliminating the need for construction of replacement vessels during that period. A cost avoidance of \$3,360,000 annually is estimated, based on the difference between relative amortized costs of the two renovated icebreakers and that of equivalent new vessels.

Improvement in supply management contributed substantially to the cost reduction effort, with \$9,218,000 in one-time cost avoidance savings expected from procurement reductions, by eliminating certain items from procurement specifications, decreasing the number of items in inventory, and distributing stocks more effectively. Sizeable supply savings resulted from the acquisition of tools, machinery, and electronic supplies from Federal surplus supplies to fill immediate needs or to replenish inventories.

A substantial manpower gain was realized by reallocating some 318 military and civilian billets throughout the Service to higher priority activities where additional personnel were urgently needed to cope with an increasing workload resulting from the nation's expanding population and economy. This added capability was realized through redistribution of workload and more effective manpower utilization, thus eliminating the need for requesting the additional billets through the budget process.

Playing an important role in the management improvement effort were some 1400 military and civilian suggestions received during the fiscal year which—together with benefits realized from civilian superior performance—brought supplemental savings estimated at \$631,000.

Operations in Vietnam

During fiscal year 1967, 26 Coast Guard 82-foot patrol boats continued to assist the U.S. Navy OPERATION MARKET TIME in countering Communist infiltration by sea of men, weapons, and supplies to enemy forces operating in South Vietnam.

During nearly two full years of operations, this patrol squadron has cruised more than 2 million miles while inspecting or boarding about 235,000 junks, sampans, and indigenous and foreign vessels. Of the numerous persons suspected of being Viet Cong members or sympathizers arrested by the patrol, approximately a hundred of them were later confirmed to be Communist combatants or cadre. The patrol squadron carried out more than 150 naval gunfire missions in support of friendly forces, destroying Viet Cong watercraft and structures. For example, in March 1967 a North Vietnamese trawler was thwarted in an attempt to land supplies in Quang Ngai Province by MARKET TIME forces that included two Coast Guard cutters. The trawler was completely destroyed after its interception and the ensuing naval gun duel. The Coast Guard suffered its first fatalities of the conflict in August 1966 when a patrol boat was attacked by friendly aircraft. Two men were killed.

In addition to the 26 small cutters whose operations are described above, five large high-endurance cutters, forming another squadron, began patrols off Vietnam in May 1967. Also assigned to Vietnam are Coast Guard personnel involved in aids to navigation, port security, explosive loading supervision, and merchant marine safety operations.

Search and Rescue

The international coverage of the Coast Guard's Automated Merchant Vessel Report System (AMVER) was expanded in the Atlantic and Pacific during fiscal year 1967 with the addition of participating radio stations by the governments of Canada, Fiji Islands, and Spain. AMVER now has a measure of international support never before achieved. This support, coupled with the fact that the ships of almost all nations participate by making AMVER reports voluntarily, makes this truly an international safety system. The AMVER computer is now plotting approximately 1,000 ships in the Atlantic and 800 in the Pacific each day. During fiscal year 1967, AMVER provided a total of 867 surface pictures (lists of ship positions) for emergency use in the Atlantic and 1,381 for Pacific positions.

The Coast Guard Search and Rescue School, located at Governors Island, New York, held the first of its continuing 4-week classes in October 1966. This school provides uniform training in the operations, procedures, techniques, and equipment employed in the saving of lives and property, thus qualifying graduates to perform as Rescue Coordination Center Controllers, Search and Rescue Mission Coordinators, On-scene Commanders, or Search and Rescue Mission participants.

Some typical examples of assistance rendered during fiscal year 1967 are summarized below.

Helicopter Evacuations from Inaccessible Areas. On July 31, 1966, the Coast Guard Air Station at Port Angeles, Washington, was requested by an Olympic National Park ranger to evacuate a critically ill young girl at Elk Lake, elevation 2,500 feet. A helicopter from Port Angeles proceeded to the scene, making a successful water landing and evacuation. That night another Olympic Park ranger requested evacuation for two youths injured in a fall at Lake Constance, elevation 4,780 feet. At daylight a helicopter from Port Angeles made a water landing and evacuation. Both cases occurred in areas inaccessible by other means.

Ten Search and Rescue Cases Handled Concurrently. The season's first "Blue Norther," a cold front pushing into the Gulf of Mexico, caused 10 distress cases during the night of October 14, 1966. Winds gusting to 70 knots and seas of 20 to 30 feet resulted in five fishing vessels being reported as sinking. Responding to these emergencies, 8th Coast Guard District aircraft, flew six sorties, dropped four pumps, and located five of the ten vessels so that surface units could assist them. Coast Guard vessels and small boats towed six of the fishing vessels to safe moorings, and the four others obtained their own assistance. All persons on board the distressed vessels reached port safely.



An HH-52A gas turbine powered amphibious helicopter landing on the U.S. Coast Guard cutter *Vigilant* during a practice launch and recovery. The raised flight deck is designed to handle quickly all types of rescue helicopters.

Marina Fire Fought by Coast Guard Small Boats. On July 30, 1966, the Coast Guard Station at Belle Isle, Michigan, received a report of a cabin cruiser afire at a boat dock. Patrol boats, dispatched by radio, were alongside the burning vessel within minutes and began playing water on the fire. The gas tanks had already blown up, spreading the fire throughout the boat. To minimize damage to nearby facilities, the burning craft was towed out of the marina. Receiving word from ashore that a woman was still on board, two Coastguardsmen boarded the burning boat and checked the cabin, but found no one. She had, it developed, jumped overboard and made shore safely. The fire was fought with foam and brought under control.

Automated Merchant Vessel Reporting System (AMVER) Coordinates Rescue. On November 12, 1966, the SS *Omega* reported that she was taking on water through a fracture in her hull and requested information concerning vessels in her area. A 500-mile AMVER plot produced one vessel, the SS *Okada Maru*, 390 miles away. Due to the extreme range from land—2,000 miles from Honolulu, 1,700 miles from San Diego and 1,800 miles from Tahiti—the position of the *Omega* was beyond the capabilities of long-range aircraft. Thus, upon request by the Coast Guard, the *Okada Maru* attempted to establish communications with the *Omega* and proceeded to assist. In the interim, a report was received that the crew of the *Omega* had abandoned ship in two lifeboats and one liferaft. The *Okada Maru*, advised of the situation, arrived on the scene in sufficient time to rescue all 29 crewmembers in good condition, and then proceeded to Chile.

CGC Cape Providence Rescues Survivors of Capsized Vessel. On November 26, 1966, Polynesian Airlines Flight 5WFAA, enroute from Apia, Western Samoa, to Pago Pago International Airport, sighted the wreckage of an overturned vessel and reported it to the Federal Aviation Agency Flight Service Station at Tafuna, American Samoa. The CGC *Cape Providence*, moored at Pago Pago on Search and Rescue standby was notified of the sighting. With the aid of the Polynesian Airliner (5WFAA), the *Cape Providence* located the disabled vessel (F/V *Main Sun No. 2*) and found 17 survivors clinging to the overturned hull. In spite of rough seas breaking over the hulk, the *Cape Providence* rescued 13 of the survivors. The F/V *Chie Hong No. 10*, which arrived on scene to assist, retrieved the remaining four persons from the water. Two of the 19-man crew, trapped in the engine room of the capsized vessel, perished.

Coast Guard C-130 Provides Illumination for Night Ditching. On March 6, 1967, a Beechcraft 18, lost on a flight from Honolulu, Hawaii, to Palmyra Island, with two persons on board, radioed a MAYDAY. The radio direction finder net was alerted and a C-130 Hercules was dispatched from Coast Guard Air Station at Barbers Point, Hawaii, to locate and assist the lost aircraft. Shortly after its distress signal the Beechcraft reported sighting a fishing vessel, the *Miyago Maru*, and began orbiting it. At 10:52 p.m. the Coast Guard C-130 arrived on scene. After briefing the pilot of the Beechcraft on ditching procedures, the C-130 began illuminating the area with parachute flares. At 11:14 p.m. the Beechcraft ditched

and both occupants escaped, boarding a liferaft. The C-130 vectored the *Miyago Maru* while it recovered both survivors, who were in good condition.

A summary of the Coast Guard's search and rescue workload for fiscal year 1967 is shown in Table 1.

Marine Inspection and Allied Safety Measures

Based on Federal marine laws dating back to the 1840's, the Coast Guard carries out an effective preventive safety program with respect to commercial vessels of the United States. Coast Guard merchant marine technical personnel review the design plans of all commercial vessels covered by U.S. Government regulations, after which the vessels are subject to Coast Guard inspection and certification. Once certified, they are reinspected and recertified at prescribed intervals for their entire commercial lifespan or until they are no longer subject to U.S. law. Should a U.S. vessel undergo major alterations, the plans for those alterations require Coast Guard approval and the certification process starts once again.

Merchant Marine Technical Inspection. The Coast Guard has issued regulations (based on Public Law 89-777) that require the operators of American and foreign passenger vessels to disclose information to prospective customers regarding compliance of their ships with safety standards. These regulations, incorporating many recommendations from American and foreign shipping interests, travel agents, and government agencies concerned, are expected to impose no hardship upon established steamship lines operating reasonably modern vessels.

During fiscal year 1967, increased attention was directed to the safety aspects of shipboard containerized cargo. Shipping cargo in specially designed containers is gaining in popularity and most major carriers anticipate that eventually there will be complete cargo interchangeability between land, sea, and even air transport. The Coast Guard is presently cooperating with other groups to develop adequate construction and inspection standards to keep abreast of this increased usage of containers.

Another area of concern is the design and operation of civil submersibles of all sizes. The Coast Guard has requested legal authority to regulate these vessels in order that adequate safety standards may be established without inhibiting development of a quickly changing technology.

To obtain information on the operation of automated ship's propulsion machinery, a survey was conducted of all steam vessels certificated to operate with a reduced number of engineroom watchstanders. The response was excellent, leading to the development of a "Guide for Automatic Control Systems for Main and Auxiliary Machinery" by the Coast Guard.

Tabulated in Table 2 are certain of the marine safety functions of the Coast Guard, comparing the workloads for fiscal years 1966 and 1967.

Investigations and Recommendations. An important part of the Coast Guard Merchant Marine Safety Program is the investigation of marine casualties to determine their causes and develop preventive measures when necessary. Several marine casualties involving commercial vessels were investigated during fiscal year 1967. The five summarized below were considered major and were investigated by Marine Boards of Investigation.

TABLE 1—Summary of Coast Guard's search and rescue workload, fiscal year 1967

	Response by—			Total
	Aviation Units	Ships	Shore Units	
Assistance calls responded to from—				
Private vessels.....	2,133	2,111	22,380	26,624
Commercial fishing vessels...	469	1,054	2,481	4,004
Other commercial vessels...	251	518	2,271	3,040
Government & public vessels	39	68	215	322
Foreign vessels.....	82	151	234	467
Total.....	2,974	3,902	27,581	34,457
Private aircraft.....	294	48	153	495
Commercial aircraft.....	76	11	32	119
Military aircraft.....	355	64	101	520
Other Gov't & public aircraft.....	4	0	1	5
Foreign aircraft.....	11	9	15	35
Total.....	740	132	302	1,174
Personnel only.....	1,072	435	2,803	4,310
Miscellaneous.....	451	301	1,532	2,284
Total.....	5,237	4,770	32,218	42,225
Major type of assistance rendered:				
Located.....	1,008	313	1,223	2,544
Refloated or dewatered.....	26	152	2,228	2,406
Towed.....	236	2,157	16,690	19,083
Escorted.....	299	220	1,213	1,732
Fueled or repaired.....	24	155	287	466
Medical.....	557	246	1,548	2,351
Assistance to persons in position of peril.....	873	314	1,992	3,179
Searches and attempts to assist.....	1,679	872	5,598	8,149
Other assistance.....	535	341	1,439	2,315
Total.....	5,237	4,770	32,218	42,225
Persons involved in assistance cases:				
Lives saved.....	438	862	1,728	3,028
Otherwise assisted.....	12,581	17,877	93,310	123,768
Total.....	13,019	18,739	95,038	126,796
Value of property, including cargo:				
Vessels.....				\$1,696,577,000
Aircraft.....				850,936,000
Miscellaneous.....				312,185,000
Total.....				\$2,859,698,000

TABLE 2—Coast Guard marine safety functions, showing comparison workloads, fiscal years 1966-67

Marine safety activities			Number	
			F. Y. 1966	F. Y. 1967
	Gross tonnage			
	F. Y. 1966	F. Y. 1967		
Vessel inspections				
Inspected for certification	11, 519, 942	13, 181, 329	4, 734	5, 785
Reinspected	11, 409, 521	10, 106, 585	5, 633	4, 632
Dry dock examinations	14, 779, 717	14, 159, 272	5, 955	5, 698
Foreign vessels	14, 887, 164	14, 522, 764	1, 544	1, 380
Miscellaneous			27, 199	30, 094
Technical services				
U.S. vessel plan approvals			37, 685	34, 062
Foreign vessel hazardous cargo plan approvals			861	3, 214
Number of vessels certificated			8, 962	9, 259
Number of vessels under document			61, 949	64, 865
Investigations of casualties				
To personnel on commercial vessels not resulting from a vessel casualty			2, 202	2, 461
To commercial vessels			2, 408	2, 353
Recreational motorboat deaths			850	756
			(C.Y. 1965)	(C.Y. 1966)
Investigations of personal misconduct, incompetence and negligence				
Hearings			1, 233	1, 738
Others, including warnings			3, 049	3, 156
Merchant marine personnel transactions				
Licenses issued, original			6, 342	7, 800
Seamen certificates issued			43, 289	50, 138
Shipment of seamen			449, 796	507, 156

The most significant casualty investigated was the structural failure and foundering of the Great Lakes freighter SS *Daniel J. Morrell* on November 29, 1966, which cost the lives of 29 crewmembers. The vessel, in ballast and northbound in Lake Huron during the height of a severe storm, was broken into two sections. Only one person survived.

The fire on board the German passenger vessel SS *Hanseatic* while moored in New York Harbor on September 7, 1966 was another significant casualty. A detailed comparison was made of structural and equipment conditions of this vessel and the corresponding standards applicable to large oceangoing passenger vessels of the United States. In this respect, the Coast Guard has, within the international maritime community, been successful in advocating amendments to the fire protection provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1960, for existing and future passenger vessels.

On October 24, 1966, the tank vessel SS *Gulfstag*, while underway in the Gulf of Mexico, suffered a series of explosions, caught fire and subsequently capsized, with the loss of eight lives.

The tug MV *Southern Cities*, also while in the Gulf of Mexico and towing a barge, foundered on November 1, 1966 with six persons on board. Although the barge was drifting, the *Southern Cities* was never located.

An explosion on board the Norwegian freighter MV *Thorstream* on June 2, 1967, caused by calcium hypochlorite drums being dropped, led to the death of four longshoremen.

Meetings and Conferences. The Merchant Marine Council held four regular meetings and three public hearings, supplemented by numerous meetings and discussions with interested parties, to consider proposed regulations amending present requirements. The Coast Guard participated in 30 of the 31 international meetings held in London by the Intergovernmental Maritime Consultative Organization (IMCO), a special agency of the United Nations. Major problems confronting IMCO centered on the upgrading of fire protection on existing passenger vessels as well as better fire protection for future vessels. The Coast Guard had urged that the subject of fire protection be given the highest priority. A special IMCO session also dealt with the problems of oil pollution, made urgent by the contamination of British shores resulting from the wreck of the oil tanker *Torrey Canyon*.

Merchant Vessel Documentation and Admeasurement. The merchant vessel documentation and admeasurement functions formerly in the Bureau of Customs were transferred to the Coast Guard on February 24, 1967. On June 30, 1967 there were 64,865 vessels in the documented fleet—2,916 more than in the previous fiscal year. Of the total documented, 15,814 were yachts and some 49,051 were commercial vessels. Public Law 89-476, approved June 29, 1966, permits yacht owners to take the measurements of their own vessels, enabling admeasurement officials to obtain gross and net tonnages by simply applying a coefficient to these figures. This new system eliminates much of the physical measuring of such vessels previously required of the Coast Guard.

Merchant Marine Personnel. The Coast Guard and National Archives and Records Service are conducting a joint study to develop recommendations aimed at improving the method for transport and discharge of seamen aboard U.S. flag vessels. This study could eventually have a far-reaching effect on the shipping industry and the Coast Guard in terms of improved service and economy of time.

The licensing and certificating of merchant marine personnel included the issuance of 105,901 documents during fiscal year 1967, a 43 percent increase over the number granted during the previous fiscal year. This added workload was a direct result of the Vietnam build-up. Coast Guard shipping commissioners supervised the completion of 9,647 sets of sign-on or sign-off shipping articles, and discharge certificates representing 507,156 individual discharge transactions were filed in the jackets of seamen at

Coast Guard Headquarters. The locator service at Headquarters answered 5,320 inquiries concerning individual seamen.

Merchant Marine Investigating Sections in major United States ports and Merchant Marine Details in certain foreign ports investigated 19,572 cases involving police checks, casualties, negligence, incompetence, and misconduct. Charges were preferred and hearings held on 1,738 of these cases by Civilian Examiners. Security checks were made of 37,831 persons desiring employment on board merchant vessels.

Recreational Boating

Forty-seven states and the Virgin Islands now have Coast Guard-approved numbering systems under the Federal Boating Act of 1958. On December 31, 1966, there were 4,067,371 numbered craft on the waters of the United States, in addition to another 4 million unnumbered boats. During calendar year 1966, 5,567 vessels were reported as being involved in 4,350 boating accidents, which resulted in 1,318 fatalities, 958 personal injuries, and property damage estimated at \$7,334,500. As compared to the previous year, there were 3 percent fewer fatalities, but personal injuries increased by 67 percent and property damage was 54 percent higher. Capsizing continued to cause the greatest number of deaths, while collisions accounted for the largest percentage of injuries. Fire or explosion of fuel accidents were the leading contributors to boating property damage, as has been the case for the past 6 years.

Fewer pleasure craft are being examined under the safety patrol concept begun in fiscal year 1965, but the broader coverage of the patrols has enabled a greater percentage of unsafe boating operations to be detected and acted upon. The Boarding Officer Instructor Indoctrination Courses sponsored by the Coast Guard at Yorktown, Virginia and Alameda, California were attended by representatives from 16 States, and a large number of State and local enforcement officers received training as boarding officers in the field through programs offered by Coast Guard districts. The Coast Guard pamphlet "Ventilation Systems for Small Craft" continued in high demand with 2,000,000 copies distributed since June 1966. "Pleasure Craft," a publication distributed free to the public, was revised during the fiscal year to reflect changes in lighting, fire extinguisher, and ventilation requirements.

Law Enforcement

The Coast Guard continued to operate five law enforcement patrols, consisting of surface and air units, to enforce laws relating to fishing conservation, neutrality, navigation, and territorial sovereignty. In October 1966, the passage of Public Law 89-658 extended the fisheries jurisdiction of the United States to 12 nautical miles. In addition, agreements were signed in early 1967 with the Soviet Union and Japan which permit fishing in certain areas of the contiguous fisheries zone, as well as provide for avoiding fishing gear conflicts on certain high seas areas off Alaska. Three

foreign vessels were seized during the year for illegal fishing activities in U.S. waters, and the masters of the vessels involved received fines ranging from \$5,000 to \$10,000. The Coast Guard's Alaska Patrol—augmented recently by the permanent assignment of the CGC *Confidence*—continued to require the temporary assignment of four high-endurance cutters and one HC-130 aircraft to cope with the increasing volume of fishing activity in that area. Three instances of fishing violations involving seven vessels off the Oregon and Washington Coasts were reported, leading to diplomatic protests to the Soviet Government.

During fiscal year 1967, the Coast Guard continued to enforce Federal laws prohibiting the pollution of navigable and coastal waters of the United States, investigating 361 reports of oil pollution. Several organizations are participating with the Coast Guard in determining how to prevent major oil releases from ships as well as how to deal with such contamination when it occurs. Contributing to this important effort is the Interagency Oil Spillage Group, established in April 1967 under Coast Guard chairmanship, with representatives from the Corps of Engineers and the Federal Water Pollution Control Administration.

Port Safety. With the continuing growth of waterborne commerce and constantly changing methods of operations and types of cargoes shipped, accidents are also on the rise. Deaths, injuries and property damage from cargo handling accidents, for example, have shown a marked increase. Vessels of novel design, both foreign and domestic, continued to ply American waterways during the year, and cargoes such as refrigerated or pressurized liquid propane, butane, and anhydrous ammonia, are moving with increasing frequency. Amendments to regulations are now under consideration to improve the safety of transporting and handling such cargo.

Two Coast Guard explosives loading teams and a staff advisory detail are assigned to Vietnam to provide technical advice and assistance in port security matters at Saigon and Cam Ranh Bay. Also related to Vietnam operations is the work of the Coast Guard's Port Security Station at Concord, California, which supervises the handling of military explosives at the Naval Ammunition Depot, Port Chicago. Other Coast Guard port safety forces are similarly occupied at military installations throughout the nation.

Table 3 illustrates the workload in the major enforcement areas for fiscal year 1967.

Military Readiness

Thirty-seven Coast Guard ships participated in Navy refresher training and two others completed shakedown training during fiscal year 1967. The installation of torpedo tubes has been completed on all Coast Guard high-endurance cutters, and a prototype of the mk. 56-gun fire control system, adapted to perform the secondary function of tracking meteorology balloons, was installed aboard the CGC *Chincoteague* for evaluation.

Coast Guard vessels participated in a number of joint military exercises for training during the fiscal year, and extensive use was made of shore-

TABLE 3—Workload in major enforcement areas, fiscal year 1967

Major enforcement areas	Number in 1967
Motorboats boarded.....	71,263
Waterfront facilities inspected.....	37,993
Anchorage patrols (hours spent).....	5,932
Reported violations of:	
Motorboat Act.....	53,247
Port Security Regulations.....	3,405
Oil Pollution Act.....	1,130
Other Laws.....	1,195
Explosives:	
Loading permits issued (commercial).....	391
Tons of commercial explosives.....	25,957
Loading permits issued (military).....	541
Tons of military explosives.....	2,012,198

based facilities for individual, team and unit training. A Coast Guard Contingencies Capability Plan has been developed and distributed to cognizant Coast Guard and Navy commands to provide a listing of Coast Guard capabilities that can be used in meeting contingency situations. (Coast Guard Vietnam operations have been previously described.)

Aids to Navigation

The manned light structure at Diamond Shoals, North Carolina, was placed in operation in November 1966 and another at the entrance to New York Harbor is nearing completion. A 40-foot diameter, disc-shaped buoy, equipped with light, fog signal, and marine radiobeacon, was placed in service on the former *Scotland* lightship station in August 1967. Seven manned light stations were converted to automatic operation during the fiscal year. Eight harbors and rivers in South Vietnam have been marked with aids to navigation for the armed forces, and a number of mooring buoys have also been positioned there for tankers waiting to discharge fuel oil.

The Southeast Asia Loran C chain went into operation in October 1966, with the commissioning of stations at Sattahip, Lampang and Udorn in Thailand and Con Son in South Vietnam. The Loran C chain on the East Coast of the United States was increased in coverage by the addition of a transmitting station at Dana, Indiana, in January 1967.

On April 1, 1967 the Coast Guard assumed from the Corps of Engineers the responsibility for approval of bridge plans and locations, administration of the alteration of obstructive bridges, and regulation of drawbridge operations.

A study concerning the utilization of buoy tenders led to the decommissioning without replacement of the buoy tenders *Hickory* and *Arbutus*. One buoy tender, the *Cactus*, was relieved of aids to navigation duties and assigned to tending oceanographic buoys, and another tender will be similarly assigned shortly. Support of the national oceanographic program is

expected to require all the tenders that the Coast Guard can spare from the aids to navigation mission in the immediate future.

Table 4 gives a tabulation of the aids to navigation maintained by the Coast Guard as of March 31, 1967.

TABLE 4—Aids to navigation maintained by Coast Guard, as of March 31, 1967

Navigational aids	1966	1967
Loran transmitters.....	60	61
Radiobeacons.....	195	199
Lights (including lightships).....	11,134	11,287
Buoys, lighted (including sound).....	3,670	3,730
Buoys, unlighted, sound.....	322	330
Buoys, unlighted.....	11,049	10,969
Buoys, river type.....	9,096	9,623
Fog signals (except sound buoys).....	584	584
Day beacons.....	7,051	7,135
Total.....	43,171	43,918

Ocean Stations

The Coast Guard continued its operation of four ocean stations in the North Atlantic and two in the North Pacific. These vessels, spending 75,370 operating hours on patrol, provided meteorological, navigational, communications, and rescue services for air and marine commerce and collected various scientific data.

Oceanography

By the end of the fiscal year some forty vessels—including those assigned to ocean stations—had been equipped for oceanographic and marine science activity. These vessels were engaged in diverse Coast Guard and cooperative oceanographic programs. The icebreaker CGC *Edisto* was utilized for an oceanographic study of Baffin Bay during July and August 1966. Cooperative projects included studies of the Western and Eastern Tropical Atlantic, a study of the Eastern Tropical Pacific, a study of the Kuroshio, and water mass studies in conjunction with ICNAF. The Coast Guard awarded a contract for the design of a modern oceanographic vessel to study subpolar regions and to provide general support for the National Oceanographic Program. The first of seven Coast Guard SWORD Systems—to collect hydrographic data from offshore light structures—began operation during the year.

International Ice Patrol

The Coast Guard began the fifty-third season of International Ice Patrol service in the North Atlantic Ocean on March 10, 1967. The patrol, utilizing SC-130 aircraft and an oceanographic vessel, observes and studies

the iceberg conditions and recommends action to be taken by shipping to avoid danger; also gathers scientific data concerning the oceanography of the area and the life cycle of icebergs. The 1967 season was notable in that icebergs still persisted at the end of June, extending the season beyond normal limits because the icebergs were not deteriorating as quickly as expected.

Icebreaking

Having taken over the large icebreakers formerly operated by the Navy, the Coast Guard is now responsible for national icebreaking operations. Eight polar icebreakers, one lake icebreaker, and one auxiliary icebreaker are the major units employed for this mission. During the year, four icebreakers supported the Antarctic national program, two conducted scientific and military missions in the western Arctic, and three furnished ice escort for shipping and scientific missions in the eastern Arctic. A new class of icebreaker is being designed to replace the overage "Wind" class vessels.

Operational Facilities

Table 5 shows the distribution of operating hours for the major Coast Guard functions during fiscal year 1967.

TABLE 5—Distribution of operating hours for major Coast Guard functions, fiscal year 1967

Activity	Vessels (operating hrs.)	Aviation units (flight hrs.)	Shore units ¹ (operating hrs.)
Law enforcement.....	53,102	6,402	65,231
Search and rescue.....	93,299	58,505	98,218
Aids to navigation.....	284,096	8,692	104,067
Reserve training.....	15,164	125	2,471
Icebreaking.....	24,045	604	245
Oceanography.....	14,539	360	36
Military readiness (includes Vietnam operations).....	179,425	13	4,380
Cooperation with other agencies.....	18,870	2,215	8,973
Port security.....	15,172	465	44,676
Training of cadets & officer candidates.....	9,385	-----	486
Ocean stations.....	72,301	-----	-----
Non-mission movement.....	51,148	-----	26,930
Proficiency training ²	-----	610	-----
Ferry ²	-----	2,528	-----
Tests ²	-----	1,943	-----
Administrative ²	-----	7,215	-----
Total.....	830,546	89,677	355,713

¹ Includes small boats.

² Applies to aircraft only.

Cutters. At the close of the fiscal year, the Coast Guard had 346 cutters in service. Continuing its program to replace overage and obsolete cutters, two more 210-foot medium endurance cutters were completed and the first

of the new class 378-foot high endurance cutters, the CGC *Hamilton*, was placed in service. The *Hamilton* is equipped with the most modern electronics and engineering systems available, while providing its crew with a high level of habitability. It also has a helicopter deck and is fully equipped for oceanographic missions. Also placed in service were 22 new 82-foot patrol craft as replacements for similar vessels deployed to Southeast Asia in fiscal year 1966. Two overage 64-foot harbor tugs were replaced by new 65-foot vessels.

Small Boats and Stations. Obsolete and wornout small boats were replaced by 117 new boats, while twenty-one 40-foot utility boats underwent major rehabilitation to extend their service life by at least 5 years. Disposal action was completed on 107 excess boats. A prototype 25-foot motor cargo boat, designed for use on buoy tenders, is now undergoing field evaluation. The Milford Haven Station, which will provide service to the area at the mouth of the Rappahannock River, has been completed and will be placed in operation shortly.

Aviation and Aircraft. The Coast Guard operated 168 aircraft, including 73 helicopters, at the end of fiscal year 1967. The last of the Service's piston-powered helicopters were retired with the assignment of turbine-powered amphibious helicopters to the Air Station at Traverse City, Michigan, and the air unit at San Juan, Puerto Rico, was augmented with two of the same type aircraft.

Communications. Coast Guard Headquarters, Area Offices, and all District Offices, air stations, radio stations, supply centers, and selected group offices in the continental U.S. (CONUS) are now served by at least one line in the Defense Communication Agency's (DCA) Automatic Voice Network (AUTOVON). The 14th and 17th District Offices have access to AUTOVON through DOD sources in Honolulu and Anchorage, respectively. Thirty-five of these lines were added during the last 12 months.

DCA's Automatic Digital Network (AUTODIN) replaced the Navy's common-user teletypewriter system (NTX-82B1) on December 15, 1966. The Coast Guard now has secured Mode V (teletypewriter only) drops at each major CONUS facility as well as at some smaller units. AUTODIN is scheduled to be extended to the 14th and 17th District Offices during fiscal year 1968.

Coast Guard Intelligence

During fiscal year 1967, 2,586 internal security and criminal investigations were made by Coast Guard intelligence personnel as were 11,714 national agency checks. In addition, 43,984 prospective merchant mariners and 9,442 applicants for port security cards were screened for suitability. The Coast Guard Intelligence Staff also made 11,250 record checks for internal purposes and 14,551 for other agencies.

Engineering Developments

Civil Engineering. Construction projects included a 300-man Cadet Barracks at the Coast Guard Academy and new stations at Marathon,

Florida, and Rappahannock River, Virginia. Continuing the implementation of the Coast Guard Shore Units Plan, construction projects were undertaken to replace obsolete facilities at 12 locations. A new helicopter station is being built at Cape May, New Jersey, and a hangar at the Kodiak, Alaska Air Station is being modified to accommodate C-130 aircraft. Scheduled for completion in August 1967 is the construction of large piers at Governor's Island, New York. Other construction projects are also planned to adapt this former Army installation to the needs of the Coast Guard. Two new Loran A Stations are being constructed at Galveston and Port Isabel, Texas, to extend coverage to the Western Gulf of Mexico.

Electronics Engineering. The Coast Guard is procuring single sideband transceivers to replace outdated amplitude modulated, double sideband equipment with the aim of improving the communication capabilities of vessels, small boats, and shore stations. A contract has also been let for a new generation of solid state, modular VHF-FM transceivers to replace present obsolescent equipment.

To further the operational capabilities of Coast Guard patrol boats in Vietnam, 32 depthsounders were furnished for installation to replace obsolete equipment that had become a maintenance support problem. Nineteen new surface search radars were also supplied to replace difficult-to-maintain, obsolete equipment aboard these patrol craft.

As part of a program to modernize the eight polar icebreakers, four of these vessels received major improvements in their radio communication facilities. The newly installed equipment will enable these ships to meet the diversified requirements of their polar missions.

After a 3-year trial period, the Coast Guard has adopted the Symbolic Integrated Maintenance Manual which should facilitate the maintenance of increasingly complex electronic equipment by technicians with a relatively low level of experience. The manuals have already been prepared for several types of Coast Guard electronic equipment.

The new twin turbine HH-3F helicopters, due for delivery in fiscal year 1968, will be equipped with two of the latest Coast Guard-developed navigation systems. One is a dual channel, auto-track Loran A receiving system, and the other is a computer system which accepts various navigational input and processes it to provide position information, automatic search pattern computation, etc.

In October 1966 the Coast Guard placed in operation the Southeast Asia Loran C chain, which was constructed to meet Department of Defense requirements. This Loran chain, consisting of four stations, is the first to provide major coverage over land rather than the sea. During the year, a new Coast Guard-designed Loran C transmitting antenna system, consisting of four guyed vertical towers supporting an umbrella-type antenna, was successfully tested. This antenna, designated TIP (Toploaded Inverted Pyramidal), offers increased stability and coverage for Loran C systems coupled with a significant reduction in high-power antenna costs.

Naval Engineering. One 378-foot high endurance cutter and two 210-foot medium endurance cutters were accepted from the builders and placed

in service, as were 26 smaller vessels, including twenty-two 82-foot patrol boats. Vessels still under construction at the close of the fiscal year included seven 378-foot high endurance cutters, ten 210-foot medium endurance cutters, and four 82-foot patrol boats. Fourteen 44-foot motor lifeboats and thirty-nine 25-foot, 8-inch self-bailing surfboats and a number of smaller boats were also manufactured for Coast Guard use. Major alterations, including structural renovations, habitability improvements, and other modernization of facilities, were completed on several high endurance cutters and icebreakers to further their mission effectiveness. Five 311-foot high endurance cutters were outfitted and deployed to Southeast Asia for duty with Naval forces. The conversion of another 311-foot cutter for oceanographic duty was about one-half completed at year's end.

Testing and Development. The Coast Guard accepted delivery of a prototype large buoy—equipped to furnish the services of a lightship—for installation at the entrance to New York Harbor. Buoys of this type are intended to replace selected lightships in the future. A prototype instrumentation and data processing system is being developed for this large buoy to permit the acquisition of oceanographic and meteorological data. Flashtube light sources being used experimentally on buoys in New York Harbor have been found to improve the mariners' ability to identify aids to navigation against a background of city lights.

An experimental sewage treatment plant for Coast Guard vessels has been successfully tested, and an operational prototype will be procured. Tests conducted on a full-scale model of a design concept for a high speed rescue boat indicate that the construction of an operational prototype would be desirable. The potential use of infrared, light amplification, and various types of sophisticated radar for search and rescue purposes is also under investigation.

Coast Guard Reserve

At the close of the fiscal year, there were 4,348 officers and 26,185 enlisted men in the Ready Reserve of the Coast Guard, and 1,897 officers and 14,683 enlisted men in the Organized Reserve.

The Port Security training mission was the subject of an in-depth study. Similar studies in the future will concern other phases of the Reserve Program. The construction of an Engineman School at the Reserve Training Center, Yorktown, Virginia, began in fiscal year 1967 as the first step in a program to replace old wooden temporary buildings.

A new system to improve the method of payment to inactive Reservists and to facilitate retirement point accounting was successfully tested and will soon become fully operational. The new system will relieve field units of considerable paperwork and will conserve manpower. During fiscal year 1967 membership in the Organized Reserve reached the highest point in its 17-year history, and attendance at drills also set a new record. Equally impressive, 72 percent of the Reservists taking the Service-wide examinations for advancement passed, compared with only 40 percent 5 years ago.

Personnel

The personnel strength of the Regular Coast Guard as of June 30, 1967 is shown in Table 6.

TABLE 6—Regular Coast Guard personnel strength, as of June 30, 1967

Personnel	Number	
	1966	1967
Military personnel:		
Commissioned officers.....	3,630	3,911
Commissioned warrant officers.....	868	1,184
Warrant officers.....	281	32
Cadets.....	770	800
Enlisted men.....	29,681	30,808
Total.....	35,230	36,735
Civilian personnel:		
Salaried (General Service).....	2,960	3,594
Wageboard.....	2,388	2,499
Lamplighters.....	156	143
Total.....	5,504	6,236

Table 7 shows the changes in the number of officers on active duty as of June 30, 1966 and 1967.

TABLE 7—Changes in number of officers on active duty, June 30, 1966 and 1967

Additions and losses	Number	
	1966	1967
Additions of commissioned officers:		
Graduates of Coast Guard Academy.....	112	97
Graduates of Officer Candidate School, Graduates of Merchant Marine Academies, and Direct Commission of Aviation Cadets.....	361	455
Reserve officers called to active duty.....	32	26
Total.....	505	578
Losses of commissioned officers:		
Regular*.....	146	177
Reserve on completion of obligated service.....	113	137
Total.....	259	314
Net Gain.....	246	264

* Through retirements, resignations, revocations and deaths.

Recruiting. Fifty-nine main recruiting offices and approximately fifty sub-offices were manned by 257 recruiters. During the fiscal year, there were 14,449 applicants for enlistment in the Regular Coast Guard and 5,895 were enlisted. The Reserve received 8,381 applications and enlisted 3,464.

Training for Foreign Visitors. Some 86 visitors from 25 foreign countries, under the sponsorship of other Government agencies, were extended the use of Coast Guard facilities for training in such areas as aids to navigation, merchant marine safety, and law enforcement.

Coast Guard Education Program. The education and training programs sponsored by and participated in by the Service are summarized for fiscal years 1966 and 1967 below:

Education and training participation	1966	1967
Coast Guard Academy:		
Applications.....	3,076	3,969
Applications approved.....	2,417	3,022
Appointments accepted.....	277	307
Cadets.....	668	704
Graduates (Bachelor of Science Degree).....	113	98
Officer training completed:		
Officer candidate school graduates.....	342	421
Postgraduate.....	61	67
Flight training.....	55	80
Helicopter training.....	20	12
C-130 aircraft training.....	12	12
Short-term specialized courses.....	790	926
Enlisted training completed:		
Recruit training		
Regular.....	6,131	5,159
Reserve.....	3,083	3,033
Coast Guard basic petty officer.....	1,792	2,595
Navy basic petty officer.....	379	612
Advanced petty officer schools (Navy and Coast Guard).....	160	139
Specialized training courses (Service and civilian).....	2,615	2,416
Correspondence courses completed:		
Coast Guard Institute.....	8,820	11,776
U.S. Armed Forces Institute.....	325	247
U.S. Naval Correspondence Course Center.....	4,750	4,263

Public Health Service Support. On June 30, 1967, there were 116 Public Health Service personnel on duty with the Coast Guard. They served at 21 shore stations, in mobile dental clinics, aboard ships assigned to ocean stations, and with Arctic and Antarctic operations.

Coast Guard Auxiliary

The Coast Guard Auxiliary is a volunteer, nonmilitary organization established to assist the Service in its rescue operations, as well as to promote safety, efficiency, and better compliance with laws governing the operation of motorboats and yachts. The Auxiliary, which operates in about 700 communities in the United States, Puerto Rico, and the Virgin Islands, is composed of experienced boatmen, radio operators, and aircraft pilots,

each fully trained in his specialty, who further their competence by participation in advanced membership training programs. Table 8 compares Auxiliary achievements, personnel strength, and facilities for fiscal years 1966 and 1967.

TABLE 8—Coast Guard Auxiliary activities, personnel, and facilities, fiscal years 1966-67

Coast Guard Auxiliary activity	1966	1967
Persons receiving safe boating instructions.....	150,793	205,439
Motorboats examined (facilities and courtesy examinations).....	176,259	158,289
Regatta patrols.....	4,401	4,629
Assistance missions.....	7,044	6,809
Lives saved.....	129	184
Qualified instructors.....	5,935	6,206
Qualified courtesy examiners.....	8,132	8,281
Total membership.....	23,232	24,981
Total facilities.....	14,972	15,289

Fiscal and Supply Management

During fiscal year 1967, further progress was made toward centralizing the payrolling of Coast Guard military and civilian personnel. Except for the Coast Guard Yard, the payrolling of all Coast Guard civilian personnel is centralized at the Internal Revenue Service Center, Detroit, Michigan. During fiscal year 1967, initial developmental work was begun on a computerized program for centralizing at Headquarters the payrolling of approximately 35,000 active duty military personnel. This system will be completely integrated with the existing Coast Guard personnel accounting and financial management systems. The developmental, systems, and programming work will continue during fiscal year 1968 and the program will be tested during fiscal year 1969. A target date for the installation of the centralized system is July 1, 1970.

The negotiation of a contract for the construction of one additional high endurance cutter under the multi-year procurement contract for three cutters awarded in fiscal year 1966 achieved savings of approximately \$966,000 in fiscal year 1967. In compliance with the President's special program for achieving cost reductions in procurement, supply and property management, special attention to these areas resulted in a cost avoidance estimated at \$9,218,000 for the fiscal year.

Funds Available, Obligations and Balances, and Expenditures Incurred

Table 9 shows the amount of funds available for the Coast Guard during fiscal year 1967 and the amounts of obligations and unobligated expenditures, as well as expenditures incurred.

TABLE 9—Funds available, obligations and balances, and expenditures incurred, fiscal year 1967

	<i>Funds available</i> ¹	<i>Net total obligations</i>	<i>Unobligated balance</i> ²
Appropriated funds:			
Operating expenses.....	\$325,953,283	\$325,611,084	\$ 342,199
Reserve training.....	24,497,000	24,458,320	38,680
Retired pay.....	44,750,000	44,575,158	174,842
Acquisition, construction & im- provements.....	123,307,758	107,163,383	16,144,375
Total appropriated funds..	<u>\$518,508,041</u>	<u>\$501,807,945</u>	<u>\$16,700,096</u>
Reimbursements:			
Operating expenses.....	\$ 19,855,219	\$ 19,855,219	-----
Acquisition, construction & im- provements.....	5,892,690	4,466,468	1,426,222
Total reimbursements....	<u>\$ 25,747,909</u>	<u>\$ 24,321,687</u>	<u>\$ 1,426,222</u>
Trust Fund, U.S. Coast Guard Gift Fund.....	71,650	44,308	27,342
Grand total.....	<u>\$544,327,600</u>	<u>\$526,173,940</u>	<u>\$18,153,660</u>

¹ Funds available include unobligated balances brought forward from prior year appropriations as follows
 Acquisition, construction & improvements: Appropriated funds..... \$16,785,430
 Reimbursements..... 2,941,453
 Coast Guard Gift Fund..... 28,795

² Unobligated balance of \$17,570,597 under the Acquisition, Construction and Improvement appropriation remains available for obligation in fiscal year 1968. These funds are programmed for obligation in fiscal year 1968 for the following purposes:

	<i>Coast Guard projects</i>	<i>Department of Defense projects</i>
For projects deferred in fiscal year 1967 to be subsequently accom- plished.....	\$ 8,299,200	-----
For completion of projects started in fiscal years 1967 and 1966.....	7,845,175	1,426,222
Total.....	<u>\$16,144,375</u>	<u>\$1,426,222</u>

	<i>Total expenditures</i>	<i>Direct expenditures</i>	<i>Reimbursable expenditures</i>
Expenditures incurred:			
Operating expenses.....	\$338,422,678	\$318,857,223	\$19,565,455
Reserve training.....	24,234,007	24,234,007	-----
Retired pay.....	44,575,158	44,575,158	-----
Acquisition, construction & im- provements.....	109,733,209	102,454,870	7,278,339
Subtotal.....	<u>516,965,052</u>	<u>490,121,258</u>	<u>26,843,794</u>
Trust Fund, U.S. Coast Guard Gift Fund.....	74,966	74,966	-----
Grand total.....	<u>\$517,040,018</u>	<u>\$490,196,224</u>	<u>\$26,843,794</u>

Chapter III

FEDERAL AVIATION ADMINISTRATION

The Federal Aviation Administration's functions center in insuring the safe and efficient use of the Nation's airspace and otherwise fostering civil aeronautics and air commerce, both in the United States and abroad. These functions involve a considerable community of interest with the military: aviation, civil as well as military, is a vital factor in national defense planning, and the Armed Forces have various airspace needs other than for aviation that must be coordinated with FAA. A narrative of FAA's principal activities in carrying out its functions in fiscal year 1967 follows.

Aviation Safety

Insuring aviation safety is FAA's principal function. Though most of the agency's programs contribute ultimately to the same end, the core of this function consists of certain regulatory programs that aim directly at preventing any but competent airmen and airworthy aircraft from operating, and at creating a safe environment in which the operations of such airmen and aircraft may take place. These regulatory programs are complemented by advisory and educational efforts and by research and development programs seeking both improved materiel and better knowledge of the physical and human factors involved in aviation. Basic to the regulatory programs are rules and standards, which (along with regulatory material less directly related to safety) are codified in the Federal Aviation Regulations (FAR's). FAR changes in the interest of safety are made in the light of experience and to accommodate or take advantage of progress in technology and the aeronautical sciences.

Aviation Safety: Certification Activities

A principal FAA regulatory device in the interest of aviation safety is the use of certification standards. Notable applications of such standards (but not a complete listing) are those affecting airmen, aircraft (and aircraft components), air carriers, and air agencies (aeronautical schools and repair stations or shops). FAA issues operating certificates to air carriers and keeps air carrier operations under surveillance to insure maintenance of the prescribed safety standards. These standards center on provisions made for maintaining at a satisfactory level the mechanical condition of equipment used and the professional competence of airman employees. Related FAA activities in this category in fiscal year 1967 are described under "Aviation Safety: Surveillance, Investigation, and Enforcement." Salient developments in fiscal year 1967 for the other certification categories mentioned above follow:

Airmen. Airmen are divided into two main categories for certification: pilots and nonpilots. The pilot category includes student, private, commercial, and airline transport pilots. In fiscal year 1967, a total of 207,822 original certificates were issued in the pilot category, as compared with 166,940 in fiscal year 1966. This increase was reflected in each of the subdivisions within the category. Active certificates (i.e., with currently valid medical certificate) held in the pilot category as of December 31, 1966, numbered 548,757; at the end of 1965, the number was 479,770.

An increase occurred also in the nonpilot category (which includes mechanics, repairmen, parachute riggers, ground instructors, dispatchers, air traffic controllers, flight radio operators, flight navigators, and flight engineers). Original nonpilot airman certificates issued in fiscal year 1967 numbered 16,345; in fiscal year 1966 the number was 11,093. The number of active nonpilot airman certificates held as of December 31, 1966, was 217,132, as compared with the 1965 calendar year-end total of 204,463.

Physical examinations required for certain airman certificates are given civilian applicants by private physicians whom FAA has designated aviation medical examiners (AME's); military applicants may be examined at any military base where a senior flight surgeon has been designated for this purpose. At the end of fiscal year 1967, there were 5,961 AME's. FAA held ten seminars in various parts of the country during the year to provide up-to-date training for AME's. The 40th anniversary of the designated AME program occurred in fiscal year 1967. As part of the celebration of this event, FAA, in conjunction with the Aerospace Medical Association, conducted a special seminar for designated AME's from 37 foreign countries and U.S. possessions. At year's end, there were 196 AME's in the international category.

Under simplified procedures taking effect in May 1967, the student pilot certificate and the appropriate medical certificate were combined into a single document issuable to qualified applicants by the AME. Formerly, only the medical certificate could be obtained from the AME. Besides passing the physical examination, the applicant must prove to the AME that he is at least 16 years of age (minor applicants previously needed parental consent) and that he can read, speak, and understand the English language.

Aircraft and Aircraft Components. New models of aircraft and aircraft components are issued type certificates by FAA when they meet prescribed standards of design, workmanship, construction, and performance. A supplemental type-certificate is issued when a type-certificated model undergoes approved modification that is major but short of creating a new model (which would require a new type-certificate). Aircraft and aircraft components manufactured in accordance with type certificates are individually tested and certificated for airworthiness or safe operating condition. U.S. type-certification standards apply also to models of foreign manufacture if U.S. certification is requested.

In fiscal year 1967, FAA issued: 103 type certificates for new aircraft models, including a number of foreign models; 999 supplemental type-

certificates for changes in aircraft type designs; 37 engine type-certificates, of which 26 were for turbines; 35 propeller type-certificates; approximately 16,600 original airworthiness certificates, export airworthiness certificates, and related approvals.

Air Agencies. Air agencies certificated by FAA include (1) schools that teach flying or the skills required for repair and maintenance of aircraft and aircraft components, and (2) repair stations for the maintenance and repair of aircraft and aircraft components.

In both categories, certificated air agencies show sizable increases in numbers during the 1960's: Certificated pilot schools, numbering 895 in January 1960, had increased by January 1967 to 1,364. Certificated mechanic schools increased between January 1, 1963, and June 7, 1967, from 68 to 80. Certificated repair stations numbered 722 on June 30, 1960, but had risen by June 30, 1967, to 1,638.

Aviation Safety: Surveillance, Investigation, and Enforcement

FAA monitors the operational safety of the civil aviation environment through a variety of surveillance, inspection, investigation, and enforcement activities.

Surveillance. Particularly notable developments during the year in FAA's surveillance activities concerned with operational safety were those pertaining to three relatively new programs: the maintenance analysis center (MAC), the performance and reliability program (PAR), and the systemsworthiness analysis program (SWAP).

MAC, developed in concept in fiscal year 1966, was established in fiscal year 1967 at the FAA Aeronautical Center, Oklahoma City. Its purpose is to provide a focal point and capability for the assembly, overall review, and diagnosis of data related to operational malfunctioning of aircraft; when the situation warrants, it issues warnings to alert interested members of the aviation community (including FAA inspectors) to potentially dangerous mechanical conditions in specified types of aircraft. To this end, MAC modernizes and automates FAA's information retrieval system applying to aircraft maintenance data; the system collects and collates the air carrier mechanical reliability report (MRR), the air carrier mechanical interruption summary (MIS), and the new general aviation maintenance irregularity report (MIR). To interpret the data thus assembled, MAC is staffed with aircraft maintenance specialists and technicians both trained and experienced in the techniques of failure-effect analysis, reliability engineering, continuous maintenance practices, and statistical research.

PAR began in June 1966, in Phase I. This phase, still in operation at year's end, monitored mechanical performance in the airline industry as represented by 15 participating airlines. From these airlines during the year involved, FAA collected service experience and related information in the form of nine parameters (see FAA's annual report for fiscal year 1966) representing 3.5 million flying hours and 2.5 million aircraft movements. At year's end, the accumulated data were being studied by representatives of the airlines and FAA to appraise PAR's success to that point

in bringing into focus areas where safety could be enhanced. Phase II is expected to add 15 more participating airlines. European interest has been expressed in developing a similar program.

SWAP, implemented in try-out phase on July 1, 1966, is the agency's new approach to monitoring the air carriers' compliance with the rules and regulations governing operation and maintenance of their aircraft. When fully implemented, it will complement a system of routine inspections largely performed by cadres of inspectors domiciled at the carriers' main operations and maintenance bases. Teams of inspectors will work from bases strategically located within an inspection area, periodically performing comprehensive, in-depth inspections of the carriers' programs for keeping personnel and materiel up to standards. Additional inspections will be performed as necessary. For example, the PAR program may uncover trouble spots or regressive trends requiring SWAP teams' attention. SWAP's try-out phase, well received by the airlines during fiscal year 1967, has demonstrated the effectiveness of the new approach. At year's end, full implementation was expected by October 1, 1967.

In addition to MAC, PAR, and SWAP, scheduled air-taxi operations were of special interest in the surveillance area in fiscal year 1967. Their continued spectacular growth prompted FAA to intensify inspection and surveillance of such operations, and to review current regulations in the light of the industry's changing needs.

Airport Inspection. An airport safety inspection program was begun on a test basis in fiscal year 1967. By year's end, selected airports of various sizes and in all sections of the contiguous United States had been inspected by teams of specialists in the agency's major operational functions. These teams were able to alert airport managements to a number of conditions that were unsafe, marginal, or otherwise unsatisfactory, and some of these have already been corrected. Usefulness and effectiveness of the approach in this program are being evaluated as the program proceeds.

Accident Investigation. Investigation of accidents is an important source of information helping FAA improve safety requirements. Under the Department of Transportation Act, FAA participates with the National Transportation Safety Board in the investigation of aircraft accidents as it did under the Federal Aviation Act with the Civil Aeronautics Board. The NTSB on April 1, 1967, took over from the CAB responsibility for fixing the probable cause of each civil aircraft accident.

Significant safety actions resulting from tragic air carrier accidents in the spring of 1967 or earlier included:

- An FAR amendment permitting until December 1, 1967, substitution of one-engine-out landing in four-engine jets instead of a two-engines-out landing during pilot aircraft-type-rating and periodic proficiency checks (but requiring, for a pilot taking a type-rating check, prior certification to FAA by the pilot's instructor that the latter had seen the pilot make a satisfactory two-engines-out landing during flight training).

- An FAA request, agreed to by all operators of large four-engine jets, that approach lanes over unpopulated areas should be used for conducting the final phase of two-engines-out training-flight landings when the speed is reduced below the two-engine minimum control speed.
- Notice of proposed rulemaking (the new rules to become effective several months after the end of fiscal year 1967) designed to make occupant survival more likely after a transport airplane crash. The new rules prescribe improved operating procedures or standards for transport category aircraft in the following key areas: emergency evacuation demonstrations; ratio of emergency exits to passengers; access to and distribution of emergency exits; emergency exit marking and lighting; emergency evacuation slides; fire resistance of cabin interior materials; fire-preventive protection of fuel lines and electrical cables; and stowage of carry-on baggage so as not to interfere with emergency evacuation. To comply with the new rules, airplanes undergoing type certification will require redesign; aircraft already in service, modifications.

Enforcement. Safety rules and regulations would have little value if they were not enforced. Agency inspectors conduct appropriate investigations of all known or reported violations and take action as warranted. Emphasis is placed on educational and other methods of preventing recurrence of violations, but penalties are imposed where deemed necessary.

Enforcement statistics for fiscal year 1967, with the comparable figures for fiscal year 1966, are as follows: Violations reported, 5,055 (4,342 in fiscal 1966); actions processed to completion, 3,962 (4,420); number of completed actions involving proceedings to suspend or revoke certificate, 1,500 (1,471); number of certificate-action cases heard by FAA hearing officers, 74 (82); number of certificate-action cases appealed to the Civil Aeronautics Board or the National Transportation Safety Board (the latter being CAB's successor on April 1, 1967, for hearing such appeals), 133, or 9 percent (150, or 10 percent [revised figures from those in FAA's 1966 annual report]); number of cases settled by civil-penalty compromises or judgments rendered in U.S. District Courts, 1,002 (1,074); number of cases settled otherwise (the great majority by letters of reprimand or other administrative action), 2,960 (3,346); total of civil penalties collected (mostly through voluntary settlements between FAA and the airmen or operators concerned), \$194,524 (\$189,312); amount of preceding sum collected by Department of Justice, \$17,907 (\$13,526); number of violations involving military personnel reported to Department of Defense for disposition, 62 (86 [revised figure]); number of violations involving foreign-certificated airmen referred through Department of State to certifying nation, 18 (12) (both revised figures).

Aviation Safety: Research and Development

Improvements in aviation safety over the years have resulted in large part from focusing research and development on safety problems brought

into prominence by aeronautical operations. Notable areas of FAA R and D effort of this kind in fiscal year 1967 included aircraft safety development, improvement of equipment and techniques for flight-inspecting nav aids, airborne systems for preventing midair collisions, airport safety, aviation weather, and aeromedical aspects of aviation safety. Brief descriptions of salient efforts in some of these areas follow.

Aircraft Safety Development. Principal efforts were directed toward—

- Safer aircraft-cabin interior furnishings: Numerous materials were tested for fire resistance and smoke and gas characteristics.
- Safer aircraft fuel and fuel tanks: Investigation of thickened or gelled fuels, underway for some years, continued, as well as efforts to develop more crash-resistant aircraft tanks.
- Solving the aircraft-sabotage problem: Work continued under an FAA-awarded contract to develop a passive bomb-detection system.
- Safer light aircraft in the hands of spatially disoriented pilots: An experimental stability augmentation system for light aircraft was successfully tested.
- Preventing general aviation stall-spin accidents: Several pilot-warning methods have been tested, and results are being evaluated.

Improved Equipment for Flight Inspecting Nav aids. Work began on integration of the component parts of the advanced flight-inspection equipment known as SEAL (Signal Evaluation Airborne Laboratory). Other work included testing and evaluation of improved sensors for measuring the strength and accuracy of signals emitted by nav aids.

Collision Avoidance. FAA has been working for some years to develop an effective collision-avoidance system—that is, equipment which, when carried aboard an aircraft in flight, can give the pilot timely warning of impending collision with another aircraft. Such equipment ranges from sophisticated systems that can electronically assess a potential threat and command an appropriate maneuver to avoid collision, to relatively simple systems designed to be economically feasible for general aviation. During fiscal year 1967, FAA participated in efforts sponsored by the airline industry to develop and test an aircraft-borne collision-prevention system.

Airport Safety. Of particular note in this area were efforts concerned with—

- Airport arresting systems: The agency achieved 90 percent completion of aircraft evaluation of a new pendant cable support system for hook-equipped aircraft at joint-use airports.
- Airport firefighting equipment and techniques: The agency completed evaluation of dry chemicals and foams to define adequate fire protection in terms of discharge rates, total quantities, and types of agents.

Aviation Weather. An outstanding problem in this area is the phenomenon known as clear air turbulence, or CAT. Aircraft encounters with CAT have usually occurred above 20,000 feet, and for this reason CAT's importance to aviation has greatly increased since the advent of jet transport aircraft, which routinely fly at higher altitudes than piston-powered

aircraft. CAT poses a problem because encounters with it, though infrequent, have sometimes been violent enough to damage aircraft structurally and injure passengers; moreover, CAT's presence is usually not suspected until felt, since it is not betrayed by clouds or other visible or audible features.

Toward solving the CAT problem, FAA in fiscal year 1967:

- Continued its participation in the ad hoc National Committee on Clear Air Turbulence (seven Federal agencies and the National Science Foundation), which was established in November 1965 to determine operational needs for the detection and prediction of clear air turbulence, and which prepared and published its final report in fiscal year 1967. FAA is participating in the coordinated interagency planning resulting from the report.
- Continued work toward development of a CAT detector, with testing of an infrared radiometer that detected turbulence over the Canadian Rockies and the Sierra Nevada in California. The device had inadequate range but is worthy of further exploration.

Other problems or objectives on or toward which work was done in fiscal year 1967 included convection-storm hazards, better measuring and reporting of runway visibility, and elimination of radar clutter in display of weather data.

Aeromedical Research. Many of the aviation safety problems to which the R and D efforts described above are addressed can also be usefully approached through aeromedical research, or research focusing on the human factors involved—i.e., such things as human capabilities, human tolerances, or human efficiency under various conditions that arise or may arise in aviation. Examples of FAA's aeromedical research efforts in fiscal 1967 include work on—

- Passenger antismoke hoods: A polyimide device to protect a passenger's eyes and respiratory tract from postcrash smoke, noxious fumes, and heat was developed and tested. Fitting over the head like a hood, the device provides breathable air for some 3 to 5 minutes during emergency evacuation of an aircraft.
- Passenger survival of impact: Studies of crushable energy-absorbing materials led to a new series of recommendations to aircraft designers for construction of instrument panels and seats less dangerous to passengers who might be flung against them in an accident.
- Cockpit noise levels: Study of noise levels in the cockpits of general aviation aircraft and helicopters yielded information that can help pilots avoid permanent damage to their hearing.

Other Aviation Safety Activities

Changes in Safety Rules and Regulations. As mentioned earlier, changes in the FAR's in the interest of safety are made when necessary or deemed desirable in the light of experience or technological advances. Also mentioned earlier was a change authorizing aviation medical examiners to issue student pilot certificates and the corresponding medical certificates

together, and both a change and a proposed change resulting from accident investigation. Adjustment of the FAR's to current applied technology was reflected in amendment of Parts 23, 25, 43, and 91, issued May 16, 1967, to revise airplane design standards and maintenance requirements applicable to static pressure systems and altimeter instruments; in addition, these amendments specified those persons authorized to conduct static pressure system and altimeter instrument tests and inspections. August 1, 1967, was set as the compliance date for persons operating airplanes in controlled airspace under instrument flight rules.

New Safety Project in General Aviation. The problem of safety in the general aviation segment of flying is especially challenging because of the growth of this segment, which for some years has been, and for the future is forecast to be, rapid. To cope with this challenge, the agency developed in fiscal year 1967 a program called Project 85. To be tested in two FAA regions in fiscal year 1968, the program calls for a trained specialist at each general aviation district office to devote full time to an aggressive attack on the problem of preventing general aviation accidents.

Deterrent to Anonymous Bomb Threats. Progress toward deterring anonymous telephone calls that threaten the bombing of aircraft was made possible through certain research efforts of the International Telephone and Telegraph Corporation in conjunction with information assembled by FAA on the frequency and location pattern of such calls.

Aviation Safety: The Year's Safety Record

Though the ideal in aviation safety is to eliminate all accidents, only progress toward that goal, rather than its absolute attainment, is at present a realistic aim. From a practical point of view, the accident and fatality rates for both air carrier and general aviation operations in calendar year 1966—the last year for which Civil Aeronautics Board figures are available—indicate well-functioning safety programs, whether comparison is made with the rates for the preceding year or the preceding decade. For general aviation, there was no significant change from recent years. For the air carriers, however, the rates were lower in calendar year 1966 than for any other year since 1954: 0.045 accidents per million miles flown, 0.004 fatal accidents per million miles flown, and 0.16 passenger fatalities per hundred million passenger-miles.

Automating the National Airspace System

Safety in airspace use comes first, but efficiency is also essential. The steady growth of aviation underscores this point. Though aircraft activity at FAA-operated airport traffic control towers (ATCT's) and air route traffic control centers (ARTCC's) set new records in fiscal year 1966, those records were superseded by new ones in fiscal year 1967. The towers in fiscal year 1966 counted 41.2 million aircraft operations (landings and takeoffs); in fiscal year 1967 the number was 47.6 million—a 15-percent increase. Similarly, at the centers (which handle only aircraft flying under

instrument flight rules, or IFR), the number of aircraft handled in fiscal year 1966 was 13,534,883, but the number in fiscal year 1967 rose to 15,067,727—an 11-percent increase. FAA's forecasts see this growth trend continuing: by 1977, traffic handled at FAA's centers is expected to double and the operations count at FAA's towers is expected to triple.

To enable it to cope with these mounting demands, FAA is developing an automated air traffic control system. The system design calls for an advanced central computer complex, input and output devices, radar, and radar displays showing for the aircraft targets on them the vital third dimension of altitude along with the identity of the aircraft in alphanumeric tags electronically attached to the aircraft targets. Expected to be fully implemented by the early 1970's, this advanced system will not eliminate the human element from air traffic control, but it will greatly relieve the present burden on the air traffic controller by performing automatically a variety of tedious chores that are now manual—and it will perform these chores faster and with greater accuracy.

New York Interim Automation. FAA has conducted field appraisals of two automated air traffic control configurations—ARTS (Advanced Radar Traffic Control System), which was concerned with traffic problems in terminal environments, and SPAN (Stored Program AlphaNumerics), which was concerned with the traffic problems of air route traffic control centers. In March 1966, FAA transferred the SPAN equipment to the New York Center.

It was also decided to provide the New York terminal environment with an interim automated capability. At the time of this decision (December 1965), each of the major terminals in the New York complex (Kennedy International, La Guardia, and Newark) was independently responsible for the control of air traffic in its area of jurisdiction, but plans were underway to combine these independent operations in a common IFR room at Kennedy International. To give this integrated operation a proven automated capability, the experience gained during the ARTS field appraisal was available. A configuration similar to ARTS was chosen for installation.

Equipping New York with an interim automation capability is only a stopgap measure. The New York ARTCC and terminal environment will eventually receive the more capable NAS En Route Stage A and TRACON M equipment now being developed (see below).

By February 1967, the initial operating capability of the interim en route configuration had been installed, checked out, and put into limited use. But some problems did crop up during the operational tests—some of which remained unresolved at year's end. The interim terminal configuration was installed during fiscal year 1967. It was expected to go into limited operation in July 1968.

NAS En Route Stage A. Work on the more advanced en route configuration, NAS En Route Stage A, proceeded apace. The first operational field model of this subsystem was almost completely assembled by year's end at FAA's Jacksonville (Fla.) ARTCC. Testing of the major com-

ponents has been in progress, and shakedown of the computer programs was scheduled to begin in November 1967.

This reporting period saw FAA award three major equipment contracts for components of the NAS En Route Stage A. A \$22.4 million contract went for 177 digitizers, which convert radar data into digital messages understood by computers. As these pieces of equipment become available, 111 will be installed at radar antenna installations feeding information to FAA ARTCC's; the remaining 66 will serve Defense Department installations. Another contract went for the purchase of computer display channels. Costing \$44.8 million, the contract was the largest ever awarded by FAA for air traffic control equipment. The third contract, which amounted to \$17 million, went for the purchase of four additional IBM 9020 computers for the central computer complex.

NAS Terminal Automation. The level of effort devoted to TRACON (Terminal Radar Approach Control) M, the high-density terminal automation program, was reduced during this reporting period in order to spread resources more evenly among all terminal programs. Nonetheless, significant progress was made in the high-density program during the reporting period. Both a system description and an operational specification were completed for this configuration. In addition, the engineering and the software (i.e., computer programs, procedures, and the like) specifications were well underway at the close of fiscal year 1967. Progress was made in TRACON M hardware too, mainly by drawing on the experience of the ARTS program.

Progress was also made in DAIR (Direct Altitude and Identity Readout), the low-density terminal automation program. In May 1967, FAA and the Department of Defense jointly awarded a \$4.8 million contract for nine DAIR prototypes. This configuration will be used at both civil and military installations; indeed, DOD radar control facilities will use DAIR exclusively. Unlike TRACON M, however, DAIR will initially employ only numerics; but an expanded version of the basic DAIR configuration, employing a full alphanumeric display, will ultimately be developed for terminal environments demanding a more capable system. The first basic DAIR unit was expected to be delivered to NAFEC for joint FAA-DOD testing near the end of fiscal year 1968.

In-Service Improvements in Air Traffic Control

While FAA is planning to introduce a highly advanced, automated air traffic control system, it is also making discrete improvements in the present air traffic control system to keep pace with the air traffic demands of today. This existing ATC system represents an investment of some \$1.14 billion and requires about half a billion dollars a year to operate and maintain. During this reporting period, FAA obligated \$96 million for new equipment and facilities (including equipment for the automated National Airspace System).

Terminal Improvements. Included in FAA's current construction program, which began in fiscal year 1963, are 77 new or replacement control



Activity in a Federal Aviation Administration air traffic control tower.

tower projects that will eventually cost the agency an estimated \$44 million. During fiscal year 1967, 15 of these projects were completed, bringing total tower projects completed to 34. At year's end, towers under construction numbered 20.

In what was perhaps the most significant development in tower construction during the reporting period, FAA adopted a new lower-cost design standard for control towers at medium-activity airports (100,000 takeoffs

and landings of itinerant aircraft or 20,000 to 99,999 IFR operations). The new standard features a free-standing 60- to 120-foot pentagonal concrete shaft topped by a control tower cab with 300 square feet of operating space. FAA estimates that the use of the new design instead of the one it supersedes will save approximately \$200,000 in construction costs at each new tower location.

In other developments, FAA awarded a \$1.8 million contract for 24 airport surveillance radar display systems. Navy and Marine air stations will receive 17 of the new display systems; Fort Rucker, Ala., an Army installation, will receive one; Brazil will receive two under an Agency for International Development agreement; and FAA will employ four at high-density terminal areas requiring more than one display system.

FAA also contracted for 88 "daylight" radar displays at a cost of \$1.5 million. Unlike the conventional TV-type radarscopes that can be viewed only in semi- or total darkness, the new "daylight" displays are capable of displaying terminal surveillance radar data under virtually all lighting conditions in air traffic control cabs. This is made possible by the use of a new cathode-ray tube that gives off a brighter picture than a standard TV set and by a special filter mounted on the face of the tube to shield the display from sunlight and reflection. Tested initially at NAFEC and evaluated at both the Atlanta and Chicago control towers, the new displays will be installed at 85 of the busiest airports in the Nation, beginning in December 1967.

En Route Improvements. Few improvements of an ad hoc character were made in the en route system during this reporting period. An exception was the installation at the Cleveland ARTCC of an IBM 9020 simplex computer system—the computer system that will eventually form a major component of the automated NAS En Route Stage A air traffic control subsystem. In fiscal year 1966, Cleveland's UNIVAC File II computer system had begun running behind during peak hours of activity at the center. Since this forced the busy air traffic controllers to take over some of the chores normally performed by the computer, it was decided to replace the overloaded UNIVAC with the speedier and higher-capacity IBM 9020.

Installation of the 9020 began in December 1966 and was followed by operational testing during periods of low traffic activity; it was expected at year's end to become operational in September 1967. Currently the most sophisticated flight data processing equipment obtainable, the 9020 is the electronic brain of the forthcoming automated ATC system.

Flight Service Stations. As it has with its other systems, FAA has successfully striven to improve its flight service station (FSS) system. Specifically, it has sought to provide better service to the public by improving efficiency and adopting the most advanced equipment while maintaining a balance between necessary service and economy of operation.

On two occasions during the 1960's the FSS system has undergone a major reassessment. The first, conducted in 1964, brought forth a plan calling for a thorough revamping of the system. While this led to a series of improvements, the plan's fundamental concept, the extensive consolidation of existing flight service stations, was never implemented. It was judged at the time that such a step was premature. During this reporting period, FAA once again addressed itself to the question of improving the FSS system. At year's end, a tentative plan was under consideration; the chief unresolved question was whether the improved services envisioned by the plan would be worth the cost of implementing them.

National Defense

A civil agency controlling use of the national airspace, as FAA does, inevitably has a large community of interest with the Department of Defense. The national system of air traffic control and navigation facilities operated by FAA is a civil-military common system, designed to serve military as well as civil aviation needs, except for military needs peculiar to warfare. Part of FAA's regular staffing consists of military personnel detailed to tours of duty with the agency in accordance with section 302(c) of the Federal Aviation Act. (Such personnel numbered 52 officers on June 30, 1967—down from 70 a year earlier.) FAA-DOD joint use of many long-range radars for both air traffic control and air defense is only one of the more important of many forms of cooperation between the two organizations. (Long-range radars in joint use on June 30, 1967, numbered 64—up from 58 a year earlier.) In addition to the foregoing, FAA is responsible for national emergency plans and preparedness programs pertaining to the Nation's civil airports, civil aviation operational facilities, and civil aircraft other than air carrier aircraft.

Military Airspace and Air Traffic Control Needs. Military aircraft use the FAA-operated civil-military common system of air traffic control and navigation in the same way as civil aircraft when this will serve their purpose. When one of the Armed Forces needs airspace for special operational purposes, such as maneuvers, FAA assigns the space for the period needed. Military requests for such assignments of airspace are handled by FAA's Central Altitude Reservation Facility (CARF), which was created in July 1956 at Kansas City, Mo., and moved in September 1963 to Washington, D.C.

During fiscal year 1967, CARF processed 10,843 military altitude reservations in support of military-command aircrew proficiency training and numerous national defense exercises; these involved the Strategic Air Command (SAC), the North American Air Defense Command (NORAD), the Tactical Air Command (TAC), the Air Defense Command (ADC), and participating Army and Navy air-defense components. Additionally, specialized air traffic control services were provided for overseas deployment of air combat and support units from SAC, TAC, ADC, and the Military

Airlift Command (MAC) to Southeast Asian and European bases. These operations involved limited occupancy of the airspace controlled by FAA's 28 air route traffic control centers and that controlled by 18 foreign centers on thousands of occasions. The processing of these missions involved the plotting of 233,219 air navigation fixes to establish the various flight routes.

Vietnam-Related Activities. As in the previous year, FAA support services were provided in fiscal year 1967 to an increasing volume of both military and civil aviation related to the military operations in Southeast Asia; regulatory services were also performed for the civil aviation involved. On Guam, the FAA center/radar approach control facility (CERAP) played a significant role in Vietnam operations for the second consecutive year. The CERAP's launch and recovery of SAC bomber missions directed at enemy targets in Southeast Asia increased steadily during the year; sorties, varying from 3 to 30 per mission, reached a total of 10,000 in May 1967. The Wake Island airport, operated by FAA, was one of the busiest on the Military Airlift Command's circuit. Traffic volume at this airport, having increased about 47 percent in fiscal year 1966 over the previous year (average monthly operations up from 1,952 to 2,863), expanded another 20 percent in fiscal year 1967 (average monthly operations up to 3,431). At Anchorage, FAA's air route traffic control center recorded 41,564 oceanic overs, surpassing the preceding year's total by about 54 percent.

The outstanding phenomenon of the year was the Southeast Asia airlift performed by civil air carriers under contract to the military. Starting in January 1966 with five airlines, this airlift had mushroomed to include 20 by the beginning of fiscal year 1967. These civil carriers airlifted more passengers and cargo across the Pacific in the month of December 1966 alone than was achieved by U.S. civil and military air transport combined in their best year of transpacific operations supporting the United Nations action in Korea in the early 1950's. According to statistics currently available to the U.S. Air Force's Military Airlift Command, the Korean airlift's largest single year in terms of passengers and cargo tons moved by both civil and military aircraft across the Pacific (U.S. west coast to Japan in most cases) was the first year of the operations, fiscal year 1951, when 92,000 passengers and 30,600 tons of cargo were transported. The December 1966 figures for the civil carriers of the Southeast Asia airlift were 99,980 passengers and 37,400 tons of cargo. For the entire year in fiscal year 1967, the civil carriers of the Southeast Asia airlift transported 996,709 passengers and 177,680 tons of cargo.

Overall responsibility for monitoring the special conditions and problems affecting the civil airlift operation was given FAA's Pacific Region. This region coordinates with the other FAA regions having regulatory control over any of the 20 air carriers operating under Military Airlift Command contract. To carry out its responsibilities better, the Pacific Region took several steps in fiscal year 1967: It assigned an air carrier maintenance specialist

to Travis Air Force Base, Calif.; established (June 1, 1967) an FAA office at the Tan Son Nhut Air Base, Saigon, staffed by an FAA representative; and created the position of airlift coordinator at its own headquarters. The region has a senior air traffic specialist on assignment to the U.S. Air Force Command in Vietnam.

National Communications System. FAA and DOD are two of five Federal agencies with major communications networks that are putting their facilities together to make a National Communications System; the other three agencies are the State Department, the National Aeronautics and Space Administration, and the General Services Administration. As conceived and launched as a project several years ago, the NCS has for its purpose to organize and use in the most efficient and economical way, for both military and civil purposes, the communications resources of the Federal Government. By presidential direction, the Secretary of Defense is the Executive Agent, NCS, and the Secretary has designated the Director of the Defense Communications Agency as the Manager, NCS.

Progress in fiscal year 1967 included, notably, further steps toward modernizing FAA's weather teletypewriter network, which is an important NCS component; the heart of this project, the concept of a solid-state store and forward switching center, had been approved by both FAA and NCS in fiscal year 1966, and bids had been received. At the end of fiscal year 1967, the outlook was for commissioning of the modernized system in fiscal year 1970.

FAA Defense Readiness. FAA and DOD continued during fiscal year 1967 to develop the detailed agreements necessary to implement their Memorandum of Understanding which, having been drawn as a first major step toward carrying out Executive Order 11161, had taken effect April 13, 1966. (Issued July 7, 1964, Executive Order 11161 directs, and contains guidelines for, FAA-DOD planning of a coordinated response to a war emergency or a lesser national emergency.) DOD has designated the North American Air Defense Command (NORAD) as its executive agent to work with FAA on plans covering the continental United States (including Alaska). Similarly, FAA's Pacific Region is developing plans with the Pacific Command; and FAA's Europe, Africa, and Middle East Region, with the U.S. European Command. The resulting plans will spell out relationships designed to insure that, under national emergency conditions, FAA's functions will be performed in such a way as to satisfy essential national defense requirements; in accordance with the guidelines of Executive Order 11161, the plans are premised on the probability that in case of war the President would make FAA an adjunct of the Department of Defense.

Plans to replace the emergency relocation site of FAA's Washington headquarters, which had made considerable progress, had to be suspended as a result of FAA's incorporation, on April 1, 1967, into the Department of Transportation. The question of a new relocation site had arisen be-

cause of certain deficiencies in the existing site; the question has now been made part of a study of the total Departmental relocation-site needs.

The existing Washington headquarters relocation site and the relocation sites for the principal field headquarters are stocked for emergency use, task forces have been designated to operate these sites under emergency conditions, and operating procedures have been provided for the task forces. Plans and procedures exist governing operation and maintenance of FAA aircraft under emergency conditions, including airlift of the Administrator and key FAA officials. An internal security program has been instituted to guard against the unauthorized interception of classified defense information via teletype communications.

Civil Aviation Defense Planning. Executive Order 11003, dated February 16, 1962, assigns to FAA certain responsibilities in the area of civil aviation defense planning. The Nation's civil airports, civil aviation operating facilities and services, and general aviation aircraft (i.e., non-air-carrier aircraft) are embraced in these responsibilities, along with national emergency plans and preparedness programs applying to these civil aviation components.

Substantial progress was made during fiscal year 1967 in planning war mobilization or other emergency use of the State and Regional Defense Airlift (SARDA), a general aviation organization. Under the broad policy guidance of FAA's Advisory Circular 00-7 (SARDA), 52 States and territories had submitted by year's end draft emergency resource-management plans called for by the Office of Emergency Planning's comprehensive program for State and local emergency management of resources, and FAA had approved 35 of these draft plans as meeting the basic criteria of the advisory circular. For the remainder of the plans, FAA provided (through OEP) comments and recommendations designed to make them acceptable.

In the area of airport emergency planning, progress continued to be made during the year in the program to assist, and to obtain the cooperation of, civil airport managers in establishing disaster control plans and improving defense readiness postures. The larger and busier airports have, on the whole, responded better than the smaller ones.

Several publications have been produced by the agency to assist civil aviation in improving its overall readiness for emergencies. These include: A handbook for air carriers giving detailed instructions on planning and implementing emergency aircraft maintenance programs; manuals for airport personnel containing emergency operating information on nuclear accidents and incidents and on radiological recovery of airports; and an advisory circular on radiological decontamination of aircraft. A handbook was developed covering FAA's responsibility for the war air service program (WASP), air carrier portion.

Fostering Domestic Aviation

Alongside its responsibility for safe and efficient airspace use, FAA has the additional responsibility of encouraging and fostering the development of civil aeronautics and air commerce. Although this additional responsi-

bility is indirectly served by the one concerning airspace use, the agency does undertake programs specifically designed to promote the development of civil aviation. It finances airport construction, develops new aircraft, and informs and educates the American public in aviation matters.

Federal-Aid Airport Program. The Federal instrumentality for meeting some of the needs of civil airport construction is the FAA-conducted Federal-aid airport program (FAAP). To be eligible for this aid, listing in the National Airport Plan (NAP) is necessary. Updated annually by FAA but projecting 5 years into the future, NAP identifies airport construction and improvement projects considered necessary by the FAA Administrator to meet the foreseeable needs of civil aviation. The fiscal year 1967 edition of NAP identified more than 4,000 existing and proposed civil landing sites in the United States, Puerto Rico, and the Virgin Islands requiring new or improved facilities over the next 5 years. The total cost of developing these facilities is estimated at \$1.5 billion.

In fiscal year 1967, Congress allocated \$71 million to the Federal-aid airport program. In turn, FAA consummated 303 grant agreements with local agencies at a cost of \$63.9 million in FAAP funds. These agreements provide that FAA pay a specified percentage (usually 50 percent) of allowable project costs. The local sponsoring agencies bear the remaining costs.

FAA also financed airport development projects jointly with other Federal agencies. FAAP funds and funds coming under the Appalachian Regional Development Act, which is administered by the Economic Development Administration (EDA), went into six airport development projects. In addition, funds coming under the Public Works and Economic Development Act, another EDA-administered act, supplemented FAAP funds going into three airport development projects.

All-Weather Landing. Prior to fiscal year 1966, air carrier aircraft could not land at most major airports if weather conditions were below a minimum decision height of 200 feet above the ground and a minimum horizontal visibility of 2,400 feet along the runway (Category I minimums). With the development and installation of advanced ground-based and aircraft-borne landing equipment in the last half of fiscal year 1966, however, three major U.S. airports and four U.S. air carriers were qualified for the first step of Category II operations, under which landings may be made with a 150-foot decision height and a horizontal visibility of at least 1,600 feet. The final step of Category II operations will permit landing during a minimum decision height of only 100 feet and a horizontal visibility of 1,200 feet.

In this reporting period, two more airports were approved for Category II operations, bringing the total approved to five. Eighteen additional airports are scheduled for Category II equipment; three of these are expected to be certified for Category II operations by the end of calendar year 1967. Dulles International became the first of the five airports now certified for Category II to be equipped with an approach lighting system that conforms with international standards.

Two more major U.S. air carriers were approved by FAA for the first step of Category II operations during the reporting period, making a total of six. Some of these carriers are expected to be approved for the second step of Category II operations before January 1968.

National Capital Airports. FAA operates and maintains two airports serving the Washington, D.C., area—Washington National and Dulles International. These airports perform a large service to the public. Fiscal 1967—the busiest year in the history of the National Capital airports—saw 9.8 million passengers handled at both airports—an increase of 11 percent over the previous reporting period. Aircraft operations at the airports increased 4 percent.

Washington National Airport, which absorbed by far the greater part of this traffic, continued to be plagued by two major problems—inadequate automobile parking facilities and congestion in the terminal building. With parking lots literally swamped during peak hours of activity, FAA attempted to relieve the situation by developing plans for privately financed construction of a multideck parking facility. But the National Capital Planning Commission deferred action on the proposal pending approval of a new master plan for the airport. Consequently, the multideck parking proposal was dropped for the time being. Meanwhile, congestion in the terminal building was relieved somewhat by airline-financed construction of “hold” rooms and other passenger handling facilities.

Other improvements were undertaken at the airport. A four-lane viaduct connecting the airport with the Jefferson Davis Highway (U.S. Route 1) was completed at a cost to FAA of \$3.7 million. This viaduct improves the airport’s accessibility. Another improvement, the grooving of the airport’s main runway, adopts a technique employed successfully in Great Britain for reducing the tendency of landing aircraft to aquaplane on wet surfaces.

Dulles International had no problems similar to Washington National’s. Although aircraft operations handled by the airport increased 12 percent and the number of passengers handled increased 18.8 percent, the utilitarian design of the airport made it possible to absorb these increases with little visible evidence of congestion—on the runways or parking lots, or in the terminal.

Among the more notable developments at Dulles Airport during the reporting period were the following:

- A dramatic increase in the number of aircraft diverted to Dulles from other fields during inclement weather. This increase was largely due to Dulles’ ability to keep its runways and its excellent access road clear of snow and ice.
- The introduction of local service airline operations when Piedmont inaugurated service at the airport in November.
- The addition of 12,000 square feet of aircraft parking for general aviation.
- The construction of two additional mobile-lounge docks to accommodate the increase in international aircraft activity.

U.S. Supersonic Transport Program. The highlight of the commercial supersonic transport (SST) program during this reporting period was President Johnson's decision, announced on April 29, 1967, to proceed with the prototype-development phase (Phase III). Mr. Johnson's decision was based on the recommendation of the President's Advisory Committee on Supersonic Transport.

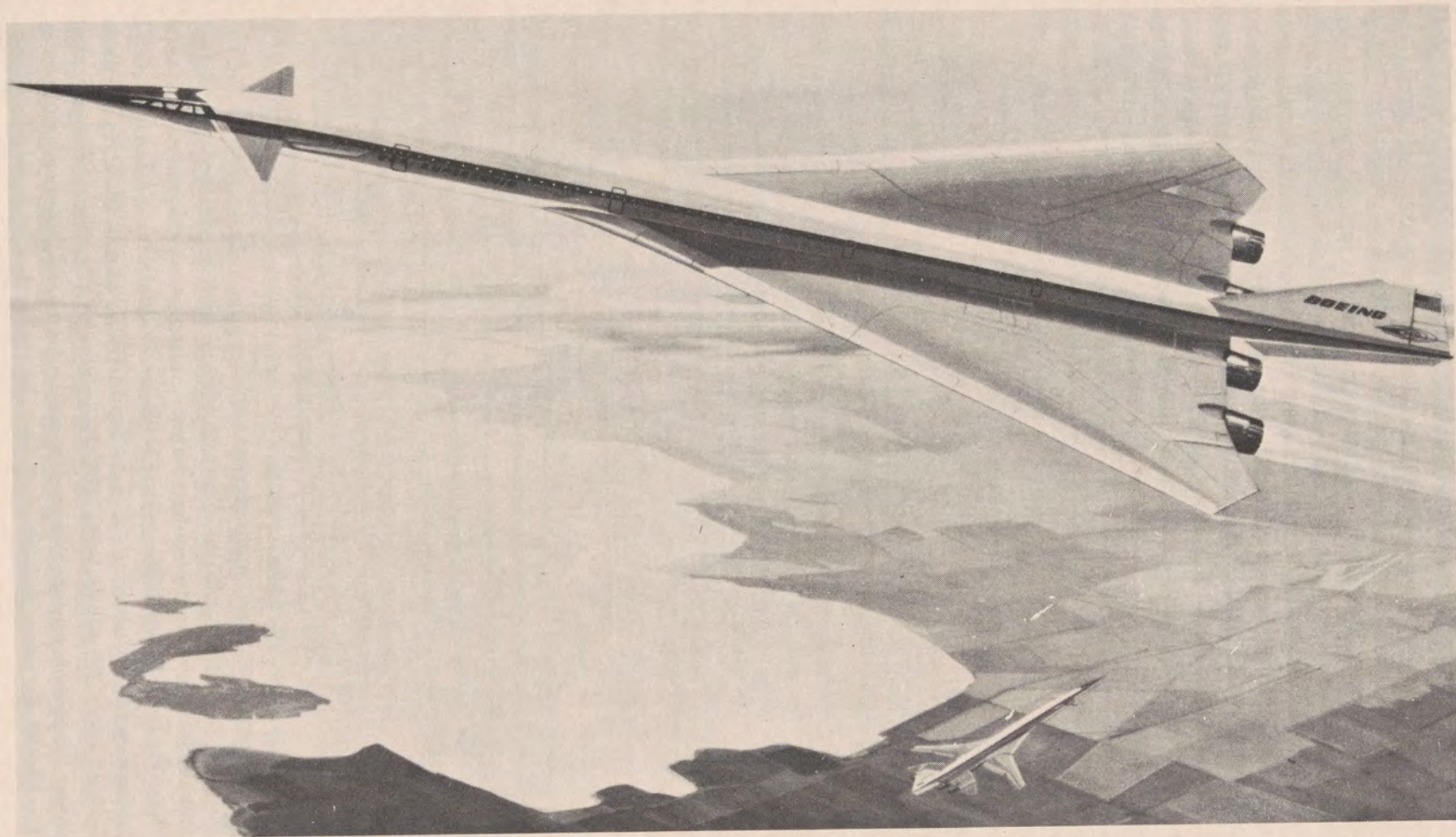
On May 1, FAA awarded contracts (made retroactive to January 1, 1967) to the Boeing Company, the winner of the airframe design competition, and the General Electric Company, the winner of the engine design competition, for the development of two identical SST prototypes. Prototype-development costs (including overruns and "nonallowable" costs borne exclusively by the contractors) are estimated by the Government at \$1.276 billion. Of this amount, the Government will bear approximately \$945 million, or close to 75 percent of the total costs. (See Part II for details of the financial arrangements.) The Government's contribution (plus interest) will be recovered by royalties on SST sales.

Among other notable developments, 10 U.S. air carriers agreed to an FAA request to help with the financing of the prototype program. These carriers, which hold a total of 52 delivery positions on the SST reservation schedule, will contribute one million dollars in risk capital for each position held. In another announcement, it was disclosed that the Boeing Company had agreed to take over from the FAA the responsibility for allocating SST delivery positions to purchasers. Boeing will require a deposit of \$750,000 for each new delivery position. These funds, along with the million-dollar contributions in risk capital, will be used by Boeing for program expenses in lieu of Government funds that otherwise would have had to be appropriated.

Noise Abatement. FAA continued to play an important role in aircraft noise abatement both by pursuing its own noise-abatement projects and by taking an active part in the Interagency Aircraft Noise Abatement Program, which was established in fiscal year 1966 after a call by President Johnson for a concerted Government attack on aircraft noise.

The various projects engaged in by FAA and the other Federal agencies taking part in the noise-abatement program can be conveniently classified under three distinct categories: (1) Developing quieter aircraft, (2) revising aircraft operating procedures, and (3) promoting land use around airports compatible with airport operations. A brief description of ongoing projects in each of these three categories follows:

- The Congress has been requested to grant the Secretary of Transportation the authority to prescribe standards for both engine noise and sonic boom and to make these standards part of the overall aircraft certification criteria.
- The General Electric Company, working under an FAA contract, is exploring the feasibility of muffling whine with choked inlet guide vanes. General Electric is also developing in another FAA-financed study a scale model Freon compressor as a tool for investigating compressor acoustics. The compressor's feasibility has already been estab-



Proposed U.S. supersonic transport being designed to cruise at speeds up to 1,800 miles an hour.

lished, and the model is being made available to approved research groups working in the area of compressor noise.

- FAA worked out and implemented a two-segment noise-abatement takeoff profile for jets serving Washington National Airport. The new procedure calls for rapid climb to a specified altitude and then reduced thrust until the aircraft is 10 miles from the airport. This two-segment takeoff profile has worked out so successfully at Washington National that plans were afoot at year's end to implement the same procedure on a voluntary basis at other noise-sensitive airports.
- FAA and the Department of Housing and Urban Development (HUD) developed detailed procedures to assure that the question of compatible land use is properly considered in projects falling under HUD's urban planning assistance program (sec. 701 of the National Housing Act of 1964).

International Aviation Activities

Since civil aviation is global in character, FAA's activities extend beyond the confines of the United States. FAA participates in the activities of a number of international organizations devoted to civil aviation, extends assistance of various kinds to foreign countries, and takes part in a miscellany of other activities of an international character.

Participation in International Organizations and Meetings. FAA representatives served on United States delegations to 13 International Civil Aviation Organization (ICAO) conferences during the reporting period and assumed a principal role in preparing and coordinating the official U.S. position for these meetings. The following ICAO meetings attended by FAA bear special mention:

- Fourth Caribbean Regional Air Navigation Meeting, held in Mexico City during November and December 1966, at which the needs of general aviation were considered for the first time in an ICAO forum.
- Conference on Charges for Airports and Air Route Navigation Facilities, held in Montreal during March and April 1967. Dealing with the controversial subject of user charges, the conference considered user charges for international general aviation for the first time.
- Communications/Operations Divisional Meeting and All-Weather Operations Panel Meeting, held in Montreal in October-November 1966 and April 1967, respectively. At both these meetings, FAA helped advance the objective of achieving an all-weather aircraft operating capability by supporting the development of an intermediate step in the reduction of weather minimums for landing at airports.

North Atlantic Lateral Separation. FAA continued to work with the North Atlantic Systems Planning Group to resolve the question of the lateral separation of jet air carrier aircraft over the North Atlantic. The question first came to the forefront in January 1966, when, at ICAO's recommendation, the lateral separation between turbojet aircraft in the North Atlantic region was reduced from a minimum of 120 nautical miles to a minimum of 90 nautical miles. Shortly thereafter, pilots were granted

permission to request and receive a 120-mile separation when flying below 29,000 feet. By mid-June 1966, however, it was realized that this dual standard would place an intolerable workload on the air traffic control facilities of Canada and the United Kingdom during the busy summer tourist season; hence, Canada, the United Kingdom, and the United States reverted to the 120-mile separation standard. At the same time, these three countries invited the cooperation of other states to conduct an "immediate study of navigational accuracy over the North Atlantic."

A program of data collection and analysis designed to measure the navigational capability of turbojet aircraft flying the North Atlantic region was worked out during this reporting period at two ICAO-sponsored Paris conclaves. The data collection program was scheduled to begin on July 1, 1967, with all participating nations accepting assignments in data collection and analysis. During this exercise, NATO Loran "A" Chains "Charlie" and "Delta" will operate full-time, and automatically recorded radar observations will be made daily from sites at Gander, Newfoundland, and Kilkee, Ireland. In addition, three specially equipped U.S. Coast Guard vessels will make similar radar observations from selected mid-ocean points. Approximately five to six thousand flights will be monitored.

Foreign Assistance and Training. At year's end, FAA had a total of 20 technical assistance groups in 22 foreign countries (including satellite offices of regional groups). The Agency for International Development (AID) sponsored 13 of these groups; the U.S. Air Force, six; and the U.S. Army, one. Five new groups were established; three groups were discontinued. FAA's authorized overseas positions increased from 97 to 113. The Civil Aviation Assistance Group in Vietnam had the largest numerical increase, rising from 20 to 34.

One of the factors contributing to the growth of the AID-supported Vietnam group was the increased volume of aircraft takeoffs and landings at Saigon's Tan Son Nhut Airport. As an illustration of the activity at Tan Son Nhut, the Saigon terminal area handled in May 1967 no fewer than 115,000 aircraft operations—25,000 more than the combined total for that month at the three major airports in the Metropolitan New York area (Kennedy, La Guardia, Newark).

Flight Inspection in Foreign Countries. FAA flight inspection of ground-based air navigation facilities (navaids) extends into many foreign countries. This service is performed not only on U.S.-owned facilities, but also on foreign-owned facilities—in which case it is done on a cost-reimbursable basis. During this reporting period, 19 reimbursable agreements with foreign countries were reviewed and, where necessary, renegotiated to provide for full cost recovery in accordance with recent U.S. budgetary policy.

While the FAA flight-inspects navaids in foreign countries, it also seeks to encourage and assist these countries in developing their own flight-inspection capability. FAA advanced its efforts in this area during fiscal year 1967 by perfecting and readying for production a unique portable flight inspection package. Capable of being installed in a nonspecialized

aircraft, the two-unit package eliminates the need for special-purpose aircraft and thereby permits marked economies. A number of countries are planning to use the U.S.-manufactured package, with resultant savings in FAA overseas expenditures.

Administration

The creation of the Department of Transportation was by far the outstanding administrative development of fiscal year 1967. Besides making FAA a component of the new Department, the Department of Transportation Act opened the door to administrative and procedural changes of prime importance to the Federal role in transportation, including aviation as well as the other modes.

Notable administrative developments of internal origin also occurred during the reporting period. An integrated management system was devised; significant strides were made in the area of financial management; the cost reduction and occupational health programs made notable progress. Details of these and other administrative developments follow.

Systems Approach to Management. The most significant event in the area of management during this reporting period was the preparation of a description of a unified system for FAA program and resource management. Once implemented, the new system will integrate all existing FAA management systems into one central system. The system description was ready for publication in an FAA handbook at year's end.

The aim of the new system is to help each FAA manager recognize when the need exists to make a decision and then to provide him with the necessary base of facts. A manager requires information to plan (i.e., to consider what needs to be done) and to program (i.e., to consider when to do it and how). He needs timely access to reliable budgetary data, which will tell him, among other things, whether he can commit FAA to expend the resources he requires. In addition, he requires continuing information about the activities with which he is concerned. Finally, he must be provided with standards of performance and productivity.

The FAA management system description envisages meeting the needs of managers (and also the external requirements imposed on FAA by other Federal agencies) through the operation of two categories of specialized subordinate systems—management support systems and program management systems. The first category encompasses a number of specialized systems (planning-programming budgeting, accounting, manpower management, and materiel management) devised to focus either on specific portions of the managerial process or on specific subject matter. The second category provides an orderly means of determining needs, analyzing operations, and making comparisons along program lines. A unified bank of information from which managers can draw is also part of the system.

Implementing the unified system is a long-term proposition that will stretch over many years. During this reporting period, an order of priorities was established for implementing the various subordinate systems. Top priority was given to revising FAA's basic accounting system (see

below). The new accounting system will provide a bridge from costs to obligations, which is prerequisite to cost-based budgeting—which comes next in the order of priorities. Program management systems will not be developed until basic summary-level accounting and cost-based budgeting are functioning.

Financial Management. Financial management is, of course, an integral part of FAA's total systems approach to management. What follows, therefore, is a review of fiscal year 1967 progress achieved in such separate subordinate systems as accounting, the Planning-Programming-Budgeting System (PPBS), and audit—all of which will ultimately help make up the overall integrated system.

During the previous reporting period, FAA submitted to the General Accounting Office (GAO) three segments of its modernized accounting system. These were formally approved by the Comptroller General in January 1967. Six more segments were developed, revised, or recodified during this reporting period and forwarded to GAO for informal review.

To conform with the accounting concepts approved by the Comptroller General, FAA revised and reissued its handbook "Concepts and Standards for FAA Integrated Financial Management System." In addition, a major effort was undertaken to systematically organize and update accounting directives. Fifty-eight circulars and directives have thus far been canceled or recodified. The updating will continue through the next fiscal year.

Efforts to integrate PPBS into the FAA's management procedures continued. As part of this effort, two FAA registers were developed and issued during the reporting period. One of these, a register of requirements, forms the basis for research and development and project planning for the National Airspace System. The register will be updated on a continuing basis to reflect aviation requirements, system requirements for in-service improvement, and requirements arising from advances in the state of the art. The other issuance, a register identifying all agency PPBS analyses, was the first of its kind in FAA. It, too, will be updated on a continuing basis.

Audit is a vital component of any financial management system: it is the means by which management is provided with an independent and objective review of how effectively financial and resource-management responsibilities are being carried out. Accordingly, as one further step in achieving an effective financial management system, the agency issued an order in January 1967 prescribing a new approach to internal audit. This order, which established 42 auditable areas within FAA, was predicated on the principle that internal audits are as important as audits bearing on FAA's external activities. The new program will be conducted in a 4-year cycle by sampling only half of the regions or centers and the Washington headquarters during each audit. Four audits under the new program were in progress at year's end.

Cost Reduction. FAA achieved significant economies in operating and administrative costs during the fiscal year, surpassing its original fiscal year 1967 cost-reduction goal by a considerable margin. Much of these

savings is attributable to a faster-than-expected growth rate in civil aviation, which imposed a greater-than-expected workload on the FAA and especially on the air traffic control work force. Indeed, it became clear early in the reporting period that safety in the air could be impaired if the air traffic controller continued to absorb additional unplanned increments in workload. The FAA therefore acted to bolster the ranks of its air traffic control personnel; their number rose—though not so fast as the demand for services—from 41 percent of the total FAA work force, at the end of fiscal year 1966, to 42.1 percent, at the end of fiscal year 1967. And at year's end, in the interest of air safety, FAA was still seeking to bring more controllers aboard.

Personnel Administration and Training. Fiscal year 1967 saw FAA reverse a 3-year downward trend in its personnel strength. At year's end, the number of employees stood at 44,328, or 771 more than the June 30, 1966, total (but still 2,104 short of the peak year-end personnel strength, registered in fiscal year 1963). Moreover, current forecasts indicate that FAA's personnel strength will continue slightly upward during the next 5 years.

FAA continued its efforts to enhance the quality and competence of its employees by expanding old and introducing new programs to take better advantage of manpower resources. Among notable examples, the agency—

- Inaugurated an integrated manpower planning program designed to identify future skills and skill-level requirements and plan for their orderly development.
- Revised and improved the Flight Standards Service "Career Planning Handbook," which covers approximately 5,000 FAA employees.
- Drafted a career planning handbook for maintenance and airway facilities personnel.
- Negotiated Civil Service Commission approval of special salary rates for FAA jet air carrier operations inspectors in an effort to slow down the steady loss of these employees to private industry.
- Inaugurated a special on-the-job training program to increase the number of native Alaskans on the FAA Alaskan work force. Besides providing these people with jobs and valuable skills, the program will help reduce the high turnover, moving, and turnabout-leave costs now being absorbed by the Alaskan Region.
- Prepared a new FAA management training handbook—"Personnel Management for Managers"—and simultaneously developed a new management training course based on the handbook.
- Inaugurated the MITTS (Management Improvement Through Team Study) program, a supervisory training program for FAA employees. The program consists of an FAA Academy-administered correspondence course followed by workshop sessions.
- Raised minority-group employment by nearly a full percentage point, from 6.2 percent of the total FAA work force to 7.1 percent.
- Set up a minority-group statistics reporting system to measure progress made by the equal-employment opportunity program.

Procurement. FAA's efforts to improve its procurement of goods and services were concentrated during this reporting period on assuring that the agency procurement activities are carried out in a uniformly efficient and economical manner. To this end, the agency developed and published the *Federal Aviation Procurement Manual*, which codifies all agencywide regulations, orders, and procedures relating to procurement. The FAA Academy developed in turn a national procurement training program based on the new 2,300-page manual. This training program consists of a series of courses designed to provide FAA personnel engaged in procurement activities with the skills needed to carry out their duties effectively. Included in the curriculum are courses in contract placement and administration, small-purchase transactions, pricing techniques, and personal-property administration.

Because some elements of the Department of Transportation—the Office of the Secretary among them—have no procurement capability of their own, FAA's Procurement Operations Division was assigned the task of procuring for these organizations. In all, FAA processed 403 procurement actions for the Department, involving a total of \$1.2 million.

Legislative and Legal Activities. From the standpoint of FAA, the act establishing a Department of Transportation was the most significant item of legislation enacted during this reporting period. Among other things, this legislation created within the new Department a Federal Aviation Administration, headed by a Federal Aviation Administrator. The act transferred to and vested in the Secretary of Transportation all the functions, powers, and duties of the Federal Aviation Agency and, in turn, transferred those duties of the Secretary pertaining to aviation safety to the Federal Aviation Administrator. FAA's status, then, was changed from that of an independent agency to that of an operating administration under a department headed by a secretary with Cabinet status.

Another notable piece of legislation was an amendment to the Federal Airport Act extending the Federal-aid airport program for an additional 3 years, from fiscal year 1968 to fiscal year 1970. The act authorized the Congress to appropriate up to \$75 million for each of these years for grants-in-aid to airports.

Occupational Health Program. Fiscal year 1967 was the first full year of operation of the air traffic control health program. This program was established to provide the FAA with psychophysical data vital in formulating policies for selecting, employing, and retiring air traffic controllers, who work under severe pressure during peak traffic hours. This reporting period saw an independent group of physicians and psychologists carefully evaluate the program (including the psychological testing procedures), recommend its continuation, and offer a number of suggestions for improving its effectiveness. Upwards of 12,200 examinations were conducted during the year, and 800 waivers were granted.

FAA furthered its employee health program in a number of other ways, which included—

- Conducting intensive studies of noise, radiation, sanitation, pollution, and other environmental health and safety problems.
- Establishing a special survey team to investigate working conditions at FAA field facilities, particularly the environmental surroundings of air traffic controllers.
- Continuing studies of such factors affecting job placement and retirement programs as air traffic controllers age and performance levels.

Aviation War Risk Insurance

On April 1, 1967, the aviation war risk insurance program—authorized by Title XIII of the Federal Aviation Act of 1958, as amended—was transferred, pursuant to the Department of Transportation Act, from the Department of Commerce to the Department of Transportation. Subsequently, it was delegated by the Secretary of Transportation to the Federal Aviation Administrator.

Under this authority, the Federal Aviation Administration has maintained a standby insurance binder program which would make available aviation war risk insurance upon an outbreak of war.

In addition, at the request of the Department of Defense, aviation war risk insurance is being provided U.S. civil air carriers under contract to the Military Airlift Command (MAC) for airlift services, including overseas destinations in areas where warlike actions may be encountered.

Active insurance policies were effective covering a total of 468 aircraft currently engaged in military civil contract operations or which are committed to the Department of Defense in the event of an emergency. Maximum contingent hull liability under these policies amounted to approximately \$2 billion. Insurance binders also were effective covering 48 aircraft. Applications for insurance coverage of additional aircraft were being processed.

Revenue for fiscal year 1967 was \$18,000, and administrative expenses, of which \$6,000 was charged to the "Operations" appropriation, totaled \$22,000. Retained earnings at the beginning of the year were \$47,000; at the end of the year, \$49,000.



Traffic in Los Angeles, Calif.

FEDERAL HIGHWAY ADMINISTRATION

Organization and Responsibilities

The Federal Highway Administration consists of five administrative offices—General Counsel, Public Affairs, Policy Planning, Administration, and Audits and Investigations—and three bureaus—Bureau of Public Roads, the National Highway Safety Bureau, and the Bureau of Motor Carrier Safety. The administrative offices were patterned after the former organization of the Bureau of Public Roads and provide support services for all of the operating bureaus and the Office of the Federal Highway Administrator. The bureaus implement and carry out the improvement and regulatory programs for which the Administration is responsible, including the construction of the Interstate and Defense Highway System. All of these are current programs, now combined under a single administration to concentrate the attack on death and destruction on our highways, to improve the scenic views for motor vehicle operators and passengers, and to fit future highway projects into their proper niche in comprehensive plans for environmental development . . . plans that will provide the necessary mobility and still leave “room to live” in our cities and along our traffic corridors.

The oldest bureau, the Bureau of Public Roads (BPR) has traditionally administered Federal laws pertaining to the planning and construction of nearly a quarter of America’s 3.7 million miles of streets and roads. It continues its unprecedented State/Federal cooperative effort primarily through the Federal-aid construction program. Through it BPR administers what has often been called the most impressive public works project ever undertaken, the construction of the 41,000-mile System of Interstate and Defense Highways, as well as improvement of 860,000 miles of primary and secondary roads and their urban extensions.

A much newer Bureau, the National Highway Safety Bureau is responsible for an increasingly important phase of highway transportation. Established originally as two separate agencies—National Traffic Safety Agency and National Highway Safety Agency—as prescribed by their respective Congressional Acts in 1966, they were combined by Executive Order No. 11357 (June 6, 1967) into a single, logical organization to implement a comprehensive safety program covering motor vehicles, their operators, and the highways on which they travel.

Advisory groups, provided by statute and composed of public, private, and industry representatives, consult on the development of safety standards and programs.

The safety performance of all motor carriers engaged in interstate or foreign commerce is the domain of the Bureau of Motor Carrier Safety. It is the only one of the three bureaus whose role is almost entirely regulatory in nature. It previously operated as a component of the Interstate Commerce Commission. Through its 100-man field staff, it deals with more than 2,250,000 vehicles belonging to nearly 150,000 certificated and private motor carriers and performs such services as checking driver qualifications, analyzing accident reports, checking on the movement of dangerous cargo and conducting safety education campaigns and clinics.

Bureau of Public Roads

Functions. Among the Bureau of Public Roads' principal functions are the planning of integrated highway networks, including the National System of Interstate and Defense Highways, administering the Federal-aid highway program (some \$4.4 billion annually), and devising practical road financing plans. Its research efforts encompass the whole range of highway transportation from improved design and construction methods to defining the causes of highway accidents and devising means to prevent them.

Although the Bureau's basic function is to represent the Federal interest in this huge and continuing construction program, other related activities—planning, research, development, safety, highway esthetics, special urban problems—have grown in size and scope with the growth of the construction program. The Bureau is quite properly concerned with the total implications of the program and its impact on human and social values, not just the provision of motor transport facilities.

Traffic Operations. An important safety activity is the so-called Spot Improvement Program, in which BPR and the State highway departments are making a concerted effort to remove or modify specific high-hazard accident locations. Between 1964 and June 30, 1966, the States programed some 1,500 projects to correct hazardous locations. At the close of fiscal year 1967, this total had risen to 2,800. The States have completed the task of inventorying their Federal-aid systems to identify accident-inducing locations. The objective is to eliminate the worst hazards by September 1, 1969.

As a corollary to the Spot Improvement Program, the Bureau has inaugurated the Traffic Operations Program to Improve Capacity and Safety (TOPICS). This activity enables the States to expand the Federal-aid highway system in cities according to a predetermined plan. Traffic engineering improvements can then be made on arterial and business district streets in that system. Improvements under this program include traffic channelizations, improved signing, pavement markings, traffic signal systems, grade separations at intersections, bus turnouts for passenger loadings and unloadings, and related projects.

While many improvements of this type are generated primarily by the need to move traffic efficiently, they add up in fact to a kind of spot improvement safety program for the urban areas, and in that context should be considered part of the overall Bureau-State highway safety effort. Pilot

projects to test this approach had been started in several cities by the end of fiscal year 1967, with a number of others under development.

Highways and Environment. In recognition of the increasing need to acquire lands for future highway use, the Congress, in section 10 of the Federal-Aid Highway Act of 1966, directed that a study be undertaken of the advance acquirement of highway rights-of-way for the Federal-aid highway systems. In the study, emphasis was to be given to the provision of adequate time for the disposal of improvements located on rights-of-way, the relocation of affected persons and businesses, methods of financing advance acquisition, and related matters. This study was submitted to Congress toward the end of fiscal year 1967.

The benefits of acquiring rights-of-way well in advance of need are many and diverse, the greatest being cost saving. For example, a large undeveloped shopping center site, purchased by a State highway department in 1959, will not be needed for highway purposes until sometime this year. The purchase price of \$275,000 represents a saving of several million dollars in right-of-way costs for land and improvements, had the shopping center been built.

Among other recommendations, the report proposed that a Federal-aid revolving fund for advance acquisition of rights-of-way be authorized in the amount of \$300 million, to be established in \$100-million increments over a 3-year period. The Highway Trust Fund was suggested as the source of these moneys.

Increasing cognizance is also being taken of the need to relocate and re-establish persons, business concerns, farmers, and nonprofit organizations displaced as a result of the Federal-aid highway program, and to do so promptly and equitably. Accordingly, the Congress, in section 12 of the Federal-Aid Highway Act of 1966, directed that a study be made of the relocation problem, with special emphasis on the adequacy of relocation payments and assistance to displaced groups and individuals; the need for additional payments or other financial assistance; the feasibility of constructing facilities within the right-of-way, or upon real property adjacent thereto, to aid relocatees; the financing of such relocation accommodations; and related matters. This study was transmitted to Congress by its July 1, 1967 due date.

The report recommended that the level of relocation payments to those displaced be substantially increased. Relocation assistance would be modified substantially in character, and made mandatory for both residential and business relocation activities. A project relocation plan would be required. New relocation housing would be encouraged. Every reasonable effort would be made to improve leadtime for State highway department right-of-way acquisition activities. The costs of administering the relocation program would be eligible for Federal-aid reimbursement in the same manner as other Federal-aid project costs. Assistance to small business would be improved. And the joint use or joint development concept is heavily stressed as an effective aid in urban areas.

Baltimore Environmental Study. Negotiations are underway with a group of consultants conducting an environmental and engineering study for the Interstate highway system in Baltimore. This team includes engineers, architects, sociologists, urban planners, economists, and others. It is being assembled to examine the highway corridor, and location and design alternatives within it, giving appropriate attention to overall community goals and plans. The fundamental purpose of this study is the resolution of those problems associated with the impact of the Interstate System on the social and economic well being of the City of Baltimore—the findings to be adapted to other cities along Interstate routes.

National Highway Needs Study. In 1965, the Congress, under Public Law 89-139, required a report to be submitted in January 1968, and every second year thereafter, on the highway needs of the Nation. The first report is approaching completion and will include the following:

- a. A review of the existing Federal-aid systems and consideration of needed system changes.

- b. An analysis of present and anticipated future deficiencies in the rural and urban highway networks.

- c. An analysis of the needs for future highway improvement as reported by the State highway departments.

- d. A discussion of highway financing, existing trends, and future options.

The 1968 report will be coordinated with a broader and larger study of total transportation requirements in the United States. In this connection, trends in highway travel are being analyzed in comparison with other modes and in relation to population and economic growth pattern.

Federal-aid Construction. Over 24,000 miles of the 41,000-mile National System of Interstate and Defense Highways were open to traffic at the end of fiscal year 1967 and another 5,852 miles were under construction. Fifty-nine percent of the total mileage was in use and only 3 percent had not been advanced beyond the preliminary stage.

Of the 24,070 miles of the System in use as of June 30, 1967, 18,431 miles met the standards of adequacy for future traffic and 3,334 miles are fully capable of handling current traffic but will need additional improvement to bring them up to the appropriate standards. Toll roads, bridges, and tunnels incorporated into the System, as permitted by law, totaled 2,306 miles.

Under the so-called ABC program, construction contracts involving 212,564 miles of primary and secondary highways and their urban extensions have been completed since 1956, and contracts involving another 16,832 miles were underway on June 30, 1967.

The Appalachian Program. This was the second full year during which the Bureau of Public Roads assisted the Appalachian Regional Commission in carrying out the highway construction provisions of the Appalachian Regional Development Act of 1965.

As of June 30, 1967, construction had begun on 194 miles of Appalachian development highways. Preliminary engineering and right-of-way acquisition were underway for an additional 980 miles, centerline locations had

been approved for another 285 miles, and location studies were underway or completed on all but 158 miles.

Of the 328 miles of local access roads selected by the Appalachian Regional Commission and approved as of June 30, 1967, construction had begun on 102 miles, preliminary engineering and right-of-way acquisition were underway on an additional 56 miles, centerline locations were approved on an additional 48 miles, and location studies were underway or completed on all but 90 miles.

Of the \$300 million of Appalachian funds appropriated to date, funds obligated at the close of fiscal year 1967 totaled \$163,096,662 for Appalachian development highways and \$8,238,833 for local access roads.

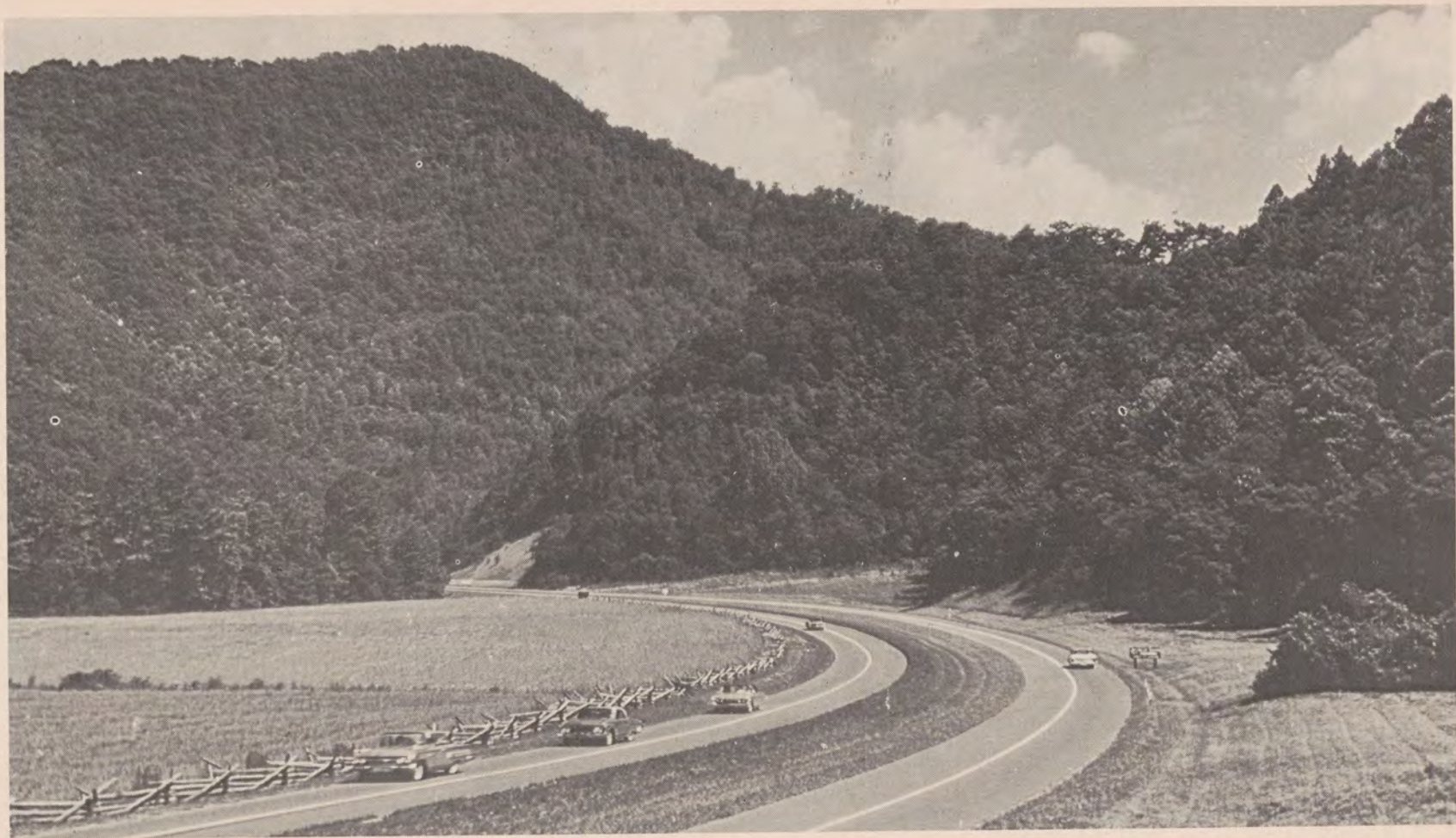
Allied Highway Programs. In addition to its activities relative to the Interstate and ABC systems, BPR also performs surveys, originates design, and has direct supervision of projects on certain allied highway programs. The most significant work in this category includes the construction of park roads and trails and parkways for the National Park Service, timber access roads for the Bureau of Land Management, service roads in or adjacent to Indian reservations for the Bureau of Indian Affairs, forest development roads for the Forest Service, and some defense access roads for the Department of Defense.

During fiscal year 1967, improvements under the direct supervision of BPR were completed on 147 projects totaling 1,110 miles and involving \$78.4 million of Federal funds. In addition, contracts were awarded on 111 new projects totaling \$40.5 million for 500 miles. At the close of fiscal year 1967, 130 projects were under contract for a total obligation of \$84.3 million for construction on 792 miles. Additional work on 526 miles, estimated to cost \$75.4 million was in either the programmed, plans approved, or advertised stage.

Highway Esthetics. To implement the Highway Beautification Act of 1965, Congress appropriated funds for fiscal years 1966 and 1967 for the landscaping and scenic enhancement of areas along and adjacent to the Interstate and Federal-aid primary systems and along selected sections of the Federal-aid secondary system. To date, 464 rest areas, 5,409 scenic easement acquisitions, and 756 landscaping projects have been obligated or completed.

The 1965 act provided that all States, the District of Columbia, and Puerto Rico establish outdoor advertising controls. Upon enactment of enabling legislation, each State would then be required to reach agreement with the Secretary of Transportation on applicable standards, criteria, rules, and regulations. As of June 30, 1967, 25 States had enacted implementing legislation and two States had submitted agreements acceptable to the Secretary.

The legislation also provided funds for the control of outdoor advertising and junkyards adjacent to the Interstate and Federal-aid primary systems. At the close of fiscal year 1967, 48 States had taken advantage of the provisions of the act, having screened or removed a total of 1,113 junkyards.



A scenic easement perpetuates a pastoral setting in North Carolina.

Joint Use or Joint Development Concept. The Bureau of Public Roads is continuing to foster the joint development of urban highway and other urban facilities, where opportunities exist at reasonable cost. This plan will stimulate local programs through which cities can meet some of their needs for better housing, parks, playgrounds, open space, and other improvements, and for business and commercial redevelopment by combining them with planned highway improvement. At the same time, the concept offers one of the most effective solutions possible for the relocation of persons and even businesses. Because of the advantages of joint development, these can all be provided in less total space and at a lower total cost.

Urban Transportation Planning. The year was characterized by consistent progress in the comprehensive transportation-land use planning programs required in certain metropolitan areas under section 9 of the Federal-Aid Highway Act of 1962. By the end of the fiscal year, transportation planning staffs in approximately half of the affected 231 areas with populations 50,000 and over had completed their analyses of alternative transportation systems and land use arrangements.

Special studies were conducted, several of which involved a joint effort with other governmental agencies, particularly the Department of Housing and Urban Development (HUD), and with the Office of High Speed Ground Transportation in the Department of Transportation in connection with access to airports. The Bureau of Public Roads also supplied staff assistance and direction to a nationwide HUD study of jet aircraft noise in the vicinity of airports.

The Inter-American Highway. Since 1930, the United States, through the Bureau of Public Roads, has been assisting the Republics of Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama in the construction of the Inter-American Highway. This is the section of the Pan American Highway System from Nuevo Laredo, on our Mexican border, to Panama City at the Pacific terminal of the Panama Canal, a distance of 3,142 miles. The 1,587-mile section of the highway in Mexico has been financed and constructed entirely by Mexico.

The full length of the Inter-American Highway has been open to all-weather traffic since May 1963. Some 2,844 miles are paved and the remaining 298 miles have an all-weather gravel surface. Sections in Guatemala and Costa Rica are still substandard and require widening and line correction to meet Inter-American Highway standards.

During fiscal year 1967, a contract was underway on grading and paving the 50-mile section from San Cristobal to Huehuetenango, Guatemala. In the Tapon section north of Huehuetenango, the Guatemalan Department of Highways worked on slide removal, retaining walls, and bridge construction, and bids were solicited for grading and paving this last section in Guatemala.

In El Salvador and Honduras, work consisted of maintenance and brush removal as the highway in these countries was previously completed to proper standards. In Nicaragua, paving was completed on the final 28-mile section.

Financing arrangements were completed and plans, specifications, and bid documents prepared for the remaining work in Costa Rica. A grading and paving contract was awarded for a 71-mile section from Cartago to Isidro. Bridges, grading, and paving were completed on the last 28-mile section of the highway in Panama.

Other Foreign-Aid Activities. The Bureau of Public Roads continued to provide technical assistance, advice, and consultation to foreign countries in cooperation with the Department of State, the Export-Import Bank, the Development Loan Fund, and the International Bank for Reconstruction and Development (World Bank). Emphasis in all cases has been given to aiding the countries in establishing competent highway organizations and training nationals to staff them.

Highway improvement programs staffed with Bureau of Public Roads personnel were carried on in 10 countries during fiscal year 1967. The programs in eight of these countries—Brazil, Bolivia, Burundi, Laos, Peru, the Philippines, Sudan, and Yemen—were sponsored by the Agency for International Development. In the Dominican Republic and Iran, the programs were financed by loans from the Export-Import Bank.

In addition, procurement and/or short-term advisory activities were carried on in Chad and Ethiopia.

Study Programs for Foreign Nationals. The Bureau of Public Roads, in cooperation with State and local highway agencies, universities, and industries, has planned and administered several types of study and training programs for foreign engineers and other highway officials. In all, 295 engineers and officials from 45 countries have participated in 396 man-months of study and training programs.

Designing for Safety. Particular attention was directed to features that will decrease the likelihood and severity of run-off-the-road accidents. Side slopes are being made flatter, shoulder widths increased, wide recovery areas provided: lateral clearances to structures, utility poles, trees, and sign supports are being increased; breakaway sign supports are used and protective rails installed where needed. Many safety improvements such as removal of unnecessary signs, guardrails, and other hardware have also made highways more attractive.

In connection with roadside hazards, the year's most significant development was the publication of the so-called "yellow book" of the American Association of State Highway Officials (AASHO). Issued in February 1967, it is officially titled "Highway Design and Operational Practices Related to Highway Safety." A joint BPR-AASHO project, it emphasized that much can be accomplished by removing hazards that currently exist on and along roads and streets, and by improving design and operational practices so that similar or other hazards will not be built into highways of the future.

The findings and recommendations in the report were adopted completely by the Bureau of Public Roads. In fact, the report confirmed a policy established by the BPR in August 1966 and spelled out in a memorandum calling for the elimination from proposed plans of all unnecessary sign

supports, light standards, drainage structure obstructions, and other appurtenances. Where complete elimination of these items is not feasible, adequate protection for the out-of-control vehicle is to be provided in the form of impact-absorbing guardrail, special grading of the surrounding area, or other means to reduce the severity of accidents.

Highways and Economics. There has been a constantly growing concern as to the social, community, and environmental aspects of highway transportation. During the past year, States and area transportation study organizations developed surveys of public attitudes, studied factors affecting public preference for highway location, and developed guidelines to community values in transportation planning. Aside from these broad-gauged studies, diversified research efforts initiated by the BPR have been investigating economic effects of highway transportation both on vehicle owners and users and on land values.

In a study for the BPR, the University of Maryland found that for the work trip, major factors in order of importance are: reliability of reaching destination, travel time, and cost. Convenience, comfort, congestion, and safety are lesser factors. In contrast, the nonwork trips' significant attributes, after reliability of reaching destination, are comfort, cost, and minimal congestion. Consumers generally preferred the private automobile to public transportation, especially for nonwork trips.

A comprehensive California study of airspace utilization found that air rights development might be suitable in areas where land values exceed \$15 to \$20 per square foot (over \$600,000 per acre), as in the central business districts of large California cities. An Illinois report on interchanges indicates that solutions to the interchange problem require combining highway design, community planning, and control of land development and highway access. A Portland, Oregon, urban area noise study showed that freeway traffic noise has little effect on apartment rental rates.

Studies of the Capital Beltway (I-495) around Washington, D.C., sought to determine the beltway's effect on work, recreation, and shopping trips, and on land values and land use. Maryland's research indicates that within 3 years after completion of the highway, development increased, highway access improved, commercial and industrial firms shifted from the central city towards suburbia, and motorists on work, shopping, and recreational trips drove greater distances. Unfavorable effects on land values were observed close to the beltway. Most of the findings of the Virginia study paralleled Maryland's. One additional major finding is that the beltway up to now has discouraged "leapfrogging" by developers in favor of more concentrated development inside the beltway and immediately beyond, with some concentrated development along major radials where they cross the beltway.

Increasingly, appraisers in and out of the State highway departments are using the experience in the BPR's "bank" of about 5,000 severance effects cases in highway right-of-way acquisition. Recently, a private appraisal valuation engineering firm estimated yearly savings of \$50 to \$100 million in right-of-way expenditures from the use of the "bank."

Virtually all States have done some severance analyses and made some use of these studies, which offer a way to correct certain overpayments as well as to emphasize the relatively few cases where too little is paid for highway right-of-way.

Analysis of the Functions of Transportation (AFT). In 1963, the Bureau of Public Roads faced a growing number of complex problems. Some of them implied a need for radical changes, particularly in control and communication systems for vehicles. A staff study of the situation led, in April 1965, to the start of a major systems analysis of transportation. The study, called "Analysis of the Functions of Transportation" (AFT), involves approximately \$2 million in staff and contract efforts and is scheduled for completion in January 1968. It is developing a mathematical model to provide a rational overall transportation planning tool for policymakers and decision-makers.

Public Transportation. The year marked increased activities in providing technical assistance to State and local agencies for determining the usage of various transportation modes, and the optimum development and service patterns for transit systems in relation to land use and socio-economic factors.

As part of the latter program the Bureau of Public Roads participated with State highway departments in developing exploratory projects, such as the exclusive use by buses of two ramps and a portion of the reversible lanes on Interstate 5 in the heart of Seattle, and in New Jersey, the designation of a section of an old railroad right-of-way as a Federal-aid route to permit construction of a highway for buses only.

Other studies included the analysis of the Bureau of the Census Standard Location Areas data to aid in the determination of factors influencing the use of public transportation, the coding of computerized networks to represent transit systems, and the development of various analytical techniques to improve the urban transportation planning process.

Bureau of Motor Carrier Safety

The mission of the Bureau of Motor Carrier Safety, reduced to its simplest terms, is to wage a concerted effort to minimize deaths, injuries, and property damage attributable to operation of commercial motor vehicles upon the Nation's highways.

In general, a three-level approach to the task is relied upon: (1) promulgation of safety regulations; (2) encouragement of voluntary cooperation; and (3) selective enforcement. The regulations are administered through a system of field audits and inspections of the carriers' records and vehicles and of driver practices. Deficiencies are brought to the attention of employees and management so that corrective action may be taken. In instances of willful or flagrant violations, criminal prosecution may be sought and certain administrative sanctions invoked.

Specific activities performed by field personnel in administering the program range from on-the-scene accident investigation to conducting gen-

eral safety meetings. States have been encouraged to adopt the Motor Carrier Safety Regulations in whole or in part, or to promulgate compatible regulations. Forty-two States have adopted all or substantial portions of the Bureau's regulations for application to intrastate motor carrier operations. Twenty-nine States have adopted all or a part of the Hazardous Materials Regulations. This wide acceptance of the regulations promotes uniformity, eases the regulatory burden on the carrier, and increases the capability to reach carriers subject to the regulations.

In accordance with the terms of Public Law 89-170, preliminary development of a program of FHWA-State cooperative agreements has been undertaken with a view toward increasing the exchange of information between the Bureau of Motor Carrier Safety and State agencies responsible for some aspects of motor carrier safety and joint cooperation in enforcement matters.

Driver Qualifications. A complete revision of Part 291, Qualifications of Drivers, is designed to strengthen the present mental and physical requirements for truck and bus drivers engaged in interstate commerce. A major feature is the requirement for more frequent physical examinations, more specific responsibilities on motor carrier management with respect to selection, supervision, and control of drivers, and, for the first time, specific standards for driver qualification.

Modification of the physical examination required of drivers allows optometrists to certify adequate vision.

Since the adoption of the safety regulations, drivers who have suffered the loss of a foot, leg, hand, or arm have been prohibited from operating a motor vehicle in interstate commerce. As a result of the progress made in the design of prosthetic devices, the regulations were amended to permit, under controlled conditions, amputee drivers to obtain a waiver from the minimum physical requirements. The waiver is limited to 2 years and the driver's record is subject to constant review and evaluation. To date there have been 73 waiver applications submitted, of which 26 have been granted.

Other Modified Regulations. Considerable progress has also been made in the modification of regulations on inspection and maintenance of motor vehicles. It is contemplated that this revision will include specific preventive maintenance programs designed to require the motor carrier periodically to inspect and maintain its vehicles. It will also include a requirement for a written report by the driver prior to dispatch, listing mechanical defects or other deficiencies of the vehicle.

There were several major revisions of the regulations relating to the transportation of hazardous materials. Requirements pertaining to the placarding of motor vehicles were modified to provide a more meaningful system to warn the public, particularly police and fire officers, of inherent danger of the commodities being transported. The regulations were also amended to require those private carriers engaged in transportation of explosives and other dangerous articles to file a report each year indicating

that they were so engaged, and supplying data on the number of accidents in which their vehicles were involved.

Study Programs. Investigation was instituted to determine the need for seatbelts on interstate passenger buses because of the number of deaths and serious injuries resulting from accidents involving such buses. An order was issued, accompanied by proposed regulations, for seatbelts on buses, making all interstate bus operators parties to the proceeding. The order solicited industry views on the proposed regulations.

In another area, an action program was designed to advise the BPR of those highway conditions directly associated with the cause of accidents. A study disclosed that trucks were overturning while exiting and entering highways at certain ramps of the Interstate System, and investigation by the Bureau of Public Roads identified a possible design problem. Engineers were instructed to examine future designs of interchange ramps to insure that superelevation does not present a hazard to large motor vehicles, and to program the correction of existing faulty designs as a part of BPR safety projects.

Statistics. Total motor vehicle use of streets and highways in calendar year 1966 reached 935 billion vehicle-miles, an increase of 5.3 percent over the previous year. Interstate common and contract carriers of property with annual operating revenues of \$200,000 or more operated approximately 0.86 percent more intercity miles in 1966 than in 1965. Passenger carrier miles were estimated to be 5.1 percent higher in 1966.

Fatalities in accidents involving interstate carriers reported to the Federal Highway Administration increased 4 percent to 2,136 in 1966 from 2,046 in 1965. Accidents involving property-carrying vehicles in 1966 resulted in 1,992 fatalities, an increase of 6 percent. Passenger carriers reported 160 fatalities in 1966, 2 percent less than the 164 in the previous year.

Fitness Reports. During fiscal year 1967, the Bureau of Motor Carrier Safety furnished 5,553 safety compliance reports to the Interstate Commerce Commission on the safety records of motor carriers applying for emergency and temporary authority to operate their vehicles. For the same period, the Bureau of Motor Carrier Safety submitted 59 reports to the Commission covering applications involving the transportation of hazardous materials; under the Commission's policy, the certificates are limited to a term of 5 years. Reports were submitted to the Interstate Commerce Commission on 11 motor carriers petitioning for waiver of the inspection requirements prescribed by the Lease and Interchange Rules, and to the Department of Defense on the safety record of 20 motor carriers seeking to haul explosives for that Department. Reports were submitted to the Interstate Commerce Commission in answer to 35 formal petitions filed by motor carriers for reconsideration of orders denying temporary authority.

Investigations. During fiscal year 1967, the field staff made a full investigation of 263 separate accidents, and a preliminary appraisal investigation of 636 accidents. These accidents were selected on the basis of high casualties, property damage, or other significant circumstances.

National Highway Safety Bureau

The National Traffic and Motor Vehicle Safety Act and the National Highway Safety Act were passed by Congress and became law on September 9, 1966. Each act called for the creation of a statutory agency to administer its provisions and provided that the agencies be located initially in the Department of Commerce. When the new Department of Transportation was established on April 1, 1967, both agencies were transferred to it. The Administrator of each agency was required by law to be appointed by the President, who chose to unify the functions of both agencies from the beginning by appointing the same person to head them and later to head the consolidated National Highway Safety Bureau, which was established by Executive Order of President Johnson on June 6, 1967.

While there were some highway and safety activities at Federal, State, and local levels prior to passage of the legislation, increasing traffic deaths and injuries—53,000 deaths and almost 4 million injuries in 1966—had prompted President Johnson to request comprehensive legislation to attack simultaneously all elements of the problem, which he referred to as “a raging epidemic of highway death—which has killed more of our youth than all other diseases combined.” Today, the National Highway Safety Bureau is leading this attack on motor vehicle crashes on all fronts—it is working to prevent crashes, to reduce injury and destruction in those that do occur, and to take all possible measures to alleviate the suffering and damage that follow.

Motor Vehicle Safety Performance. The first major legal deadline the Bureau had to meet was to develop and issue initial motor vehicle safety standards for all domestic and foreign motor vehicles manufactured after January 1, 1968, for sale in the United States. The standards were to be reasonable, practicable, and above all, to meet the needs of safety, assuring the motoring public, within that framework, of cars as safe and reliable as modern industry can make them. The job of issuing the standards received primary attention in the months immediately following passage of the Act. In developing them, the National Highway Safety Bureau followed the clearly defined series of regulatory steps specified in the law—procedures long followed by other Federal agencies with similar statutory responsibilities.

The first step was taken by the National Highway Safety Bureau October 8, 1966, in the form of a legal notice stating that standards would be issued January 31, 1967—the statutory deadline—and inviting interested parties to submit proposals and suggestions by November 1, 1966. In response to this announcement, over 3,105 pages of technical comments and data were submitted by 175 interested parties.

In its next step, on December 3, 1966, the National Highway Safety Bureau drew up and published 23 proposals for standards for the consideration of interested parties, including both the domestic and the foreign motor vehicle industry, who were given 31 days to review the proposals

and submit comments by January 3, a date necessitated by the January 31, 1967 deadline.

Despite the complexity of considering the varied problems of hundreds of different automobile makes and models, and the short time in which to do it, 200 different sources submitted 4,525 pages of technical comments and data. Contributors included domestic and foreign motor vehicle manufacturers, the Vehicle Equipment Safety Commission, individuals, trade associations, and various segments of the scientific community. These materials, the earlier submissions and later technical records of numerous meetings between Bureau staff and technical experts, comprise one of the most detailed collections of specific matter on motor vehicle safety ever assembled, and greatly facilitated the development of the final standards that reflected a broad consensus of expert technical opinion.

The standards were issued on January 31, 1967, as required by law and covered all or part of 20 of the 23 proposals suggested by the National Highway Safety Bureau on December 3, 1966. The areas covered were: labeled controls within reach of safety-belted driver, shift sequence for automatic transmissions, windshield defrosting and defogging systems, windshield washers and two-speed wipers, residual braking system, reliable brake hose and improved parking brake, reduction in glare quality for bright metal surfaces, rear-view mirror, interior impact protection, energy-absorbing steering assemblies, improved laminated windshields, improved door latches and hinges, lap safety belts in all passenger positions, shoulder safety belts for two outboard front seat positions, elimination of wheel cover protrusions, and safer fuel tanks and fittings.

At the same time the initial standards were issued January 31, 1967, seven proposals were made to extend further their safety coverage. Detailed comments and technical data were also formally requested on three safety problem areas—new pneumatic tires, tire selection and rims, and head restraints—for which standards could not then be issued.

The law required the initial standards to be based on existing standards. Thus, the 20 initial standards were based on a total of 48 existing standards of the General Services Administration, the Interstate Commerce Commission, and other groups. In some cases, the National Highway Safety Bureau combined parts of several existing standards into a better composite. The 19 GSA standards, on which the National Highway Safety Bureau's standards are largely based, were developed for government vehicles, primarily standard passenger cars. These standards had to be re-examined in terms of applicability to the much wider variety of vehicles purchased by the general public, e.g., convertibles, station wagons, etc. Existing standards also had to be adapted to meet the statutory requirement that the standards be stated in performance rather than in design terms—in terms of what is to be accomplished rather than how it is to be done.

Currently, work is in progress on new and revised motor vehicle safety performance standards.

Notification Concerning Defective Motor Vehicles. Another provision of the National Traffic and Motor Vehicle Safety Act requires motor vehicle

manufacturers to notify original owners and dealers and the Secretary of Transportation of any safety-related defect discovered in their products and of appropriate remedial measures. These notices are available for public inspection at the National Highway Safety Bureau's offices. From time to time, listings of the defects will be published and made available to the public.

During fiscal year 1967, under this requirement of the Act, there were 95 notification and recall campaigns involving 1,944,592 vehicles and 24 manufacturers—both domestic and foreign. In some cases, all the vehicles which needed to be checked were identified before they reached the public. More often, however, extensive notification of owners and dealers was necessary. The major problem areas concerned brakes, steering mechanisms, and fuel supply.

State/Community Highway Safety Program Standards. Development of highway safety performance standards for State programs is a major provision of the Highway Safety Act and began shortly after its enactment. On September 15, 1966, an introductory meeting was held with selected State officials and representatives of various safety groups. This was followed by a letter to each Governor requesting information about existing State highway safety programs and requesting the appointment of a liaison representative to assist in planning the national effort. The major point of emphasis was that the evolving attack on traffic deaths and injuries was to be a *national effort*, stimulated at the national level but implemented by State and local governments.

In early December 1966, a meeting was held with representatives of the Governors of each State to outline the program and discuss preliminary proposals for standards in such program areas as driver education, motorcycle safety, vehicle inspection, and others.

Discussion at the meeting, in which almost all of the States participated, centered on the need for effective communications with the States, timing of the issuance of the standards, procedures for applying for funds, and program implementation by the States. A similar meeting was held the same week with representatives from various organizations of professional, civic, and local government officials and with representatives from national associations concerned with State highway safety programs. Over 30 associations were represented.

The initial proposals were expanded in number and refined in discussion with groups and individuals representing States and other interested parties during December 1966 and January 1967. On February 16, 1967, 13 draft standards were presented and discussed in meetings with representatives of the Governors, associations of State and local officials, and major private organizations. The draft standards covered motor vehicle inspection; motor vehicle registration; motorcycle safety; driver education; driver licensing; codes and laws; traffic courts; alcohol in relation to highway safety; identification and surveillance of accident locations; traffic records; emergency medical services; highway design, construction, and maintenance; and traffic control devices.

The draft proposals reflected the views and findings of many different sources, including the newly created National Motor Vehicle Safety Advisory Council and the presentations of safety and health agencies, national organizations and groups such as the National Safety Council, and private individuals. They also reflect numerous published research reports of the Bureau of Public Roads, the U.S. Public Health Service, and other government agencies. Also taken into account were standards, publications, and programs of such national organizations as the American Association of Motor Vehicle Administrators, American Association of State Highway Officials, American Bar Association, Institute of Traffic Engineers, International Association of Chiefs of Police, and the National Education Association.

Over 10,000 copies of the draft standards were distributed. Comments on them were received from 48 States, the District of Columbia, and Puerto Rico, 24 national organizations and associations, six Federal departments, and 75 private individuals. In addition, national, State, and local organizations held special meetings to discuss and comment on the draft proposals.

Comments varied in substance, with many suggestions for deletion of specific items and the addition of others. As expected, there were some differences of opinion, but a clear consensus could usually be recognized. Apart from program substance, a number of comments noted that several years and greatly increased expenditures would be needed for the programs to become fully effective. Other comments centered on new authorizing legislation and training of personnel.

All comments were carefully analyzed over a period of several months and prompted a number of changes in the draft standards as circulated. The most general change was a significant simplification to allow for maximum flexibility in implementation by the States and communities.

The program standards were issued in final form on June 27, 1967. Also, in accordance with the requirements of the Act, a comprehensive report on the development of the highway safety program standards was prepared and submitted to the Congress on July 1, 1967.

The States since then have generally responded vigorously and constructively to the new highway safety program standards. Twenty-five State legislatures have initiated legislation in compliance with them. Forty-seven State legislatures met in 1967. Of these, ten enacted periodic vehicle inspection laws and six others enacted "spot" inspection laws. Several States strengthened driver licensing laws, with at least 12 States providing for some form of re-examination at time of renewal. Thirty States enacted laws relating to motorcycle riders or to safety equipment requirements for such vehicles.

Implied consent laws applying to drunk drivers were enacted in seven States; chemical test laws were enacted in three States and strengthened in three others. Laws to improve emergency medical services were passed in at least eight States.

State/Community Highway Safety Programs: Funding Procedures. Another major area of activity in the highway safety programs in fiscal year

1967 was the development of procedures for disbursing Federal grant-in-aid funds for State and local highway safety programs.

Non-discretionary funds for fiscal years 1967 and 1968 totaling \$118,987,500 were apportioned to the States on December 20, 1966 according to population, as required by law. On April 8, 1967, interim procedures and application forms for State planning and administration projects were released. On May 19, 1967, the first State grants were approved under this interim procedure. By July 1, 1967, 21 matching State and Federal planning and administration grants to as many States had been approved for a total of \$1,652,414—Federal funds providing \$903,000.

On June 2, 1967 an order was issued providing for application procedures for substantive as well as planning administration projects. Four substantive project applications to be financed in matching funds for a total of \$1,205,100 in combined State and Federal funds had been received by July 1, 1967.

Work was initiated on a manual to guide the States in the development of "base year" figures—that is, the level of expenditures for highway safety during the two fiscal years preceding passage of the Act. In addition, manuals were drafted to assist the States in the development of meaningful estimates of the cost of the highway safety program over the next 10 years. These statistics will be compiled to meet the requirements of Section 207 of the Act—a report to the Congress on the cost of the programs nationally.

Mission Support. Performance standards both for motor vehicle safety programs and for State and community highway safety programs must be based upon carefully documented scientific evidence. The National Highway Safety Bureau's support program is designed to generate and document the sound, scientifically obtained evidence required for the formulation of effective and feasible performance standards. It also seeks to disseminate broadly the information generated, to produce technical guidelines to assist in the implementation of national traffic safety programs, and to stimulate the development of critically needed manpower resources.

Major support functions include development and maintenance of a statistical data base with regard to driver, vehicle, highway, accident, and other variables to identify and evaluate traffic safety trends; development of systems and procedures for aggregating and interpreting national traffic safety data transmitted from State and local traffic data centers; assistance to States and communities in the development of data centers; coordination of information between national, State, and local data centers; and maintenance of a national driver register and a national accident report system.

In fiscal year 1967 an outside contracting program was initiated in these and other support functions, primarily focusing on program development and organization, and program definition work to be followed by full-scale efforts in fiscal year 1968. Most of the contracts were directed toward providing answers needed immediately for startup operations of the National Highway Safety Bureau, but also had the parallel objective of laying a firm foundation for later broad investigations that will place the whole of

the Nation's highway safety effort on much more scientific bases than heretofore has been possible.

Another purpose of the contracting program was to identify and encourage the development of specialized safety research capability in the Nation's scientific and engineering community, in industry, universities, and nonprofit groups. Highway and traffic safety research until now has had little significant financial support. As a result, the needed research capability has never fully developed. The National Highway Safety Bureau accordingly initiated wide-scale competitive bidding on many comparatively small awards rather than pursuing the easier course of engaging only a few major contractors. Qualified consultants assisted in defining the areas of study. Then, the Bureau's needs and study interests were communicated to a broad spectrum of the Nation's research and development organizations. More than 225 universities, Government organizations, nonprofit groups, and commercial research firms were directly requested to participate in briefings and to submit proposals on the various stated needs.

Panels of experts in related program fields were formed to evaluate and comment on proposed work plans and to assist in evaluating proposals and bids.

The response to the challenge of the new effort and program needs of the National Highway Safety Bureau was excellent and resulted in an exceptional group of contractors working on the problems—often at little or no profit, if not at a loss—in order to gear up capability for later full-scale work.

The research program includes, in addition to a contractual agreement with the National Bureau of Standards, numerous outside contracts to private firms, universities, and foundations. The total program represents the most comprehensive and broad-gauged attack ever attempted on the problem of reducing deaths and disabling injuries in highway accidents. It is directed toward many significant aspects of the traffic safety problem; the gathering of reliable data on the causes of motor vehicle crashes, deaths and injuries and their costs, and on the relative merits of alternative countermeasures for reducing deaths and injuries.

Subsequent to the awarding of 74 contracts with an approximate cost of \$8.7 million, methods for guaranteeing responsive work performance by the contractors have been developed along with communication processes which would best enable information exchange between the researchers and the National Highway Safety Bureau. Urgent information requirements demand continuous feed-back from projects as they progress. In addition, expanding Bureau needs will have to be continually translated into contractor direction.

The National Highway Safety Advisory Committee. The National Highway Safety Act provides for formation of the National Highway Safety Advisory Committee, a 29-member group to be appointed by the President, with the major function of consulting with, and making recommendations to, the Secretary of Transportation on highway safety and, in particular,

the State program standards. The initial membership, as announced by President Johnson on March 16, 1967, included the Federal Highway Administrator and representatives from State and local governments, public and private interests concerned with highway safety, and research scientists and other experts in the highway safety field. The Under Secretary of Transportation serves as Chairman.

The Committee's first meeting was held April 25, 1967. Members later received proposed drafts of the highway safety standards, the supporting discussions and explanations of the issues involved, and invitations to submit comments on the standards. The members individually responded with pertinent and constructive suggestions that were used in the appropriate redrafting of the proposed standards.

The Committee reconvened on June 6 and 7, 1967, and reviewed the new draft proposals which took into consideration all comments submitted on the earlier proposals. It made a number of recommendations that were, in large measure, incorporated in the first set of 13 highway safety standards issued by the Secretary of Transportation on June 27, 1967.

National Motor Vehicle Safety Advisory Council. The National Traffic and Motor Vehicle Safety Act provides for the establishment of a 17-member National Motor Vehicle Safety Advisory Council composed of a majority representing the general public and with representation of motor vehicle and motor vehicle equipment manufacturers and motor vehicle dealers. The Council was appointed January 6, 1967. The Act directs the Secretary of Transportation to consult with the Council on motor vehicle safety standards established under the Act.

The Council has had four major meetings since its appointment. The first two meetings were devoted to consideration of the initial motor vehicle safety standards; the second two were devoted to a wide range of motor vehicle safety subjects as well as to the overall program and goals of the National Highway Safety Bureau.

Nine substantive subcommittees were set up by the Council to study in depth a number of issues related to government issuance of motor vehicle safety standards. The subcommittees include a group to study the impact of the standards on small volume manufacturers, a group to consider alternative methods for certification of vehicles and equipment as required by the law, and a group to assess the international implications of the program which apply to both domestic and imported vehicles.

Accident and Injury Research and Test Facilities. The National Traffic and Motor Vehicle Safety Act authorized a study and development of preliminary plans for traffic safety research, test, and demonstration facilities. Preliminary work was started on the development of a conceptual master plan for such facilities needed by the National Highway Safety Bureau to carry out the provisions of the Act. Program activities were identified that require the use of laboratory and test facilities. These requirements were then reconciled against an inventory of existing Government and private facilities that might be suitable for these purposes.

TABLE 10—The National System of Interstate and Defense Highways improvement status of system mileage as of June 30, 1967

State	Preliminary Status or Not Yet in Progress ¹	Work in Progress			Open to Traffic				Total Designated System Mileage
		Engineering or Right-of-Way	Under Construction	Total Underway	Toll Facilities	Improved to Standards Adequate for Present Traffic	Completed To Full or Acceptable Standards	Total Open To Traffic	
Alabama-----		248.4	189.5	437.9	-----	141.3	300.7	442.0	879.9
Arizona-----	1.0	209.8	229.6	439.4	-----	282.0	444.9	726.9	1,167.3
Arkansas-----		78.7	173.9	252.6	-----	4.3	262.5	266.8	519.4
California-----		628.3	370.6	998.9	10.2	329.3	826.7	1,166.2	2,165.1
Colorado-----	139.3	168.0	90.2	258.2	-----	147.3	401.1	548.4	945.9
Connecticut-----		24.2	10.9	35.1	16.5	47.0	196.8	260.3	295.4
Delaware-----		9.4	10.8	20.2	14.3	0.9	5.2	20.4	40.6
Florida-----	176.5	239.7	78.2	317.9	46.5	-----	613.0	659.5	1,153.9
Georgia-----		369.7	214.5	584.2	-----	13.9	507.7	521.6	1,105.8
Hawaii-----	11.4	26.7	2.3	29.0	-----	1.6	9.5	11.1	51.5
Idaho-----		192.6	33.3	225.9	-----	53.6	328.9	382.5	608.4
Illinois-----	38.8	488.3	182.5	670.8	156.0	143.0	633.2	932.2	1,641.8
Indiana-----		273.6	254.9	528.5	156.9	41.1	388.3	586.3	1,114.8
Iowa-----		191.9	93.1	285.0	0.6	-----	424.2	424.8	709.8
Kansas-----	0.9	133.3	38.0	171.3	186.6	8.5	431.7	626.8	799.0
Kentucky-----		204.7	184.4	389.1	39.2	4.2	300.6	344.0	733.1
Louisiana-----		258.0	158.8	416.8	-----	1.8	252.3	254.1	670.9
Maine-----	1.8	34.6	41.4	76.0	58.0	60.6	115.7	234.3	312.1
Maryland-----	19.2	28.4	40.2	68.6	53.0	80.9	132.4	266.3	354.1
Massachusetts-----	4.4	57.2	55.6	112.8	135.8	27.4	170.7	333.9	451.1
Michigan-----		178.1	95.5	273.6	4.8	44.4	758.6	807.8	1,081.4
Minnesota-----		379.0	197.5	576.5	-----	48.5	279.0	327.5	904.0
Mississippi-----		127.0	206.1	333.1	-----	31.4	313.5	344.9	678.0
Missouri-----	12.3	268.7	79.2	347.9	0.3	173.5	585.1	758.9	1,119.1

Montana-----	58.4	530.0	94.9	624.9	-----	275.4	226.7	502.1	1,185.4
Nebraska-----	-----	111.5	54.2	165.7	0.2	25.5	286.2	311.9	477.6
Nevada-----	-----	161.0	65.2	226.2	-----	5.4	303.0	308.4	534.6
New Hampshire-----	11.1	37.9	19.9	57.8	22.0	3.6	120.0	145.6	214.5
New Jersey-----	58.3	94.0	55.9	149.9	46.3	46.6	72.2	165.1	373.3
New Mexico-----	73.4	236.5	100.0	336.5	-----	55.7	537.0	592.7	1,002.6
New York-----	21.7	90.0	106.2	196.2	492.4	51.9	461.0	1,005.3	1,223.2
North Carolina-----	15.3	210.9	128.4	339.3	-----	35.5	380.1	415.6	770.2
North Dakota-----	63.0	113.0	8.7	121.7	-----	51.9	334.0	385.9	570.6
Ohio-----	8.8	255.2	251.5	506.7	206.1	47.2	760.9	1,014.2	1,529.7
Oklahoma-----	-----	113.2	99.2	212.4	174.1	30.6	380.4	585.1	797.5
Oregon-----	16.9	73.5	11.7	85.2	-----	138.6	493.1	631.7	733.8
Pennsylvania-----	31.2	245.5	305.6	551.1	360.2	2.2	630.8	993.2	1,575.5
Rhode Island-----	-----	20.5	11.8	32.3	-----	8.7	29.8	38.5	70.8
South Carolina-----	-----	128.1	180.7	308.8	-----	19.1	353.1	372.2	681.0
South Dakota-----	-----	206.3	96.2	302.5	-----	57.2	319.5	376.7	679.2
Tennessee-----	-----	337.3	163.5	500.8	-----	96.0	453.8	549.8	1,050.6
Texas-----	54.9	715.9	354.4	1,070.3	-----	312.9	1,590.2	1,903.1	3,028.3
Utah-----	235.7	285.0	160.6	445.6	-----	50.5	202.7	253.2	934.5
Vermont-----	-----	147.1	43.2	190.3	-----	-----	130.8	130.8	321.1
Virginia-----	11.3	295.6	150.9	446.5	38.3	53.5	510.6	602.4	1,060.2
Washington-----	64.7	138.6	72.9	211.5	-----	216.1	234.4	450.5	726.7
West Virginia-----	60.6	164.0	75.0	239.0	87.2	0.3	130.3	217.8	517.4
Wisconsin-----	0.7	68.0	67.0	135.0	-----	24.7	298.0	322.7	458.4
Wyoming-----	162.2	71.7	141.8	213.5	-----	35.6	502.4	538.0	913.7
District of Columbia-----	10.4	7.7	1.2	8.9	-----	2.9	7.6	10.5	29.8
Pending-----	² 37.4	-----	-----	-----	-----	-----	-----	-----	² 37.4
Total-----	1,401.6	9,676.3	5,851.6	15,527.9	2,305.5	3,334.1	18,430.9	24,070.5	41,000.0

¹ Public hearings have been held on route location, and location studies are underway on many portions of the mileage in this column.
² Consists of mileage which has not been assigned to any specific route and is a reserve for final measurement of the system.

Work is continuing on detailed engineering analysis of various alternatives for implementing the master plan. These alternatives include the use of existing facilities, modifications of existing facilities, construction of new facilities, or combinations of existing and new facilities.

While some of the needed research and development work can be accomplished by questionnaire and other techniques that do not require "hard facilities," such facilities are of central importance to most of the critical research and testing requirements.

New Programs and Responsibilities. The National Highway Safety Bureau's fiscal year 1967 activities were, for each program area, the start of a systematic build-up in fiscal year 1968 and later years to a level of effort commensurate with the magnitude of the problems and the urgent need to make progress in lessening the continuing national tragedy.

The motor vehicle performance properties covered by motor vehicle safety standards will be broadened to cover more motor vehicle performance properties that relate to preventing crashes or to survivability in crashes.

In the State and community highway safety program areas the scope and depth of technical assistance in the implementation of the highway safety program standards will be broadened. Particular attention will be provided to assist the development of procedures for evaluating comparative benefits.

The system of implementation of a comprehensive, orderly research program on accident and injury countermeasures will be continued. The major emphasis will center on the development and validation of criteria needed for near-term decisions on form and substance of highway safety program planning at Federal, State, and local levels. A new area of emphasis will be on used vehicle safety. This is to improve the technical level and substance of all activities that directly relate to helping the consumer keep his car in a reasonably safe working order without undue economic burden. Improved methods for motor vehicle inspection and mechanical diagnostics are key target areas.

A systematic program of highway safety demonstration projects in various types of local government jurisdictions will be developed to assist them in obtaining actual working experience and proper implementation of new highway safety techniques at local levels.

Another top priority item is an expanded program of motor vehicle accident investigations coupled with in-depth mathematical analysis of the resulting information. Virtually all evaluations of countermeasure effectiveness depend upon the quality and quantity of information available on accident loss experience and the conditions leading to the crashes. This is the mandatory foundation for the entire national effort to reduce the losses, and will accordingly be developed fully.

Finally, there will be continued development of the National Highway Safety Bureau's conceptual master plan for highway safety research, test, and demonstration facilities.

TABLE 11—U.S. Federal Highway Administration Federal-Aid Highway Program
at June 30, 1967

ASSETS

Current Assets		
Funds in U.S. Treasury-----	\$ 725,196,037	
Less unappropriated receipts-----	721,455,793	
Available fund balance with Treasury----		\$ 3,740,244
Deposits intransit-----		-----
Accounts receivable:		
Repayments to fund-----	12,278,468	
Emergency relief ¹ -----	91,025,187	
Advances to travelers-----	257,774	
		103,561,430
Fixed Assets ²		
Land-----	14,147,406	
Machinery & equipment-----	4,446,071	
Buildings & structures-----	2,780,773	
		21,374,251
Contracting Authority ³ -----		9,176,280,179
Total assets-----		<u>\$9,304,956,106</u>

LIABILITIES AND UNITED STATES GOVERNMENT INVESTMENTS

Current Liabilities		
Disbursements intransit-----	\$	7,817
Accounts payable and accrued liabilities for States' completed work-----		957,899,090
Accrued liabilities—Other-----		3,621,806
		961,528,715
Accrued Annual Leave of Employees-----		4,920,790
U.S. Government Investment		
Contracting authority:		
Federal-aid-----	\$8,255,197,873	
Emergency relief & Other-----	66,855,266	
Invested capital-----	16,453,461	
		8,338,506,600
Total liabilities and United States Government investment-----		<u>\$9,304,956,106</u>

¹ Title 23, United States Code, Sections 125/320 allows payment for disaster assistance and construction of roadways over Federal Dams prior to appropriation. The unappropriated expenditures for Emergency Relief and Roadways over Dams are \$91,025,187.

² The Fixed Assets are stated at cost. Specific authorization is required for the procurement of Fixed Assets. Machinery and Equipment are utilized for administrative operations and are replaced as needed.

³ The Congress grants contracting authority to Public Roads in advance of actual appropriations from the Highway Trust Fund in order to permit Public Roads and the States to plan highway construction operations. This authority is apportioned to the States and Public Roads records the obligations as the States are permitted to proceed. Funds are appropriated by the Congress annually to cover estimated needs for liquidating the obligations maturing within the current fiscal year.

DEPARTMENT OF TRANSPORTATION

TABLE 12—U.S. Federal Highway Administration
Federal-Aid Highway Program
Statement of Operations
July 1966 through June 1967

APPROPRIATIONS

For Contracting Authority

New.....	\$ 4,450,000,000
From Last Year.....	7,913,166,430
Reimbursable Earnings.....	13,900,458
Available.....	\$12,377,066,889

For Working Capital

New.....	\$ 3,968,400,000
From Last Year.....	8,766,303
Reimbursable Collections.....	11,143,529
Available.....	\$ 3,988,309,832

OPERATING EXPENSES

	Payments	Changes in Accruals
Federal-Aid		
Primary.....	\$ 420,679,837	\$ -454,992
Secondary.....	280,267,485	13,184,411
Urban.....	226,864,424	-1,627,839
HPR.....	56,973,910	7,683,663
Interstate.....	2,896,351,400	38,879,172
Administration.....		
Purchase of Fixed Assets.....	50,100,382	-1,029,538
"D"+"L" Funds.....	377,923	
TOTAL FEDERAL-AID.....	\$3,931,615,364	\$56,634,876
Emergency Relief.....	38,371,105	-584,777
Roadway over Dams.....	133,667	
Pentagon Road Network.....	69,953	1,131
Reimbursable.....	14,279,582	-379,124
TOTALS.....	\$3,984,469,673	\$55,672,105
Increase in Accruals.....	55,672,105	
	\$4,040,141,779	

DEDUCT

Accrued Expenses.....	\$ 4,040,141,779
Lapsing Authority	
Emergency Relief.....	14,871,970
USED.....	\$ 4,055,013,749

DEDUCT

Payments.....	\$ 3,984,469,673
Increase-Travel Advances.....	102,029
Decrease-Unpaid Project	
Leave.....	-1,261
Intransit.....	-852
USED.....	\$ 3,984,569,588

AVAILABLE BALANCES AT JUNE 30, 1967

Contracting Authority.....	\$ 8,322,053,139
In Treasury.....	\$ 3,740,244

TABLE 13—U.S. Federal Highway Administration
Federal-Aid Highway Program
Statement of Application of Funds

Funds Provided By:		
Appropriated.....	\$3,968,400,000	
Repayments to Appropriation.....	13,900,458	
Increase in receivables for unappropriated payments.....	21,403,043	
Total working capital provided.....		\$4,003,703,501
Funds Applied To:		
Federal aid.....	\$3,988,250,241	
Emergency Relief.....	37,786,328	
Bridges over dams.....	133,667	
Pentagon road network.....	71,084	
Reimbursable work.....	13,900,458	
Total working capital applied.....		\$4,040,141,779
Decrease in working capital.....		<u>\$ 36,438,277</u>

TABLE 14—U.S. Government Investment
July 1966 through June 1967

U.S. Government Investment at July 1.....		\$7,929,619,801
Increases:		
Contracting authority.....		4,450,000,000
Reimbursable work.....		13,900,458
Other.....		35,380
Decreases:		4,463,935,838
Expenses.....	\$4,039,859,520	
Property Dispositions.....	174,476	
Lapsing contract.....	14,871,970	
Leave earned but not used.....	143,071	
		-4,055,049,039
U.S. Government Investment at June 30....		<u>\$8,338,506,600</u>

ANALYSIS OF UNITED STATES GOVERNMENT INVESTMENT

Invested Capital		
Obligated.....		\$ 16,453,461
Federal aid.....	\$3,619,495,274	
Emergency relief.....	27,813,617	
Roadways over dams.....	1,197,094	
Pentagon road network.....	1,059	
		3,648,507,046
Available for Obligation		
Federal aid.....	3,125,292,259	
Emergency relief.....	27,454,561	
Roadways over dams.....	113,542	
Pentagon road network.....	275,390	
		3,153,135,754
Reserved—not available.....		1,520,410,339
U.S. Government Investment at June 30 as shown on Statement of Assets and Liabilities.....		<u>\$8,338,506,600</u>

TABLE 15—Decrease in Working Capital
(Accounted for as follows)

	<i>June 30, 1967</i>	<i>July 1, 1966</i>	<i>Increase</i>	<i>Decrease</i>
CURRENT ASSETS				
Funds with U.S. Treasury	\$ 3,740,244	\$ 8,766,303		\$ 5,026,059
Deposits Intransit		1,940		1,940
Accounts Receivable:				
Repayment to Fund	12,278,468	10,316,460	\$ 1,962,008	
Emergency Relief	91,025,187	69,622,144	21,403,043	
Advances to Travelers	257,774	155,745	102,029	
Collections Undeposited				
			\$23,467,080	\$ 5,027,999
CURRENT LIABILITIES				
Disbursement Intransit	\$ 7,817	\$ 6,965		\$ 852
Accounts Payable and Accrued:				
Liability for States Completed Work	957,899,090	901,898,724		56,000,365
Accrued Liabilities—Other	3,621,806	4,745,666	\$ 1,123,859	
Collections Unapplied				
			1,123,859	56,001,217
SUBTOTALS			24,590,939	
DECREASE IN WORKING CAPITAL			36,438,277	
TOTALS			\$61,029,217	\$61,029,217

TABLE 16—Listing of Initial Federal Motor Vehicle Safety Standards

Standard
101 Control Location and Identification—Passenger Cars
102 Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
103 Windshield Defrosting and Defogging—Passenger Cars and Multipurpose Passenger Vehicles
104 Windshield Wiping and Washing Systems—Passenger Cars
105 Hydraulic Service Brake, Emergency Brake, and Parking Brake Systems—Passenger Cars
106 Hydraulic Brake Hoses—Passenger Cars and Multipurpose Passenger Vehicles
107 Reflecting Surfaces—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
108 Lamps, Reflective Devices, and Associated Equipment—Multipurpose Passenger Vehicles, Trucks, Trailers, and Buses, 80 or More Inches Wide Overall
111 Rearview Mirrors—Passenger Cars and Multipurpose Passenger Vehicles
201 Occupant Protection in Interior Impact—Passenger Cars
203 Impact Protection for the Driver From the Steering Control System—Passenger Cars
204 Steering Control Rearward Displacement—Passenger Cars
205 Glazing Materials—Passenger Cars, Multipurpose Passenger Vehicles, Motorcycles, Trucks, and Buses
206 Door Latches and Door Hinge Systems—Passenger Cars
207 Anchorage of Seats—Passenger Cars
208 Seat Belt Installations—Passenger Cars
209 Seat Belt Assemblies—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
210 Seat Belt Assembly Anchorages—Passenger Cars
211 Wheel Nuts, Wheel Discs, and Hub Caps—Passenger Cars, and Multipurpose Passenger Vehicles
301 Fuel Tanks, Fuel Tank Filler Pipes, and Fuel Tank Connections—Passenger Cars

TABLE 17—Summary of the Highway Safety Program Standards
Issued June 27, 1967

1. **PERIODIC MOTOR VEHICLE INSPECTION**—Each State shall have a program for periodic inspection of all registered vehicles or an experimental, pilot, or demonstration program approved by the Secretary of Transportation. Every registered vehicle must be inspected at time of initial registration and at least annually thereafter or at such intervals as may be designated under the approved experimental, pilot, or demonstration program. The inspections must at least equal criteria of the National Highway Safety Bureau.

2. **MOTOR VEHICLE REGISTRATION**—Each State shall have a motor vehicle registration program and recordkeeping system to provide rapid identification of each vehicle and owner, and shall make data available for accident research and safety program development. Gross laden weight of all commercial vehicles also must be registered.

3. **MOTORCYCLE SAFETY**—Operators must be licensed and examined specifically for the operation of motorcycles. Operators must wear approved helmet and eye protection when operating cycles. Seats and footrests must be provided for motorcycle passengers, who must also wear approved safety helmets. Each cycle must have a rear-view mirror.

4. **DRIVER EDUCATION**—Requires that comprehensive driver training programs, meeting standards set by the State, be made available to all youths of licensing age. Requires certification of instructors and licensing of commercial driving schools. Calls for research, development, and procurement of practice driving facilities such as simulators and other tools for both school and adult training programs. Also requires training and retraining program for adults.

5. **DRIVER LICENSING**—Each State shall have a driver licensing program to insure that only persons physically and mentally qualified may drive, and to prevent needless denial of the right to drive. Physical and eyesight examinations, knowledge of traffic laws, ability to comprehend traffic signs and ability to operate the vehicle for which licensed, will be required. Drivers shall be re-examined at least once every four years for visual acuity and knowledge of rules of the road. It calls, also, for a medical advisory board to advise the licensing agency on physical and vision standards. Requires keeping of continuing records of driver histories, and means for quick retrieval of these data.

6. **CODES AND LAWS**—Each State shall develop and implement a program to achieve uniformity of traffic codes and laws throughout the State, including rules of the road for all public streets and highways. It should also have a plan to make the rules of the road consistent with those of other States.

7. **TRAFFIC COURTS**—Requires that Traffic Courts notify the State traffic records system of all convictions for moving traffic violations. Recommends individuals charged with moving hazardous traffic violations be required to appear in court. Recommends uniform accounting system for traffic fines and uniform court procedures for traffic cases.

8. **ALCOHOL IN RELATION TO HIGHWAY SAFETY**—Each State, in cooperation with local subdivisions, must develop a program to reduce traffic accidents resulting from persons driving under the influence of alcohol. States are required to establish specific test procedures for determining blood alcohol content, but the blood concentration level at which a driver may be deemed to be intoxicated shall not be set higher than .10 percent by weight. A person placed under arrest for operating a motor vehicle while intoxicated or under the influence of alcohol is deemed to have given his implied consent to an alcohol content test. Recommends alcohol content tests on accident victims, and drivers surviving fatal accidents.

9. **IDENTIFICATION AND SURVEILLANCE OF ACCIDENT LOCATIONS**—Each State, in cooperation with county and other local governments, shall have a program for identifying and investigating high accident locations and maintaining surveillance of locales with high accident rates. A systematic program for developing corrective methods also is required. Measures shall be taken to reduce accidents, and to evaluate safety improvements, at these locations.

10. **TRAFFIC RECORDS**—Requires a statewide system, and compatible local systems, to include all traffic data for the entire State. The system shall be capable of providing summaries, tabulations, and special analyses and shall include driver, vehicle, accident, and road records that are compatible for purposes of analysis and correction.

11. **EMERGENCY MEDICAL SERVICE**—Each State, cooperating with local subdivisions, shall have a program to insure prompt emergency medical care for accident victims. Requires first-aid training for emergency service personnel and criteria for use of two-way communications systems for dispatching aid. Specifies that systems for operating and coordinating ambulances and other emergency care facilities be established. Requires comprehensive State planning of emergency medical services.

12. **HIGHWAY DESIGN, CONSTRUCTION AND MAINTENANCE**—Requires that existing streets and highways be maintained in a condition that improves safety. Requires that modernization of existing roads and new highways meet approved safety standards issued or endorsed by the Federal Highway Administrator. Requires lighting of expressways and other major arteries in urbanized areas, high accident locations, and major intersections. Calls for clear roadsides, breakaway signs, special guardrails and bridgerails, and signs at freeway interchanges directing motorists to emergency care facilities.

13. **TRAFFIC CONTROL DEVICES**—Each State in cooperation with county and local governments shall have a program for traffic control devices (signs, signals, markings, etc.) which will conform with standards issued or endorsed by the Federal Highway Administrator. Existing control devices also shall be upgraded to conform to these standards. Preventive maintenance, repair, and day-and-night inspection of all traffic control devices shall be provided.

TABLE 18—U.S. Department of Transportation
National Highway Safety Advisory Committee
(Appointed March 16, 1967)

1-Year Term

William A. Rodgers
Vice President and Director
Tidewater Insurance Company
Baltimore, Maryland

James F. Collins
President
American National Red Cross
Washington, D.C.

Richard N. Satterfield
Executive Vice President
Tennessee Automotive Association
Nashville, Tennessee

Joseph H. Hays
General Counsel
Association of Western Railways
Chicago, Illinois

Jake J. DiMaggio
Insurance Adjustor
Valiant Associates
New Orleans, Louisiana

William Randolph Hearst
Editor in Chief
Hearst Newspapers and Chairman
New York, New York

James R. Boyd
General Manager
Oil Field Haulers Association
Austin, Texas

M. James Gleason
County Commissioner
Multnomah County, Oregon

William J. Hartigan
President
Hartigan Oldsmobile-Cadillac
Park Ridge, Illinois

Robert F. Boos
City Manager
City Hall
Laramie, Wyoming

2-Year Term

Richard E. McLaughlin
Registrar of Motor Vehicles
Boston, Massachusetts

Harold J. Gibbons
Vice President
International Brotherhood
of Teamsters
St. Louis, Missouri

DeWitt C. Greer
State Highway Engineer for Texas
Austin, Texas

Joseph E. Kerigan
Vice President
Chrysler Corporation
Detroit, Michigan

Jeffrey O'Connell
Professor of Law
University of Illinois
Champaign, Illinois

Norma O. Walker
Mayor
City of Aurora
Aurora, Colorado

Ray F. Reavley
Executive Secretary
Automobile Wholesalers Association
and Manager
Montana Safety Foundation
Montana

Norvin Kiefer, M.D.
Chief Medical Director
Equitable Life Assurance Society
University Heights, New York

James M. Hare
Secretary of State for Michigan
Lansing, Michigan

Norman R. Howard
State Representative
Salem, Oregon

3-Year Term

Richard J. Hughes
Governor of New Jersey
Trenton, New Jersey

Kenneth A. Roberts
Partner, Law Firm of Harter,
Calhoun, Williams and Roberts
Alabama

Colin MacLeod, M.D.
Vice President for Medical Affairs
The Commonwealth Fund
New York, New York

William H. Morris
President, International Association
of Chiefs of Police and
Superintendent
Illinois State Police
Illinois

Harry Heltzer
President
Minnesota Mining and Manufacturing
Company
Minneapolis, Minnesota

J. Sam Winters
Partner, Law Firm of Clark,
Thomas, Harris, Denius and
Winters
Austin, Texas

Jesse M. Unruh
Speaker of the Assembly
State of California
Sacramento, California

Mattie Belle Davis
Judge, Municipal Court
Metropolitan Dade County, Florida

J. E. Malloy
Commissioner of Motor Vehicles
of Vermont
St. Albans, Vermont

TABLE 19—U.S. Department of Transportation
National Motor Vehicle Safety Advisory Council
(Appointed January 6, 1967)

1-Year Term

J. Roy Alphin
President
Alphin Motors, Inc.
Virginia Beach, Virginia

Chester Devenow
President
Sheller-Globe Corporation
Toledo, Ohio

Colonel Homer Garrison
Director
Department of Public Safety
Austin, Texas

William Karl Keller, M.D.
Chairman
Department of Psychiatry
University of Louisville School
of Medicine
Louisville, Kentucky

Thomas Mann
President
Automobile Manufacturers
Association, Inc.
Washington, D.C.

John J. Swearingen, Chief
Impact and Survival Branch
Civil Aeromedical Institute
Federal Aviation Agency
Oklahoma City, Oklahoma

2-Year Term

David Busby
Busby & Rivkin (Law Firm)
Representative for Automobile
Importers of America
Washington, D.C.

Thomas L. Dougherty
Manager
Product Reliability & Safety
International Harvester
Chicago, Illinois

James W. Hall, Chairman of
the Board
Red Ivey's Automotive Service
Atlanta, Georgia

Lewis Kibbee
Director
Engineering Department
American Trucking Associations, Inc.
Washington, D.C.

Walter Reuther
President
United Automobile Workers of
America
Detroit, Michigan

Leonard A. Sawyer
State Representative
Olympia, Washington

3-Year Term

John Conger, Ph.D.
Vice President for Medical
Affairs and
Dean, School of Medicine
University of Colorado
Denver, Colorado

John Forrest Floberg, Vice President
Secretary and General Counsel
The Firestone Tire and Rubber Co.
Akron, Ohio

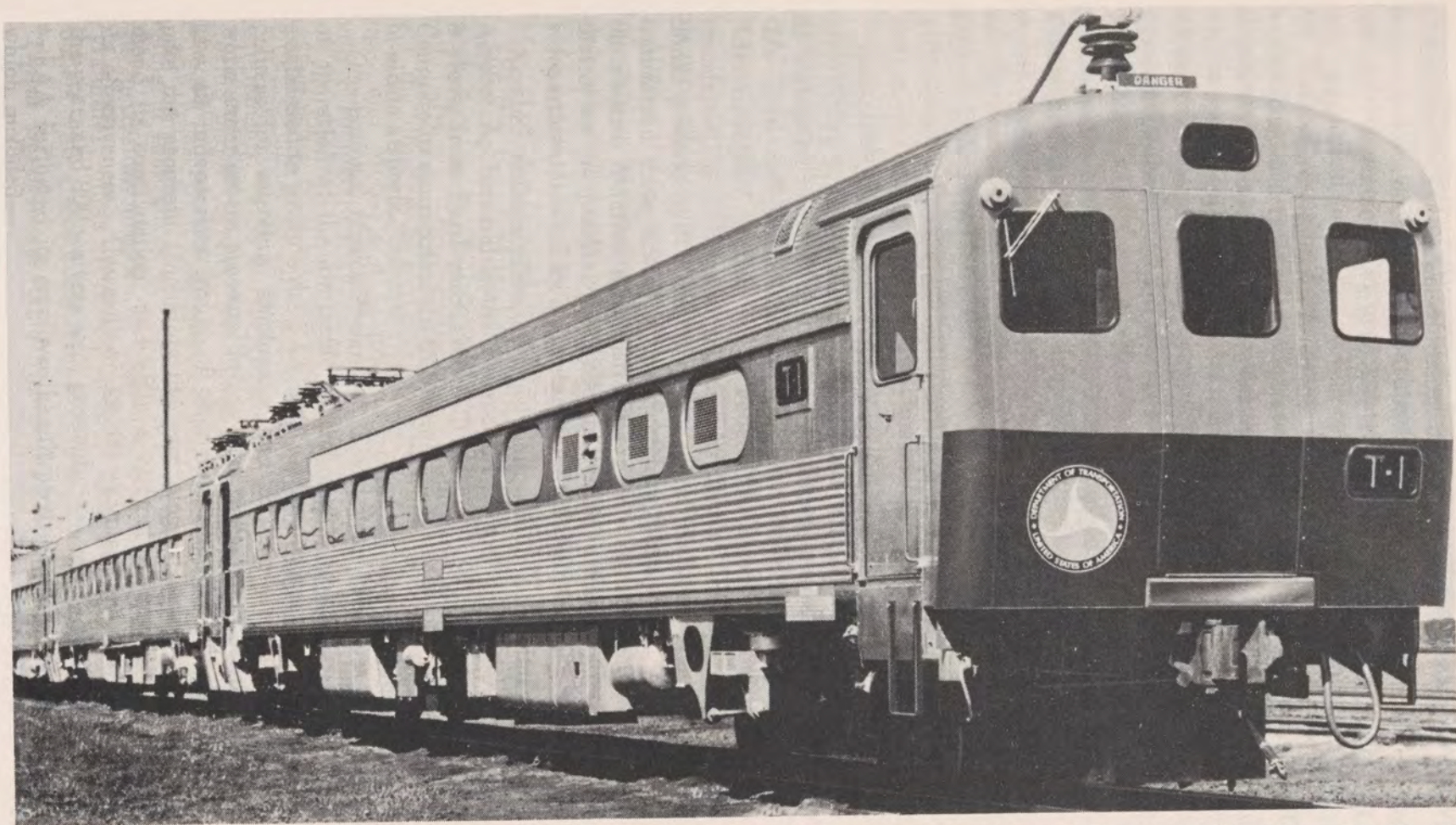
Edward J. Heitzman
Research Staff
Instrumentation and Control
Laboratory
Department of Aerospace and
Mechanical Sciences
Princeton University
Princeton, New Jersey

3-Year Term—(Continued)

Thomas F. Malone, Sc.D.
Vice President and Director
Research

The Travelers Insurance Companies
Hartford, Connecticut

Derwyn M. Severy
Research Engineer
Institute of Transportation and
Traffic Engineering
University of California
Los Angeles, California



Electric-powered, self-propelled rail cars used by the DOT Office of High Speed Ground Transportation for research and development.

Chapter V

FEDERAL RAILROAD ADMINISTRATION

The Federal Railroad Administration is a new agency, responsible primarily for three basic programs: (1) operation of the Alaska Railroad, formerly under the direction of the Secretary of Interior; (2) administration of the High Speed Ground Transportation Program, transferred from the Department of Commerce, which includes the Northeast Corridor Transportation Systems Planning Study and its related research and development programs and demonstration projects; and (3) implementation of the railroad and oil pipeline safety functions, formerly a responsibility of the Interstate Commerce Commission. The Administrator also advises the Secretary of Transportation on matters pertaining to national railroad policy development.

The Alaska Railroad

The Alaska Railroad operates 482 miles of mainline from the ports of Seward and Whittier to Fairbanks. Its depreciated current value is about \$135,000,000 and its current annual gross income about \$14,250,000. It is not dependent upon Congressional appropriations for either operating expenditures or capital improvements.

A severe earthquake on March 27, 1964 temporarily changed The Alaska Railroad from a net income to a net loss operation. The deficit for fiscal year 1967 was reduced by about \$300,000 to \$856,407 after depreciation charges amounting to \$2,245,328. The 1967 deficit included about \$80,000 of earthquake repair damage. At the end of the fiscal year, the earthquake rehabilitation program, which involved a total cost of more than \$27,000,000, was more than 99 percent complete. Disaster struck again after the close of the fiscal year with the floods of August 1967 at Nenana and Fairbanks. The costs of repairing this flood damage will amount to more than \$500,000. Almost concurrently with these floods, high water caused washouts at various points along the railroad.

Passenger service was improved during the year on an experimental basis with an automobile-on-flatcar service for passengers to the port of Whittier for connection with Alaska State ferries, and by tourist passenger service to Seward where there had been no scheduled passenger trains for several years. The results of these experiments are now being evaluated.

An important change in personnel procedure was introduced on January 1, 1967 when, by order of the Civil Service Commission, employees were transferred from the noncompetitive to the competitive civil service. The change has created difficulties in the filling of vacancies in laborer occupa-

tions for which relief will be sought from the Civil Service Commission. Major wage negotiations took place with union representatives of both operating and nonoperating employees which resulted in substantial wage increases. The negotiations also brought a request from certain nonoperating union officials for changes in the Railroad's historic policy of basing its wages on those paid by private railroads in the Pacific Northwest plus a cost-of-living differential to meet the higher living cost level in Alaska. The impact of the negotiations on overall additions to payroll will not be known until both negotiations and wage calculations are completed during fiscal year 1968.

Bureau of Railroad Safety

The Bureau has safety jurisdiction over rail-highway grade-crossing accidents, and safety appliances, locomotives, signal installations, and the rail transportation of hazardous commodities. The Bureau has no safety jurisdiction over the construction and maintenance of track, roadbed and structures, the running gear of rail cars, or of the number or qualifications of train crewmembers.

TABLE 20—Railroad accidents and resulting casualties, calendar years 1964–66

	1964	1965	1966
Number of train accidents from:			
Collisions.....	1,229	1,380	1,552
Derailements.....	3,398	3,869	4,447
Other.....	689	718	794
Total train accidents.....	5,316	5,967	6,793
Number of train accidents with casualties.....	471	457	492
Trespassers killed.....	619	634	678
Trespassers injured.....	711	668	702
Passengers killed in train accidents.....	2	1	10
Passengers injured in train accidents.....	343	187	264
Passengers killed in train-service accidents.....	6	10	13
Passengers injured in train-service accidents.....	1,146	1,002	980
Employees on duty killed.....	183	172	159
Employees on duty injured.....	19,973	18,644	18,195
All other persons killed.....	1,613	1,582	1,824
All other persons injured.....	5,441	5,288	5,411
Total number of persons killed.....	2,423	2,399	2,684
Total number of persons injured.....	27,614	25,789	25,552
Highway grade-crossing accidents*.....	3,782	3,839	4,117
Persons killed.....	1,544	1,535	1,782
Persons injured.....	3,820	3,826	4,073

*Included in totals.

Train Accidents. During calendar year 1966, 6,793 train accidents* were reported, an increase of 826 or 13.8 percent over those reported in 1965. (See Tables 20, 21 and 22.) The number of resulting casualties rose 5.6 percent over those in 1965.

A major factor in the accident increase was the 14.9 percent rise in derailments, caused mainly by failure of equipment and defective track. Increasing use of heavier equipment is creating problems of this kind.

Rail-Highway Grade-Crossing Accidents. During calendar year 1966, 4,097 grade-crossing accidents of all kinds were reported to the Bureau, an increase of 277 accidents or 7.25 percent over the previous year as shown in Table 23. A total of 1,780 deaths and 4,043 injuries resulted from these accidents, representing an increase of 16.0 percent in deaths and an increase of 6.4 percent in injuries over those reported in 1965.

*Includes 351 of the total railroad-highway grade-crossing accidents.

A reportable train accident is one arising from the operation or movement of trains, locomotives, or cars which result in (1) a reportable death or injury and more than \$750 damage to equipment, track or roadbed, or (2) a collision, derailment or other train accident, with more than \$750 damage to equipment, track or roadbed. The \$750 excludes the cost of clearing a wreck.

ACCIDENT REPORTS ACT

TABLE 21—Serious accidents investigated under the Accident Reports Act (45 U.S.C. 38-43), fiscal years 1963-67

Fiscal year	Number of accidents investigated			Persons	
	Colli-sions	Derail-ments	Total	Killed	Injured
1963-----	24	16	40	61	1,215
1964-----	34	18	52	70	1,284
1965-----	35	18	53	51	1,044
1966-----	44	16	60	75	639
1967-----	34	20	54	35	534

TABLE 22—Enforcement of the Accident Reports Act, fiscal years 1966-67

Accident Reports Act	1966	1967
Number of regular inspections-----	463	452
Accident and casualty cases investigated-----	25,272	35,628
Infractions disclosed by regular inspection-----	34	83
Number of complaints investigated-----	14	17
Infractions disclosed by complaints investigated-----	14	14
Violation cases transmitted for prosecution-----	52*	77*

*Includes cases pending at close of preceding fiscal year.

TABLE 23—Accidents and casualties at highway grade crossings, calendar years 1964–66

Accidents and casualties	1964			1965			1966		
	Number of Accidents	Number of Casualties		Number of Accidents	Number of Casualties		Number of Accidents	Number of Casualties	
		Killed	Injured		Killed	Injured		Killed	Injured
Total rail-highway grade-crossing accidents and resulting casualties ¹ -----	3,755	1,543	3,783	3,820	1,534	3,801	4,097	1,780	4,043
Accidents at highway grade-crossings involving motor vehicles-----	3,539	1,432	3,676	3,602	1,434	3,663	3,862	1,657	3,927
Derailments of trains at highway grade-crossings involving motor vehicles ² -----	57	23	59	60	27	70	62	37	75
Miscellaneous other train accidents as a result of collision between trains and motor vehicles-----	229	122	117	256	122	82	272	138	131
Railroad casualties: ²									
Passengers-----			25			42		10	28
Employees on duty-----		7	110		12	122		4	102
Total railroad casualties-----		7	135		12	164		14	130

¹ Excludes non-train.² Included in totals.

Source: Highway-Grade Bulletin.

Collisions at grade crossings involving trains and motor vehicles (trains striking or being struck) totaled 3,862 and resulted in 1,657 deaths and 3,927 injuries—an increase of 260 accidents and 223 deaths and an increase of 264 injuries compared to like incidents in 1965. The remaining 235 accidents—involving pedestrians and other vehicles or machines—resulted in 123 deaths and 116 injuries, compared to 100 deaths and 138 injuries in 1965.

Included in the total number of accidents involving motor vehicles were 62 derailments and 272 miscellaneous train accidents accounting for 175 deaths and 206 injuries. Also included in the total casualties at rail-highway grade-crossings were 10 deaths and 28 injuries to passengers, as well as 4 fatalities and 102 injuries to employees on duty.

Locomotive Inspection Activities. The Bureau of Railroad Safety's Division of Locomotive Inspection investigated 174 accidents during the fiscal year. (See Table 24.) One hundred twenty accidents were reported by the carriers; 49 investigations were initiated of accidents not reported by the carriers as required by the Act but referred to the Bureau by other sources; one was disclosed during an investigation of another accident and four were initiated by district inspectors. Nine accidents which were investigated occurred during fiscal year 1966 and were either not reported or the investigations were not completed in time to be included in the fiscal report for that year.

Failure of locomotive equipment contributed to 121 of these accidents and resulted in 140 injuries, but no fatalities. (See Table 25.) Predominant causes of these accidents were defective cab seats; defective electrical insulation, short circuits or electric flash; unsafe cab floors, steps and passageways; defective cab doors, door latches and windows; and crankcase or airbox explosions in diesel engines.

During fiscal year 1967, the Division inspected 107,932 locomotives, an increase of 12,092 over the number of units inspected in the previous year.

TABLE 24—Accidents and casualties caused by failure of some part or appurtenance of steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units, fiscal years 1962-67

Accidents and casualties	1962	1963	1964	1965	1966	1967
Number of accidents.....	67	71	76	87	65	121
Percent increase or decrease from previous year.....	5.6	5.9*	7.0*	14.5*	25.3	86.0*
Number of persons killed.....	0	0	1	0	0	0
Percent increase or decrease from previous year.....	0	0	100*	100	0	0
Number of persons injured.....	73	98	96	93	68	140
Percent increase or decrease from previous year.....	5.2	34.2*	2.0	3.1	26.9	105.9*

*Increase.

TABLE 25—Specific causes, accidents and casualties resulting from failure of steam locomotives, tenders, locomotives other than steam, multiple operated electric locomotive units, and their appurtenances, fiscal year 1967

Part or appurtenance which caused accident	Accidents	Killed	Injured
Air compressors.....	2	0	2
Air reservoirs, fittings, safety and check valves.....	3	0	3
Air hose coupling, train line ¹	0	0	0
Boiler:			
Explosions.....	1	0	1
Fuel explosion in firebox ¹	0	0	0
Draft equipment—adjustment.....	1	0	1
Steam valves, piping and blowers.....	3	0	3
Brakes and brake rigging ¹	4	0	5
Cab:			
Doors and windows.....	9	0	9
Seats.....	22	0	22
Control equipment—mechanical, electrical, pneumatic or electro-pneumatic.....	5	0	21
Couplers, draft and drawgear ²	3	0	3
Electrical equipment:			
Armature journals and bearings ²	0	0	0
Energized electrical parts ¹	0	0	0
Insulation, short circuits, or electrical flashes.....	18	0	18
Pantographs, trolleys or third rail shoes.....	3	0	3
Fans and shutters.....	1	0	1
Fires due to liquid fuel or debris.....	1	0	1
Floors, steps and passageways.....	11	0	11
Handholds.....	2	0	2
Internal combustion engines and turbines:			
Crankcase or air-box explosions.....	7	0	8
Exhaust and cooling systems.....	6	0	7
Fuel injectors and connections.....	2	0	2
Fuel injectors and connections.....	1	0	1
Unguarded moving parts.....	16	0	16
Miscellaneous.....			
Total.....	121	0	140

¹ Decrease.

² Constant.

(See Table 26.) Of the total units inspected 13,243 or 12.3 percent were reported as defective, compared to 11.9 percent in the previous fiscal year.

Safety Appliance Laws. There was little or no improvement during fiscal year 1967 in the carriers' maintenance of safety appliances and power brakes on equipment in service. (See Table 27.) The incidence of defective equipment increased one-tenth of 1 percent from 6.7 to 6.8 percent and the operation of trains that had not been given proper train brake tests continued at the high level of 16.1 percent, only two-tenths of 1 percent under last year.

Carriers' shop track repair practices involving air brake attention for freight and passenger cars continued to be inadequate. Discrepancies were found in 4.7 percent of BRS observations, representing an increase of 1.3 percent over fiscal year 1966.

TABLE 26—Reports and inspections—steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units, fiscal years 1962-67

	1962	1963	1964	1965	1966	1967
Number of locomotives for which reports were filed.....	34,789	34,473	34,350	34,072	34,048	33,916
Number inspected.....	94,592	79,781	79,682	76,044	95,840	107,932
Number found defective.....	9,050	8,497	8,852	9,391	11,447	13,243
Percent of inspected found defective.....	9.6	10.7	11.1	12.3	11.9	12.3
Number ordered out of service.....	488	420	579	646	666	768
Number of defects found.....	26,032	25,718	28,453	31,596	36,556	42,609

TABLE 27—Number of inspections of safety appliances and percent defective, fiscal years 1963-67

Inspections (type and percent defective)	1963	1964	1965	1966	1967
Freight cars inspected.....	1,282,431	1,381,754	1,371,855	1,500,755	1,520,027
Percent defective.....	6.3	6.7	7.2	7.1	7.2
Passenger-train cars inspected.....	29,988	28,833	30,977	32,400	29,439
Percent defective.....	5.0	5.9	7.4	7.2	6.9
Locomotives inspected.....	¹ 93,205	¹ 96,142	¹ 93,058	¹ 113,144	¹ 124,272
Percent defective.....	1.0	1.2	1.3	1.5	2.1
Number of defects per 1,000 units inspected.....	66.53	71.91	79.34	79.72	78.37

¹ These figures included locomotives which were inspected for defective safety appliances during the year by inspectors of the Section of Locomotive Inspection.

Specialized Equipment. The technical staff of the Safety Inspection Division reviews drawings submitted by carriers and builders and inspects prototype equipment to make certain the purpose, intent and requirements of the Safety Appliance Acts are met, and to uncover any potential hazards which might exist in new and untried designs.

During fiscal year 1967, the introduction of new types of equipment continued, as shipper demand for specialized and new equipment remained high.

The broad changes in safety appliance requirements made by the Interstate Commerce Commission's Order of April 1, 1966 (Docket No. 34468) generated an unprecedented number of inquiries from carriers and car manufacturers. Cars built and in service prior to that date which were not designed with the new requirements in mind present different and complex problems. Experience to date indicates that questions concerning such older equipment will continue to arise during the course of the 8-year transition period.

During the past year, 278 special inspections of new equipment were made by field agents and members of the Washington staff. This represents an increase of 63.5 percent over the previous year.

Signal Inspection Activities. Railroad capital investment planned for new signal installations and upgrading existing installations on 48 Class I railroads for 1967 was estimated in January 1967 to be approximately \$30 million, with a total estimated signaling budget of more than \$56 million. The workload, in block signal and rules, standards and instructions applications filed with the Bureau for approval of some of these projects, continued at a normal level through fiscal year 1967. (See Table 28.)

TABLE 28—Applications for approval of modifications of block signal systems and interlockings; applications for relief from or modification of the Rules, Standards and Instructions prescribed by order of the Federal Railroad Administration, calendar years 1963-67

Year	Applications—Block Signal			
	Number	Pending at beginning of year	Acted upon	Pending at close of year
1963-----	218	46	209	55
1964-----	220	55	212	63
1965-----	221	63	212	72
1966-----	213	72	202	83
1967-----	172	83	222	33
Rules, Standards, and Instructions				
1963-----	30	6	26	10
1964-----	33	6	32	7
1965-----	43	7	46	4
1966-----	59	4	52	11
1967-----	53	11	59	5

Further development work in the use of electronic solid state equipment for railway signaling continued, as did the development of the pulse modulated electronic track circuit. High voltage direct current transmission of power is causing some apprehension as to the grounding effect this transmission arrangement may have on the safe operation of direct current track circuits controlling railroads' signal systems.

Hazardous Materials. The overall coordination of administration of the Hazardous Materials Regulations is now vested in the Office of Hazardous Materials, Office of the Secretary of Transportation. However, the Bureau of Railroad Safety, Federal Railroad Administration, conducts all investigations and inspections relating to the rail transportation of hazardous commodities. Close liaison has been effected between the Bureau and the Office of Hazardous Materials since establishment of the Department.

During the year, safety agents of the Bureau of Railroad Safety made 1,288 inspections of hazardous shipments in transit or storage. In many of the inspections reported, the agents were able to effect corrective action with carrier or shipper personnel to prevent recurrence of any irregularities noted.

During the period April 1 through June 30, 46 field inspection reports used in considering amendments to the regulations were transmitted to the Office of Hazardous Materials. Six complaints alleging violation of the regulations were received during the same period and were assigned to appropriate Regional Directors for investigation. Twenty-six investigations developed evidence of violation of the regulations, and the investigation reports were forwarded to the Bureau of Operations, Interstate Commerce Commission, and/or the Chief Counsel, Federal Railroad Administration for disposition.

Responsibility for the issuance of Special Permits for transportation of certain items not covered by a regulation was transferred from the Bureau of Explosives, Association of American Railroads, to the Office of Hazardous Materials when the Department was established. During the period April 1 through June 30, 172 Special Permits pertaining to rail transportation were issued, and copies forwarded to appropriate safety agents for enforcement purposes.

Hours of Service Act. During the year ended June 30, 1967, hours of service reports were filed by 109 railroads reporting 4,328 instances of excess service, an increase of 567 instances as compared with the previous year. (See Table 29.)

The reports covered 681 instances of excess service performed by train and engine employees subject to the 16 hours provision of the law, and 3,647 instances of excess service by operators, train dispatchers and other employees subject to the 9-hour and 13-hour provisions of the law, classified as follows: 575 instances of employees who remained on duty longer than 16 consecutive hours; 106 instances of employees who continued on duty after having been on duty 16 hours in the aggregate in a 24-hour period; 4 instances of employees who returned to duty with less than 8 or 10 consecutive hours off duty after having been on duty 16 aggregate or contin-

TABLE 29—The classes of offices, and the cause of instances in which operators, train dispatchers, or other employees who by the use of the telephone or telegraph handled orders affecting the movement of trains, remained on duty longer than the statutory periods, as indicated by the carrier's monthly reports for calendar years 1963-67

Classes of offices	1963	1964	1965	1966	1967
At continuously operated offices.....	2,013	2,220	2,305	2,062	3,616
At offices operated only during the daytime.....	70	42	22	58	31
Total.....	2,083	2,262	2,327	2,120	3,647
Causes					
Train accidents.....	149	231	89	56	126
Weather conditions, floods, fire, landslides.....	318	215	392	314	642
Delayed trains, and held to handle train orders.....	14	27	76	55	26
Misunderstanding of instructions or arrangements.....	78	51	86	56	103
Station or clerical work.....	18	13	9	4	3
Sickness, death, or personal injury.....	1,107	1,221	1,209	1,054	1,948
Relief operator arrived late.....	114	97	124	85	112
Labor shortage.....	164	351	226	168	600
Miscellaneous.....	121	56	116	328	87
Total.....	2,083	2,262	2,327	2,120	3,647

uous hours; 3,616 instances of employees who remained on duty longer than 9 hours in a 24-hour period at a continuously operated office; and 31 instances of employees who remained on duty longer than 13 hours in a 24-hour period at offices operated only during the daytime. (See Table 30.)

Rule Changes—Ex Parte 243. Hearings in the proceeding instituted by the Interstate Commerce Commission in Ex Parte 243 to consider changes in rules relating to locomotive safety were concluded December 21, 1965. The hearing examiner's Recommended Report and Order was served August 17, 1966. Exceptions were filed to the examiner's Order by the Association of American Railroads, the ICC's Bureau of Railroad Safety and Service, and the Railway Labor Organizations.

On March 17, 1967, the ICC's Division 3 served its Order approving the examiner's Order with minor changes. Subsequently, petitions for reconsideration of said Decision and Order and their respective replies thereto were filed by the AAR and the RLO.

The entire matter was transferred on April 1, 1967 to the jurisdiction of the Federal Railroad Administration's Bureau of Railroad Safety. The Federal Railroad Administrator issued an Order on June 6, 1967 effecting a stay of Division 3 Order and, at the close of the fiscal year, the matter still was under consideration.

Safety Enforcement Activities. On April 1, 1967, a backlog of 350 rail safety cases which had not been legally reviewed and prepared for prosecution were transferred to the FRA from the ICC. In addition, 380 pending court cases were transferred to the FRA. These figures do not include a large but undetermined number of violations that had not been forwarded to ICC attorneys because of the impending transfer of jurisdiction pursuant to the DOT Act.

At the end of fiscal year 1967, there were 256 cases pending in court and approximately 450 potential cases were awaiting legal review to determine whether legal prosecution should be instituted. Since these totals are expected to increase substantially during the beginning of fiscal year 1968 it is quite apparent that immediate action is necessary to prevent serious impairment of enforcement of the rail safety statutes.

Efforts were initiated to develop more efficient procedures for handling these cases, particularly from the standpoint of the statutory requirement that rail safety civil penalties be recovered by suit in the U.S. District Court having jurisdiction over the location where the violation occurred and that the penalty provided for must be collected. This factor was found to be responsible for a substantial portion of the time, effort, and expense involved in handling these cases.

In reviewing all possible steps to expedite matters, it was determined that civil penalties payable under the rail safety statutes could be collected and compromised under the Federal Claims Collection Act of 1966 (31 U.S.C. 951 *et seq.*). This Act authorizes the head of executive and legislative agencies to compromise claims of the United States arising out of the activities of, or referred to, his agency, and to terminate or suspend

TABLE 30—Causes of excess service involving train and engine employees subject to the 16-hour provision of the law, for fiscal years 1963-67

Cause	1963	1964	1965	1966	1967
On duty longer than 16 consecutive hours					
Collisions and derailments.....	254	199	176	144	117
Weather conditions, track defects, floods, obstructions.....	185	161	291	557	251
Congestion of traffic.....	71	58	68	70	26
Mechanical defects, engines and cars.....	73	19	72	78	100
Wrecking and relief service.....	70	16	0	49	33
Miscellaneous.....	56	49	69	581	48
Others					
On duty longer than 16 hours in the aggregate in a 24-hour period.....	75	104	111	146	102
Returned to duty without required 10 hours off duty.....	22	4	5	15	4
Returned to duty without required 8 hours off duty.....	1	0	0	1	0
Total.....	807	610	792	1,641	681

NOTE: The foregoing table shows a decrease of 960 instances of excess service, involving train and engine employees subject to the 16-hour provision of the law as compared with the number reported last year.

During the year, 475 counts involving violations of the Hours of Service Law (45 U.S.C. 61-64) were forwarded to the Chief Counsel for consideration.

collection action on any such claim under regulations that conform to the standards promulgated jointly by the Attorney General and the Comptroller General.

Departmental regulations establishing procedures for the implementation of this statute will be issued. Once these regulations become effective, the FRA will be able to consolidate all of its civil penalty claims for rail safety violations against a given railroad and attempt to collect them directly. When this collection effort is not successful, it still will be necessary to prepare these cases for prosecution. However, the overwhelming majority of the penalties for rail safety violations will be collected administratively and the FRA will be able to handle its legal workload more efficiently and realize significant savings in collection costs.

Reorganization Plan. The Bureau of Railroad Safety is charged with administering regulations and laws that have their roots in the safety problems of a bygone era. While this does not mean that all of these laws and regulations are inappropriate, it does suggest that, in detail, they must be less than fully consistent with the technical and operating problems of today. Steps are being taken towards a thorough and systematic review of railroad safety problems. The eventual goal: A restructuring of safety regulatory activities so that they reflect more appropriately the real safety problems facing the railroad industry today.

Accordingly, plans are being developed to establish the first of several study groups whose mission will be to look at each major area of railroad safety, identify important problems and determine how a Governmental regulatory program can contribute meaningfully to the solution of those problems. These study efforts will necessarily involve technically qualified personnel from the railroad industry.

A Bureau of Railroad Safety reorganization plan also has been developed to: (1) upgrade the technical quality of staff work and, in the process, create a more analytically oriented approach to all railroad safety problems; and (2) provide, within the framework of the Bureau's organization, a much more intensive, continuing program of training for field inspection personnel.

Although these study efforts or plans to reorganize and upgrade existing regulatory activities are not expected to solve problems overnight, the FRA is convinced that improved joint safety performances by the railroad industry and FRA's own efforts will reflect considerable progress in this common area of concern. The objectives are not to create and enforce regulations, or to prosecute violations, but to play a constructive role in improving the industry's safety performance.

Office of High Speed Ground Transportation

The Office of High Speed Ground Transportation includes the Northeast Corridor Transportation Systems Study, the High Speed Ground Transportation Research and Development Program, and the High Speed Ground Transportation Demonstration Program, all authorized under the High Speed Ground Transportation Act of 1965.

The three divisions are working to provide solutions to transportation problems in densely populated regions of the United States for the year 1980 and later. The Engineering Research and Development Division is working to improve railroad technology and to develop the technology of unconventional high speed transportation systems. The Demonstrations Division's activities center on a series of market tests of improved rail passenger equipment and service.

The Northeast Corridor Transportation Project, established in 1963 at the request of the President, places emphasis on the (1) development of comprehensive regional transportation plans for the Northeast Corridor with the required investment programs; and (2) evaluation of the adequacy and potential availability of new transportation technology for the Northeast Corridor, recognizing that such technology may have significance in other regions.

High in priority at this point is the study of cost and performance characteristics of different transportation system alternatives.

Work also continued towards collecting comprehensive data on effects of high speed railroad operations, using the Department of Transportation's four specially instrumented rail research cars. On-board instruments measure approximately 150 variables while the cars are in motion, and wayside instruments measure the effects of the speeding trains on the guideway and overhead structure. Comparable data have not been collected previously here or in foreign countries. The results will contribute to the better design of railroad systems.

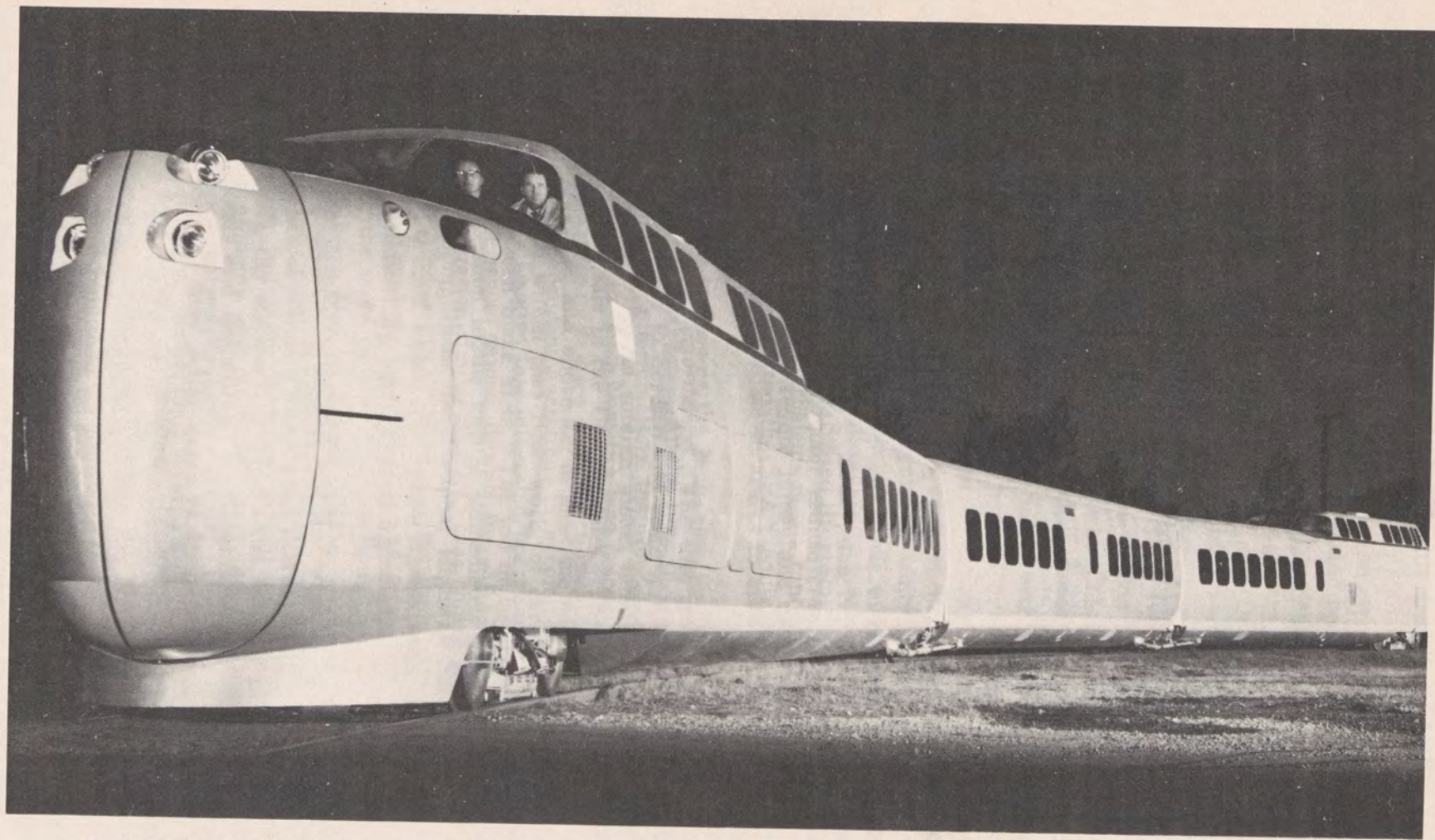
Other continuing programs include:

- (1) Railroad roadbed design innovations, which will be tested on sections of heavily traveled railroad;
- (2) Determination of methods to reduce the aerodynamic drag of large special purpose freight cars, which would have significant benefits for railroad operating speeds and costs; and
- (3) Development of new types of propulsion systems, communications and control systems, and tunneling techniques.

In demonstrations of improved rail passenger service, the Pennsylvania Railroad will operate 50 new electrically propelled cars between New York City and Washington, D.C. at speeds up to 110 miles per hour. This service will include experiments with mobile telephone service, new baggage handling techniques, and two new suburban railroad stations.

In a second demonstration, OHSGT will lease two three-car TurboTrains from the United Aircraft Corporate Systems Center for service between Boston and New York City on the New Haven Railroad. The service will effect a reduction of one hour in transit time below the fastest current rail schedule between Boston and New York.

Work will continue on a third demonstration project—the development of an experimental auto-train. It is expected that this train will be used in a demonstration project to be operated between Washington, D.C. and Jacksonville, Florida on the Seaboard Coast Line.



TurboTrains designed for service between Boston and New York, powered by aircraft-type gas turbine engines.

Data will be collected throughout the course of these demonstration projects for use in developing new systems and in evaluating proposals for changes in existing systems to meet future needs.

Continuing work in this area includes the following projects:

- Tube vehicle systems are being studied. The research program encompasses a number of proposals for improving the drag relationships as well as analytical work to establish the fundamental stability and energy considerations applicable to all types of tubes vehicles.
- A large scale laboratory investigation of the interaction of steel wheels on steel rails is scheduled. The research contemplated will help locate the upper speed limits of steel-wheeled vehicles traveling on steel rails.
- Preliminary runs will be made of the mathematical models being developed for the Northeast Corridor Transportation Project.

Chapter VI

SAINT LAWRENCE SEAWAY DEVELOPMENT CORPORATION

Responsibilities and Objectives

The Saint Lawrence Seaway Development Corporation, a Government-owned enterprise, is responsible for the construction, operation, and maintenance of that part of the St. Lawrence Seaway within the territorial limits of the United States (33 U.S.C. 981).^{*} The Seaway is operated and maintained jointly by the Saint Lawrence Seaway Development Corporation and the St. Lawrence Seaway Authority of Canada.

The United States portion consists of the Wiley-Dondero ship channel, which includes the Dwight D. Eisenhower and Bertrand H. Snell Locks, and the international section of the St. Lawrence River between Lake Ontario and St. Regis, New York.

Marine Operations

Ice breaking by the tug *Robinson Bay* began on March 7, 1966. (Ice conditions were not as severe as in previous years.) Commissioning of navigation aids was started on March 24, with all navigation aids in commission by April 4.

During the year, four lighted buoys, one pair of range lights, and three steering lights were newly commissioned. Navigation aid decommissioning started at the close of the season on December 16 and was completed on December 21.

Eisenhower Lock

The Corporation has been concerned with extraordinary deterioration of the concrete at Eisenhower Lock. In January, a testing and drill crew from the U.S. Army Engineer Waterway Experiment Station in Vicksburg, Mississippi, surveyed the lock structure using electronic measuring devices and core drilling. In addition, other testing procedures have been instituted during the year. Although the Corporation has not received the final reports as to the extent of the deterioration, it is apparent that a major repair job is in the offing.

^{*}The reports of the Saint Lawrence Seaway Development Corporation cover the operation of the Seaway on a calendar year basis. The information supplied here was abstracted from the official annual report which is published by the Corporation.

1966 Shipping Season

The downbound transit of the *Fort York* through Eisenhower Lock on April 1, 1966, inaugurated the earliest start of shipping on record. The first ocean vessel, the *Pra River*, upbound, entered Eisenhower Lock the following day. This was the third consecutive year that the Seaway opened prior to the official opening date of April 15.

The Seaway closed officially after the last commercial ship, the *Iroquois*, upbound, cleared Iroquois Lock on December 15.

The last Department of Transport buoy tenders and the Corporation tug, *Robinson Bay*, with its barge load of buoys, cleared through Eisenhower Lock on December 20.

Lockages and Transits, 1966

<i>Month</i>	<i>Lockages</i>	<i>Ships</i>	<i>Small Craft</i>
April 1-30	536	594	--
May	838	938	18
June	794	906	58
July	933	970	342
August	872	912	202
September	826	898	67
October	873	960	19
November	787	886	3
December 1-15	165	187	--
Total	6,624	7,251	709

Operations On Most Active Days

<i>Date</i>	<i>Lockages</i>	<i>Ships</i>
May 7	31	37
May 28	32	38
May 29	33	40
June 6	36	42
June 13	31	36
June 15	35	40
June 16	35	40
June 24	32	39
June 27	31	36
July 3	34	41
July 11	37	36
July 13	32	38
July 15	36	40
July 21	36	37
July 24	36	38
July 26	31	46

Operations On Most Active Days—(Con't)

<i>Date</i>	<i>Lockages</i>	<i>Ships</i>
August 4	31	36
August 30	34	39
September 1	34	36
September 25	35	39
October 5	34	38
October 9	35	37
October 21	35	37
October 25	28	40
November 26	34	43

Summary of Delays and Incidents—1966

	<i>hrs.</i>	<i>min.</i>
Weather (wind, fog, etc.) -----	162	15
Ships/shipping -----	25	14
Awaiting pilots -----		40
Other:		
Congested anchorage areas		
11/2 and 11/30/66 -----	6	30
No. 2 fender, Snell Lock, struck by vessel		
<i>Eudora</i> , 10/30 -----	9	
Divers: Inspecting vertical lift gate		
sills and lock valves -----	1	15
Overall Total -----	204	54

Incidents involving three ships resulted in lock damage during the year. The *Cape Breton Miner* struck the upper guide wall at Eisenhower Lock, the *Wearfield* struck the upper guide wall at Snell Lock, and the *Eudora* struck the No. 2 Fender at Snell Lock and was stopped by the fender cable only a few feet from the lower miter gate. Action to recover reimbursement for the lock damage has been initiated in all three cases.

Traffic

The St. Lawrence Seaway had another record breaking year in 1966. A total of 49,249,358 tons passed through the waterway as compared with 43,382,864 tons in 1965.

The 43,760,669 tons of bulk cargo and 5,488,689 tons of general cargo were carried through the Seaway by 7,341 vessels. The major movements were:

13,315,846 tons of iron ore from Canada to the United States; 9,336,591 tons of wheat from Canada to Canada; 2,497,574 tons of "iron and steel manufactured" from overseas to the United States; 2,042,676 tons of corn from the United States to overseas, plus 1,307,302 tons to Canada for trans-

shipment overseas; and, 1,440,998 tons of fuel oil from Eastern Canada upbound to Canadian ports.

Toll Review

The Corporation and the Seaway Authority of Canada continued to study toll charges throughout the year. For the purpose of public hearings, the two Seaway entities published revised toll proposals calling for a 10 percent increase on the Montreal-Lake Ontario sector of the waterway and lockage fees on the Welland Canal. The lockage fee proposal called for the following increases: cargo or passenger vessels, per lock: 1967—\$20; 1968—\$40; 1969—\$60; 1970—\$80; 1971—\$100.

Public hearings on the proposed increase were conducted in Ottawa on May 25 and in Chicago from June 8 to 10, 1966. In December, the Corporation presented its recommendations to the Secretary of Commerce. In March of 1967, agreement was reached by the two governments to place lockage fees on the Welland Canal, but not to increase tolls on the Montreal-Lake Ontario Sector. Canada's percentage of the total income was increased from 71 percent to 73 percent, and the U.S. portion reduced proportionately.

Financing

The Corporation is a self-sustaining and self-liquidating enterprise. Its construction activities are financed by the proceeds from revenue bonds issued to the Secretary of the Treasury. The cost of operations, payments of interest, and the retirement of bonds are financed from toll revenues. The Corporation is authorized to borrow funds in an amount not greater than \$140 million from the Secretary of the Treasury.

Financial highlights, fiscal years 1967 and 1966

	1967	1966
Gross revenues -----	\$ 7,117,000	\$ 6,498,000
Operating expenses -----	2,009,000	1,829,000
Payments to U.S. Treasury	5,100,000	4,700,000
Total to date (12/1/67)		
Payments to U.S. Treasury	25,982,000	20,882,000
Interest-bearing investment	141,183,000	141,019,000
Average interest rate	3.62%	3.53%

DOT LIBRARY



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