AVIATION FORECASTS
FISCAL YEARS
1972-1983

SEPTEMBER 1971

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

OFFICE OF AVIATION ECONOMICS
Aviation Forecast Division

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INTRODUCTION

This report presents forecasts of key indicators of aviation activity and of Federal Aviation Administration workload during the period fiscal years 1972-1983. The report has been prepared to meet the planning needs of the various offices and services of FAA for data concerning future trends in aviation activity. During the forecast period significant changes are expected in the volume of air traffic activity and in the type of equipment that will be flying our domestic and international air routes.

Although the report focuses on the period through fiscal year 1978 to provide forecasts required in the preparation of the FAA Five-Year Program, forecasts for fiscal years 1982 and 1983 have also been prepared to meet long-range planning needs. Specific numerical forecasts have also been included for each year from 1972 to 1978 to meet shorter term, fiscal and program planning requirements. It must be recognized, however, that year-to-year fluctuations are difficult to forecast precisely. To a considerable extent, therefore, the data reflect the trend or average conditions expected during the forecast period. In addition, many published forecasts show a range of values reflecting different assumptions. As an aid to uniform planning, only one forecast is presented herein. However, this forecast should be viewed as a level within a band of possible values - some lower, some higher.

HIGHLIGHTS OF FISCAL YEAR 1971

The aviation industry in fiscal year 1971 reflected the sluggishness of U.S. economic activity for the second consecutive year. FAA workload measures, as a result, changed only moderately with some measures increasing and others decreasing.

Scheduled revenue passenger miles flown by the U.S. certificated air carriers in fiscal year 1971 increased only 2.6 percent from fiscal year 1970, continuing the moderation in growth which began in 1968. All growth was in the international sector since domestic passenger miles were unchanged. Last year personal and business decisions to fly were affected by the sluggish economy and a higher level of fares. In addition to general fare increases which became effective in February and October 1969 and May 1971, selective fare increases have been granted by the Civil Aeronautics Board which significantly raised short-haul and certain discount fares.

Revenue passenger enplanements declined 0.8 percent in fiscal year 1971. The smaller growth for passengers than for passenger miles reflects a continuing long-term trend of increasing average passenger trip lengths.

The air carrier fleet declined slightly in 1971 after increasing every year since 1963. The retirement of piston aircraft more than

offset the addition of new jet equipment. Upgrading of jet equipment also occurred as the carriers replaced older jets with new wide-bodied aircraft.

Air carrier revenue airborne hours and miles flown in fiscal year 1971 declined 5.9 percent and 4.9 percent, respectively, from fiscal year 1970. This decline reflects the expanding use of wide-bodied jets and the air carriers' efforts to reduce excess capacity.

There were 288 air transport aircraft produced in fiscal year 1971 compared with 368 in the previous twelve months. This was the lowest unit volume since the fiscal year 1966 number of 284. However, in terms of available seats, the production of fiscal year 1971 far exceeded the 1966 level because of the introduction of the new large capacity wide-bodied jets.

The manufacturers of general aviation aircraft produced only 7,467 aircraft in fiscal year 1971, down from the fiscal year 1970 number of 10,189. This was the lowest level of production since fiscal year 1963. The active general aviation fleet numbered 131,407 on 1 January 1971, up only 601 over a year earlier. This minimal growth not only stemmed from the low production level but also from a change in the definition used for determining this fleet. In prior years, an active aircraft must have a current registration and have been flown during the previous calendar year.

The estimated hours flown by general aviation in fiscal year 1971 increased to 26.5 million compared with 25.7 million a year earlier. An increase in total hours as well as in average utilization was noted among all categories of aircraft. Most of these increases are probably the result of the change to a new reporting system and new method of estimating hours flown rather than from an actual increase in general aviation activity.

Fiscal year 1971 civil aircraft engine production in the United States followed the trend of aircraft production and dipped 20 percent from fiscal year 1970. Turbojet engine production was down 32 percent to 1,076 compared with 1,576 a year earlier. Turboprop engine production decreased only 5 percent to 625 units. Although piston engines continued to make up the bulk of production, the number was down 19 percent to 9,928 from the fiscal year 1970 figure of 12,279.

Total aircraft operations declined in fiscal year 1971 for the first time since 1960. A drop of 0.3 million below fiscal year 1970 had been forecast, but the actual decline was 2.0 million, or down to a total of 54.2 million. Air carrier operations were off from a year earlier, for the same reasons revenue hours and miles were down -- the impact of the large capacity of the new wide-bodied jets and the curtailment of service in many markets.

General aviation itinerant operations also were down, from 22.6 million in fiscal year 1970 to 22.0 million in fiscal year 1971. Local operations reflected a similar pattern dropping from 19.4 million to 18.6 million in the same time span. These declines continued the softening in general aviation activity which became apparent in fiscal year 1969 coincident with the slowdown in the national economy.

Instrument operations in fiscal year 1971 at 17.4 million were virtually unchanged from a year earlier in spite of a decline in total itinerant operations. Both general aviation and military instrument operations increased significantly, an indication of the more intensive use that these two categories are making of the FAA Instrument Flight Rules (IFR) system. These trends seem certain to continue.

Total IFR aircraft handled dipped slightly from 21.6 million in fiscal year 1970 to 21.3 million this past year. As with instrument operations, both general aviation and military IFR flying increased, but these gains were offset by the drop in air carrier IFR traffic. The FAA instituted new IFR terminal control procedures in the Washington, Atlanta, and Chicago areas which undoubtedly led to an increase in general aviation and military IFR center traffic as well as in terminal instrument operations.

Total flight services provided by the flight service stations and combined station/towers increased in fiscal year 1971 to a new all time high. The mark of 47.6 million was 4.2 percent above fiscal year 1970

and continued the uninterrupted uptrend which has been evident since the start of this series in 1962. Both pilot briefs and flight plans filed were higher than a year earlier, but aircraft contacted did not increase due to the reduction in air carrier flying.

All categories of pilot certificates except students continued to increase in fiscal year 1971. The student category was down for the second year in a row illustrating the sensitivity of new entrants to general aviation flying to general economic conditions. Instrument rated pilots increased faster than any other major category in fiscal year 1971 continuing the trend of the last five years.

AVIATION INDUSTRY FORECASTS

Air Carrier Traffic

Domestic scheduled revenue passenger miles flown by U.S. certificated route air carriers, as shown in Table 1, are forecast to increase a moderate 4.5 percent in fiscal year 1972 following a period of no growth in fiscal year 1971. A much larger increase of 10.6 percent is expected in fiscal year 1973. The full impact on passenger traffic of a forecast improvement in economic activity is not expected until fiscal year 1973, reflecting a projected short-term lag between improved economic conditions and increased travel. By 1983, domestic revenue passenger miles are forecast to increase to 338.0 billion, up more than three times the 1971 level of 104.1 billion. This reflects an annual rate of growth of nearly 10.5 percent compared with 13 percent in the decade of the 1960's.

In contrast to zero growth in the domestic sector, international scheduled revenue passenger miles reported by U.S. certificated route air carriers increased 13.5 percent in fiscal year 1971 over fiscal year 1970. The growth rate is forecast to slip to 10.5 percent in fiscal year 1972 primarily as a result of limited increase during the first half of the year. The long-term rate of growth of international revenue passenger-miles is expected to average just under 12 percent annually, or approximately 1 percentage point higher than the domestic forecast.

The number of domestic scheduled revenue passenger enplanements will grow at a more moderate pace than revenue passenger-miles, reflecting a continuing long-term trend of increasing average passenger trip lengths and the impact of recent and expected fare adjustments. In addition to a significantly greater increase in short-haul than long-haul fares in the last few years, many special discount and group fares have recently been introduced in long-haul markets which are exerting a downward pressure on yields. By fiscal year 1983, domestic enplanements are forecast to increase to 420 million, almost triple the 1971 level of 153 million enplanements. The average passenger trip over this forecast period is expected to increase from 680 miles in fiscal year 1971 to 805 miles in fiscal year 1983.

International scheduled passengers enplaned by U.S. certificated route air carriers at both domestic and overseas points are forecast to total 55.5 million by fiscal year 1983, slightly more than triple the 1971 level of 17.1 million enplanements. Because of the much greater trip length characteristic of international travel, international revenue passenger enplanements account for only slightly more than one-tenth of total enplanements of all U.S. certificated route air carriers.

The air carrier forecast is based on the assumption that domestic passenger traffic will continue to be closely associated with the trends in GNP (in terms of constant dollars), the proportion of GNP spent on

air transportation, and average passenger fares. Likewise, the trend in international traffic of U.S. carriers is assumed to continue to be closely related to domestic traffic levels.

GNP, expressed in terms of constant 1958 dollars, is forecast to increase sharply in the final half of fiscal year 1972 and into fiscal year 1973. This is consistent with the consensus forecast of leading economists of 6 percent real growth for calendar year 1972. After 1973, this forecast assumes real GNP growth will return to a more normal long-term rate of 4.3 percent per year. This forecast also assumes the general price level will decline from 3 percent in 1972 to 2 percent per year by 1973.

Domestic yield (including tax) per revenue passenger mile is expected to increase approximately 1 percent in fiscal year 1972 in terms of dollars of constant purchasing power. This increase does not assume any new fares in fiscal year 1972 but reflects the fare increases which became effective in the latter half of fiscal year 1971. Fares plus tax are expected to decline 1 percent in fiscal year 1973 and 2 percent per year beginning with fiscal year 1974. The forecast downtrend in the average fare level will be made possible by the introduction of ever increasing numbers of wide-bodied jets which have a greater capacity and potential for lower unit cost operation than the first generation jets.

When measured in current dollars, average domestic fares will increase over 4 percent in fiscal year 1972, 1 percent in fiscal year 1973, and will be virtually unchanged after 1973. There may be selected increases in regular fares, but these will be offset by lower special promotional and discount fares. Over the next decade the domestic airlines are expected to increase their promotional efforts to capitalize on the consumer's greater income and leisure time and to counter competition from the international carriers for holiday and pleasure type passengers.

The proportion of GNP spent on air transportation which has increased steadily from 0.2 percent in 1950 to 0.7 percent in 1971 is forecast to rise to 1.1 percent in 1983. This increasing trend is the result of the impact of many factors on the propensity to travel such as greater aircraft speed, range, comfort, and safety; higher personal income levels, lower fares, more leisure time, and greater interest in travel. Obviously, some of these factors will have only a limited effect on increasing travel in the future, while others, greater income, more leisure time, and more discount fares, in particular, are expected to continue to have a significant stimulating effect.

It should be noted that all of these long-range forecasts must be viewed as long-term averages and not as predictions of precise levels

in any given year. Divergent movements must be anticipated, but they are expected to vary around the forecast values.

Air Carrier Fleet

The total number of aircraft in the service of U.S. air carriers is forecast to decline slightly over the next two years from the 1 January 1971 level of 2,679 aircraft (see Table 2). A slight upturn in numbers is expected in the 1 January 1974 inventory, followed by a moderate growth through the rest of the forecast period. By 1983, a total of 3,510 aircraft is forecast to be in service, which represents an increase of 31 percent over 1971.

The fleet numbers were developed from an analysis of the carriers' current inventory, known orders and retirements, and a forecast of future aircraft requirements to maintain a competitive airline structure and to meet expected future market demand. Recognition was also given to the reduced aircraft utilization and relatively low load factor currently existing in the industry. The seat-miles generated by the forecast fleet are consistent with the revenue passenger-mile forecast shown in Table 1. The domestic passenger load factor increases from the 1971 level of under 50 percent to just below 60 percent in fiscal year 1983.

Piston and turboprop aircraft are forecast to comprise less than 5 percent of the fleet in 1983, compared with nearly 20 percent today,

and are expected to be used mainly on low density routes and in nonscheduled service. Two- and three-engine jets of all types will account for an ever larger proportion of the air carrier fleet over the forecast period, increasing from about 50 percent today to 75 percent in 1983. Two-engine wide-bodied jets are forecast to enter scheduled service in significant numbers in the latter half of the 1970's. By 1983 approximately 50 percent of the fleet will be wide-bodied aircraft.

The Concorde supersonic transport is assumed to enter the fleet in fiscal year 1974 and to be used primarily in international service. All-cargo aircraft are included in the fleet, but the numbers are not tied to a detailed air cargo market forecast. Some V/STOL aircraft may be in the fleet by the end of the forecast period, but the timing and specific aircraft types are too indefinite for separate identification.

Forecasts of U.S. air carrier revenue airborne hours and revenue miles flown, by aircraft type, are shown in Tables 3 and 4. Average utilization rates and airborne speeds were developed for each aircraft type by carrier groups based on past trends as well as anticipated future use of the aircraft. These unit values were then applied to the corresponding number of aircraft of the given types of each carrier group. Except for a minor dip in fiscal year 1972, both series are expected to increase steadily through the forecast period, although revenue miles flown will increase faster than airborne hours, reflecting an increase in average air speed.

General Aviation Flying and Aircraft Fleet

General aviation is defined as all civil flying not classified as air carrier, and as such contains many different use categories as well as many different types of aircraft. It varies from personal flying and transportation of personnel and cargo by business firms in corporate-owned aircraft and by air taxi operators to special uses of aircraft, such as crop-dusting, power and pipeline patrol, and aerial advertising. The forecast for general aviation in fiscal year 1972 calls for a slight recovery in activity levels from fiscal year 1971. A rapid upswing in activity is expected in fiscal year 1973.

Between 1 January 1970 and 1 January 1971 the active general aviation fleet grew from 130,806 to 131,407 aircraft. The definition used for determining this fleet was changed as of 1 January 1971. Formerly an active aircraft was one certified as eligible to fly. Now an active aircraft must have a current registration and have been flown during the previous calendar year. This has tended to lower the number of aircraft classified as active. As shown in Table 5, by 1983 the fleet of general aviation aircraft is expected to reach a total of 212,000, about 60 percent greater than the 1971 fleet.

Although every category of general aviation aircraft will continue to show an increase, the fastest growing categories will be the turbine-powered fixed-wing aircraft and rotorcraft. In 1970 there were 2,401

turbine aircraft, and this number is forecast to reach 8,000 by 1983, a gain of 235 percent. The rotorcraft fleet is estimated to increase from 2,247 to 5,500 aircraft or by 145 percent during this same period.

Single-engine piston aircraft will continue to make up the great bulk of the fleet and between 1971 and 1983 their number will grow from 109,333 to 166,500. However, their relative importance will decline from 83 percent to 79 percent of the total inventory. Multiengine piston aircraft are forecast to nearly double to 28,900 in 1983 from 15,875 reported in 1971.

Table 6 provides a regional distribution of active general aviation aircraft. There will be continued growth throughout the forecast period in the number of aircraft in each FAA region. This distribution was based on historical trends plus anticipated growth in each region's population and per capita income. By 1983 the Eastern, Southern, Great Lakes, and Western Regions will have over 75 percent of the national total of active general aviation aircraft.

Total hours flown in general aviation, as shown in Table 7, are expected to increase from an estimated 26.5 million hours in fiscal year 1971 to 46.2 million by fiscal year 1983. Single-engine piston aircraft will continue to provide the great bulk of hours flown. Their estimated 20.0 million hours in 1971 was 75 percent of the total. This will grow to 33.0 million hours in 1983 but will decline to 71 percent

of the total. These hours projections are based on the fleet of general aviation aircraft by type of aircraft as shown in Table 5.

Domestic Aviation Fuel Consumption

A forecast of U.S. domestic civil aviation fuel consumption is shown in Table 8. Preliminary figures show that during fiscal year 1971, 8.7 billion gallons of fuel were used compared to a forecast of 18.9 billion in 1983. The dominant factor in this growth is air carrier jet fuel use of which increases from 8.0 billion gallons to 17.5 billion gallons. For the past few years the air carriers have consumed approximately 98 percent of the jet fuel, and this relationship will continue through 1983. General aviation turbine aircraft will continue to increase during the forecast period at a much higher rate than air carrier aircraft, but the lower utilization and consumption rates of general aviation combine to keep the jet fuel used to a fraction of that used by the air carrier.

Aviation gasoline consumption in fiscal year 1971 totalled 561 million gallons and is forecast to increase to 910 million gallons in 1983. The growth in the general aviation use of aviation gasoline during each year of this period more than offsets the decline in air carrier consumption as the air carriers continue to retire their piston aircraft.

Civil Aircraft and Engine Production

Historically, the production of general aviation aircraft has been sensitive to business cycle fluctuations, and production has been down substantially in the last two years from the 14,000 plus level of the three previous years. In fiscal year 1971, as shown in Table 9, the total dropped to 7,467, or to the lowest level since the early 1960's. With the expected upturn in the economy, general aviation aircraft production is forecast to increase to 8,200 in fiscal year 1972 and to 11,000 in fiscal year 1973. By 1983, production is expected to reach 23,400 aircraft. Normally, about 20 percent of the U.S. production is exported, while only a small number of aircraft are imported from foreign manufacturers.

Piston aircraft will continue to account for the bulk of the general aviation aircraft deliveries. Over the past year the trend has been toward higher performance, more sophisticated aircraft types and this trend is expected to continue. Increased airborne equipment requirements that may be imposed on general aviation by government regulation to permit its effective use of the National Aviation System, and the resulting increases in operating and investment costs, could place some constraints on these anticipated growth rates.

The growth of general aviation activity and the increasing use and acceptance of light aircraft by private individuals and business

firms has been one of the outstanding aviation developments during the past 25 years. As the population grows and becomes more affluent and aviation oriented, continued growth in general aviation activities can be expected. Group flying activities of professional and trade organizations and flying clubs plus such new developments as fly-in resorts will stimulate the growth of personal and pleasure flying. The lease-a-plane concept, similar to car rentals, is now available in many communities and is expanding. Industrial and service organizations are finding light aircraft offer a degree of transport flexibility not possible with any other mode. These factors augur well for the future of general aviation.

The air carrier transport aircraft production forecast is based on both announced orders and additional orders required for the U.S. and foreign air carriers to remain competitive and to accommodate forecast traffic growth. Wide-bodied aircraft are expected to account for the majority of aircraft produced over the next few years and all of the transport aircraft production in the latter part of the forecast period. The number produced is forecast to drop sharply in fiscal year 1972 and then to increase slowly over the next decade. The 1971 production level of 288 is not expected to be reached again until fiscal year 1978.

The forecast of civil aircraft engine production, as shown in Table 10, was based on the aircraft production figures shown in Table 9 and provides for necessary spares. Piston engine production was based solely on general aviation aircraft production, while the number of turbine engines accounts for air carrier requirements as well as general aviation.

FAA AIR TRAFFIC ACTIVITY FORECASTS

During the period of this forecast, fiscal years 1972 to 1983, all FAA workload measures will increase substantially. Most of the growth will be generated by general aviation. Military activity is expected to remain relatively static. Although air carrier operational activity will increase during the next decade, its rate of growth will be slower than that of the past ten years.

Tables 11 through 17 show forecasts of the different measures of air traffic activity and workload at FAA terminal, en route, and flight service station facilities. Except as specifically noted, these forecasts are predicated upon the continuation of present operating rules, procedures, services, and facilities. If these are changed, the forecasts will have to be adjusted accordingly.

Aircraft Operations at Airports with FAA Traffic Control Service

Table 11 shows total, itinerant, and local operations through fiscal year 1983. The anticipated acceleration of the economic recovery will stimulate all operations. Total operations in fiscal year 1972 are forecast to increase to 58.2 million, or 7.4 percent over the 1971 level. Itinerant and local operations will increase by 6.5 and 8.8 percent, respectively. The growth is expected to persist over the long-term, with

total operations forecast to reach 140.2 million by fiscal year 1983, over two and a half times the fiscal year 1971 level.

Since the number of reporting towers directly affects the operations count, the schedule for installation and commissioning of new towers is basic to the operations forecasts. Historically, the FAA has installed an average of about ten new towers per year, but for the past few years the number has been below this average. In fiscal year 1972, four new reporting towers will be added, 11 more are scheduled for fiscal year 1973, while 32 are planned for fiscal year 1974. Beginning in fiscal year 1975, the FAA National Aviation System Plan anticipates new tower commissionings at or above the historical rate for the remainder of the forecast period. A total of nearly 500 towers is programmed by 1982. The increase in the number of towers reporting will compound the effect of aviation growth on the operations count.

As shown in Table 12, itinerant operations are forecast to increase from 33.6 million in fiscal year 1971 to 83.6 million in 1983, an increase of about 150 percent. Nearly all of this increase will occur in general aviation operations. In fiscal year 1971 general aviation itinerant operations were 65.5 percent of the total; in 1983 they will account for over 80 percent of the total.

Air carrier itinerant operations will decrease slightly over the near term and then rise slowly to reach the 1971 level of 10.1 million

by 1976. The forecast decline in air carrier itinerant operations between fiscal years 1971 and 1972 from 10.1 million to 9.4 million is due to several factors. The air carriers have been reducing flight schedules with the introduction of the new wide-bodied jets. Their much greater capacity permits the offering of more seats with fewer flights. Also, the carriers have reduced some flight frequencies served by the older conventional jets in an effort to raise passenger load factors and improve their profit position. In addition, many air commuter and air taxi operations, which formerly were reported by some towers in the air carrier count, have now been shifted to the general aviation series in these forecasts, thereby lowering the number of air carrier operations.

Although the expanding economy in the years ahead will stimulate air carrier revenue traffic, the rate of growth in operations during the 1970's will be retarded by the introduction of larger capacity, more productive aircraft. Domestic passenger-miles are expected to be more than three times their 1971 level by fiscal year 1983, but air carrier operations will increase by only about a third. In fiscal year 1971, air carrier operations accounted for 30 percent of total itinerant operations. By 1983, this percentage will be down to only 16 percent.

General aviation itinerant operations are forecast to triple, growing from 22.0 million in fiscal year 1971 to about 69 million in fiscal year 1983. This growth contrasts with a slight decline shown between fiscal years 1970 and 1971. The economic upturn anticipated in fiscal years 1972 and 1973 is expected to stimulate general aviation activity, but part of the forecast growth is attributable to a shift of some air taxi operations from the air carrier series to the general aviation series. Because of limited information upon which to base the latter adjustment, the near term forecasts may be subject to some error. This series will be watched carefully. If the accumulation of more data indicates a significant change, an amended forecast will be issued.

Military itinerant operations are expected to continue a slow decline and will not contribute significantly to the total tower count.

General aviation activity will be responsible for all of the growth in local operations as shown in Table 13, since military local operations are expected to decline during the forecast period. In fiscal year 1971 there were 20.6 million local operations; by 1983 this figure is expected to grow to about 57 million, an increase of 175 percent.

The factors which influence the number of local flights are different from those that affect itinerant operations. Itinerant operations generally represent a transportation function while local general aviation

flying is primarily instructional or recreational in character. Pleasure or recreational flying, relying as it does on discretionary spending, bears a direct relationship to economic factors such as income levels and aircraft operating costs.

Table 14 includes instrument operations at civil airports with FAA traffic control service as well as at FAA-operated military radar approach control facilities. Total instrument operations in fiscal year 1971 were fractionally below the previous year as gains in general aviation and military operations were not enough to offset a significant drop in air carrier activity. The dip of 0.7 percent was the first year over year decline on record.

During fiscal year 1971, the FAA began a program requiring new instrument flight control procedures in several of the nation's high-density traffic areas. By the end of the fiscal year there were three of the Terminal Control Areas (TCA's) in operation. Six more TCA's are scheduled for installation in fiscal year 1972 with 16 additional areas planned by fiscal year 1975.

As a result, instrument operations are forecast to show an abnormal increase and reach 18.9 million in fiscal year 1972, a rise of 1.5 million, or 8.6 percent over 1971. Fiscal year 1973 is expected to show a similar gain over 1972. The annual growth should drop to about 1.0 million operations per year between 1973 and 1977. Most of the near-term

growth will stem largely from general aviation and military activity as virtually all air carrier flying is already under instrument control. By the end of the forecast period, total instrument operations are expected to be double the current level.

FAA En Route Traffic Control Activity

The number of IFR aircraft handled is used as a measure of IFR activity and workload at the FAA air route traffic control centers. The forecast of aircraft handled is shown in Table 15.

The volume of IFR aircraft handled has shown relatively little change over the past three years, and fiscal year 1972 is forecast to remain at the 1971 level of 21.3 million. An upturn is anticipated in fiscal year 1973 when IFR traffic should reach a new all-time high of 22.4 million aircraft handled. The forecast shows an uninterrupted growth trend beyond 1973 and by fiscal year 1983 the number is expected to be around 42.0 million, or double the present level. However, the growth rate of the three system users will be substantially different throughout the forecast period.

Since virtually all air carrier operations are conducted under IFR procedures, the recent cutback in flight schedules and the forecast of limited growth in itinerant operations during the 1970's have a direct bearing on the number of aircraft handled. In fiscal year 1972,

air carrier IFR traffic is expected to dip below the year earlier volume and not surpass the fiscal year 1970 record until after 1978. This apparent lack of air carrier growth reflects the impact of the introduction of large numbers of the new wide-bodied jets. By fiscal year 1983, air carrier IFR traffic will be only 30 percent above the current level. In fiscal year 1971, the air carriers accounted for 61 percent of the total; by the end of the forecast period this percentage will be down to 39 percent.

In spite of a slowdown in general aviation itinerant operations, the number of general aviation IFR aircraft handled has continued to increase, and they are forecast to grow substantially throughout the forecast period. There has been an ever-increasing acceptance as well as requirement for general aviation pilots to file IFR flight plans and use the FAA en route traffic control system. More pilots are becoming IFR qualified and more aircraft are being equipped with the necessary navigation and communications gear. The industry anticipates these trends will continue and by fiscal year 1983 the volume of general aviation IFR aircraft handled is expected to reach 20.7 million. This is over five and a half times the present volume.

A recent agreement between the military and the FAA has increased the number of military aircraft flying IFR. Fiscal year 1972 is forecast to increase to 4.8 million compared with 4.6 million a year earlier. The 1972 level is expected to be sustained through fiscal year 1983.

FAA Flight Services

Total flight services provided by FAA flight service stations and combined station/towers have increased 40 percent over the past five years. As shown in Tables 16 and 17, the outlook is for an even higher growth rate in the years ahead. By fiscal year 1975, the weighted total of all flight services will be up by nearly 50 percent, and by the end of the forecast period the total will be over three times the present volume. The general aviation industry has been the principal user of the flight service stations, and it will make more intensive use of these facilities in the future.

Pilot briefs are the largest in volume and the most rapidly growing of all of the services provided, and an uninterrupted uptrend is forecast throughout the forecast period. Fiscal year 1972 is expected to show only a 4 percent gain over last year to 13.2 million, but subsequent years will show gains as high as 18 percent. By fiscal year 1983, pilot briefs are expected to reach 53.3 million, over four times the present level.

Through fiscal year 1967, flight plans originated were about equally divided between IFR-DVFR and VFR. As general aviation has become more sophisticated, IFR flying has increased faster than VFR flying. At the present time, the ratio of IFR to VFR flight plans filed is about 1.3

to 1.0. By fiscal year 1983, the ratio is expected to be around 1.5 to 1.0. In fiscal year 1971, total flight plans filed numbered 6.2 million, by fiscal year 1983 the number should be over 14 million.

Total aircraft contacted are forecast to increase from 9.9 million in fiscal year 1971 to 10.5 million in fiscal year 1972 and to 22.4 million in fiscal year 1983. Virtually all of these gains will stem from growth in general aviation as military and air carrier contacts are expected to show almost no change. As with flight plans filed, the IFR category of aircraft contacts has grown at a faster rate than the VFR category. The former has increased 30 percent in the last five years while the latter has increased by only 3.6 percent. In the forecast period, IFR contacts will expand by nearly four times, but VFR contacts will only double. However, the VFR contacts will still outnumber the IFR contacts by almost 4 to 1.

AIRMEN FORECASTS

Number of Active Pilots

The data in Table 18 represent the number of active pilots as entered in the airmen certification records. This count is determined by the number of pilots with current medical certificates and includes those pilots who no longer fly but for various reasons maintain their active status by periodic medical examinations.

Between January 1971 and January 1983 total pilot certificates will grow from 732,729 to 1,324,000, an increase of 80 percent. The largest numerical increase will be in the private and student pilot categories. The rate of increase in the pilot inventory slowed considerably in 1969, 1970, and 1971 but is expected to improve as the economy accelerates in 1972.

After declining from 209,406 in 1969 to 195,861 in 1971, student pilots are forecast to grow to 200,000 in 1972 and double by 1983 to 392,000. The number of private pilots has continued to increase each year and is forecast to grow from 305,826 in 1971 to 548,000 in 1983, an increase of 79 percent. This category will account for 41 percent of all pilot registrations in 1983.

Commercial pilots are expected to continue a rapid growth from 186,821 in 1971 to 308,000 in 1983, an increase of 65 percent. Airline transport rated pilots will continue to have the lowest rate of growth, 48 percent, during the forecast period. This series is closely related to the size of the air carrier fleet and the hours flown.

Helicopter and glider flying, while numerically small, will continue to show strong rates of growth. These two categories of pilots will increase from 9,791 in 1971 to 25,100 in 1983, or 156 percent.

The number of instrument rated pilots has increased sharply in spite of the economic slowdown over the past few years. We expect this trend will continue as greater proficiency will be required to fly in tomorrow's air traffic system. A growth of 91 percent is forecast between January 1971 and January 1983, or from 169,848 to 325,000.

Table 1

UNITED STATES CERTIFICATED ROUTE AIR CARRIER
SCHEDULED PASSENGER TRAFFIC

Fiscal Year	Revenue Passenger Enplanements (millions)			Revenue Passenger-miles (billions)		
	Total	Domestic	International	Total	Domestic	International
1967	126.4	113.5	12.9	86.3	65.7	20.6
1968	152.6	137.5	15.1	106.6	81.6	24.9
1969	168.0	152.8	15.3	119.8	95.3	24.5
1970	171.4	156.9	14.5	129.0	104.1	24.9
1971	170.0	152.9	17.1	132.4	104.1	28.2
1972*	174.9	156.5	18.4	140.0	108.8	31.2
1973*	189.7	169.4	20.3	155.3	120.3	35.0
1974*	209.0	186.3	22.7	174.5	134.9	39.6
1975*	229.5	204.3	25.2	195.0	150.5	44.5
1976*	252.0	224.1	27.9	218.0	168.0	50.0
1977*	276.5	245.6	30.9	242.5	186.5	56.0
1978*	303.0	268.8	34.2	269.5	207.0	62.5
1982*	435.0	384.5	50.5	404.0	307.5	96.5
1983*	475.5	420.0	55.5	445.0	338.0	107.0

*Forecast.

Note.--Detail may not add to total due to independent rounding.
Beginning with 1969, domestic and international are based on the revised CAB definition. Domestic encompasses operations within and between the 50 states. International encompasses operations between the 50 states and foreign points, between the 50 states and U.S. possessions and territories, and operations between foreign points.

Table 2

TOTAL AIRCRAFT IN THE SERVICE OF UNITED STATES AIR CARRIERS

(As of January 1)

Aircraft Type	Reported 1971	Forecast 1972	1973	1974	1975	1976	1977	1978	1982	1983
Total Aircraft	2,679	2,600	2,560	2,590	2,650	2,680	2,750	2,840	3,310	3,510
Fixed-wing Aircraft	2,663	2,583	2,544	2,574	2,632	2,659	2,728	2,818	3,285	3,485
Jet	2,136	2,107	2,125	2,188	2,289	2,340	2,427	2,545	3,110	3,325
2-and 3-engine	1,205	1,224	1,277	1,382	1,485	1,546	1,668	1,804	2,420	2,640
4-engine	931	883	848	803	780	758	720	700	625	616
SST	-	-	-	3	24	36	39	41	65	69
Turboprop	374	345	312	293	267	248	233	211	130	120
1-and 2-engine	264	263	259	246	225	211	198	180	115	105
4-engine	110	82	53	47	42	37	35	31	15	15
Piston	153	131	107	93	76	71	68	62	-	40
1-and 2-engine	119	107	89	79	65	63	62	58	45	40
4-engine	34	24	18	14	11	8	6	4	-	-
Helicopter	16	17	16	16	18	21	22	22	25	25
Piston engine	3	3	1	-	-	-	-	-	-	-
Turbine engine	13	14	15	16	18	21	22	22	25	23

Note.--Included here are all passenger and cargo aircraft owned or leased by, and in the domestic or international service of the United States certificated route, supplemental, intrastate and commercial air carriers. Aircraft used for training and aircraft that have been withdrawn from service and are awaiting disposal are not included here. Aircraft in the service of air taxi operators are shown in the general aviation aircraft fleet on another page of this report.

Table 3

TOTAL REVENUE AIRBORNE HOURS, UNITED STATES AIR CARRIERS

(Fiscal years --- In millions)

Aircraft Type	Reported 1971	Forecast 1972	1973	1974	1975	1976	1977	1978	1982	1983
Total Aircraft	6.35	6.33	6.54	6.82	7.05	7.18	7.35	7.72	9.18	9.75
Fixed-wing Aircraft	6.33	6.31	6.52	6.79	7.02	7.15	7.31	7.68	9.14	9.71
Jet	5.60	5.60	5.84	6.13	6.42	6.60	6.79	7.21	8.83	9.44
2-and 3-engine	2.96	2.98	3.24	3.57	3.88	4.06	4.36	4.84	6.58	7.19
4-engine	2.64	2.62	2.60	2.56	2.48	2.41	2.29	2.22	2.01	1.99
SST	-	-	-	*	.06	.13	.14	.15	.24	.26
Turboprop	.65	.63	.61	.60	.55	.51	.48	.43	.28	.25
1-and 2-engine	.55	.55	.54	.53	.48	.45	.42	.38	.25	.22
4-engine	.10	.08	.07	.07	.07	.06	.06	.05	.03	.03
Piston	.08	.08	.07	.06	.05	.04	.04	.04	.03	.02
1-and 2-engine	.06	.06	.05	.05	.04	.03	.03	.03	.03	.02
4-engine	.02	.02	.02	.01	.01	.01	.01	.01	-	-
Helicopter	.02	.02	.02	.03	.03	.03	.04	.04	.04	.04
Piston engine	*	*	*	*	-	-	-	-	-	-
Turbine engine	.02	.02	.02	.03	.03	.03	.04	.04	.04	.04

*Less than 0.005.

Note.--Included here are revenue hours flown by all passenger and cargo aircraft that are owned or leased by, and are in the domestic or international service of the United States certificated route, supplemental, intrastate and contract air carriers. Hours for fiscal year 1971 are partially estimated.

Table 4

TOTAL REVENUE STATUTE MILES, UNITED STATES AIR CARRIERS

(Fiscal years --- In millions)

Aircraft Type	Reported 1971	Forecast 1972	1973	1974	1975	1976	1977	1978	1982	1983
Total Aircraft	2,589	2,585	2,682	2,806	2,963	3,075	3,170	3,345	4,020	4,270
Fixed-wing Aircraft	2,588	2,584	2,681	2,804	2,961	3,072	3,167	3,341	4,016	4,266
Jet	2,440	2,442	2,546	2,671	2,834	2,952	3,054	3,238	3,950	4,206
2-and 3-engine	1,176	1,179	1,287	1,440	1,579	1,659	1,792	1,995	2,704	2,944
4-engine	1,264	1,263	1,259	1,223	1,187	1,155	1,102	1,075	985	980
SST	-	-	-	8	68	138	160	168	261	282
Turboprop	132	128	125	123	118	112	105	96	62	56
1-and 2-engine	109	108	105	103	99	95	89	81	53	47
4-engine	23	20	20	20	19	17	17	15	9	9
Piston	16	14	10	10	9	8	8	7	4	4
1-and 2-engine	12	10	7	7	6	6	6	6	4	4
4-engine	4	4	3	3	3	2	2	1	-	-
Helicopter	1	1	1	2	2	3	3	4	4	4
Piston engine	*	*	*	-	-	-	-	-	-	-
Turbine engine	1	1	1	2	2	3	3	4	4	4

*Less than 0.5

Note.--Included here are revenue miles flown by all passenger and cargo aircraft owned or leased by and in the domestic or international service of the United States certificated route, supplemental, intrastate and contract air carriers. Miles for fiscal year 1971 are partially estimated.

Table 5

ACTIVE GENERAL AVIATION AIRCRAFT BY TYPE OF AIRCRAFT

As of January 1	Total	Fixed Wing			Rotorcraft	Balloons Dirigibles Gliders
		Piston		Turbine		
		Single-engine	Multiengine			
1967	104,706	88,621	12,671	915	1,622	877
1968	114,186	96,471	13,439	1,281	1,899	1,096
1969	124,237	103,735	14,999	1,833	2,350	1,320
1970	130,806	108,704	15,882	2,229	2,557	1,434
1971	131,407	109,333	15,875	2,401	2,247	1,551
1972*	135,000	112,100	16,200	2,500	2,600	1,600
1973*	139,000	115,000	16,800	2,700	2,800	1,700
1974*	143,000	117,700	17,600	2,900	3,000	1,800
1975*	148,000	121,300	18,300	3,200	3,250	1,950
1976*	154,000	125,500	19,300	3,600	3,500	2,100
1977*	160,000	129,300	20,300	4,400	3,750	2,250
1978*	167,000	134,300	21,400	4,900	4,000	2,400
1982*	203,000	160,300	27,200	7,300	5,200	3,000
1983*	212,000	166,500	28,900	8,000	5,500	3,100

*Forecast

Note.--As of 1 January 1971 the definition used for determining the active general aviation fleet was changed. Formally an active aircraft was one certified as eligible to fly. Now an active aircraft must have a current registration and have been flown during the previous calendar year.

Table 6

ACTIVE GENERAL AVIATION AIRCRAFT BY FAA REGION

As of January 1	Total	FAA Region										
		New England	Eastern	Southern	Southwest	Great Lakes	Central	Rocky Mountain	Western	Northwest	Alaskan	Pacific
1967	104,706	3,397	13,829	13,322	15,063	20,649	8,656	5,825	16,457	5,562	1,717	145
1968	114,186	3,711	15,095	14,973	15,794	22,760	9,328	6,344	18,064	6,134	1,697	175
1969	124,237	4,183	16,636	16,809	17,011	24,151	10,042	6,683	19,724	6,698	1,956	188
1970	130,806	4,516	17,420	18,340	17,756	25,446	10,425	6,907	20,400	7,041	2,184	206
1971	131,407	4,684	17,002	18,407	18,062	25,865	10,130	6,951	20,318	6,997	2,462	240
1972*	135,000	4,995	17,350	19,305	18,360	26,385	10,130	7,150	20,925	7,160	2,700	270
1973*	139,000	5,280	17,790	20,365	18,765	27,025	10,215	7,230	21,405	7,365	3,000	280
1974*	143,000	5,505	18,230	21,305	19,160	27,670	10,295	7,365	22,020	7,580	3,300	285
1975*	148,000	5,770	18,795	22,645	19,685	28,490	10,360	7,550	22,645	7,920	3,550	295
1976*	154,000	6,160	19,480	24,025	20,330	29,410	10,550	7,700	23,560	8,240	3,925	310
1977*	160,000	6,400	20,160	25,440	20,960	30,320	10,880	7,920	24,640	8,560	4,080	320
1978*	167,000	6,700	20,960	27,055	21,710	31,555	11,170	8,185	25,800	8,935	4,260	335
1982*	203,000	8,100	25,400	32,900	26,400	38,400	13,400	9,900	31,600	10,900	5,200	405
1983*	212,000	8,500	26,500	34,300	27,600	40,100	14,100	10,400	33,000	11,300	5,400	425

*Forecast.

Note - Totals include a small number of aircraft located in foreign countries. Also see Table 5 footnote.

Table 7

ESTIMATED HOURS FLOWN IN GENERAL AVIATION BY TYPE OF AIRCRAFT

(In millions)

Fiscal Year	Total	Fixed Wing			Rotorcraft	Balloons Dirigibles Gliders
		Piston		Turbine		
		Single-engine	Multiengine			
1967	21.6	16.9	3.7	0.5	0.5	0.1
1968	23.1r	18.2	3.5	0.6	0.6	0.1
1969	24.7r	19.2	3.8	0.9	0.7	0.1
1970	25.7r	19.5	4.1	1.1	0.8	0.1
1971**	26.5	20.0	4.4	1.1	0.9	0.1
1972*	27.5	20.8	4.5	1.2	0.9	0.1
1973*	28.8	21.8	4.6	1.3	1.0	0.1
1974*	30.2	22.8	4.8	1.4	1.0	0.2
1975*	31.8	23.9	5.0	1.6	1.1	0.2
1976*	33.2	24.8	5.2	1.8	1.2	0.2
1977*	34.8	25.7	5.5	2.1	1.3	0.2
1978*	36.4	26.8	5.7	2.3	1.4	0.2
1982*	44.4	31.9	7.1	3.4	1.8	0.2
1983*	46.2	33.0	7.4	3.7	1.9	0.2

*Forecast.
**Preliminary
r Revised

Note.--Detail may not add to total due to independent rounding. Hours for 1967-1970 have been developed from calendar year data shown in FAA Statistical Handbook of Aviation.

Table 8

FUEL CONSUMED BY UNITED STATES DOMESTIC CIVIL AVIATION

(In millions of gallons)

Fiscal Year	Total Jet Fuel and Aviation Gasoline	Jet Fuel			Aviation Gasoline		
		Total	Air Carrier 1/	General Aviation 2/	Total	Air Carrier 1/	General Aviation 2/
1967	5,379	4,659	4,568	91	720	335	385
1968	6,827	6,151	6,043	108	676	230	446
1969	7,807	7,205	7,063	142	602	94	508
1970	8,564	7,996	7,826	170r	568	39	529r
1971**	8,726	8,165	7,985	180	561	22	539
1972*	8,880	8,285	8,100	185	595	20	575
1973*	9,420	8,800	8,600	200	620	20	600
1974*	10,245	9,610	9,400	210	635	15	620
1975*	10,890	10,230	10,000	230	660	10	650
1976*	11,525	10,845	10,600	245	680	5	675
1977*	12,195	11,485	11,200	285	710	5	705
1978*	13,245	12,505	12,190	315	740	5	735
1982*	17,550	16,670	16,200	470	880	5	875
1983*	18,920	18,010	17,500	510	910	5	905

r Revised *Forecast **Preliminary

1/ Partially estimated for fiscal years 1967-1971.

2/ Estimated. General aviation fuel consumption is not reported. 1969-1971 and forecast data not exactly comparable with prior years due to a change in the base.

Note.--Domestic civil aviation is defined for purposes of this table to include all civil aircraft flights which originate and terminate within the 50 states. Fuels consumed by airframe and aircraft engine manufacturers, whether for flight testing or ground testing, are not shown here because they are not available for the domestic industry as a whole and cannot be estimated with any assurance of accuracy. Estimates of fuel consumed by the supplemental, contract and intrastate air carriers are included in the "Air Carrier" columns.

Table 9

CIVIL AIRCRAFT PRODUCTION IN THE UNITED STATES

(Number of Aircraft)

Fiscal Year	Total	Air Carrier Transport Aircraft	General Aviation Aircraft
1967	15,171	372	14,799
1968	15,044	625	14,419
1969	14,673	665	14,008
1970	10,557	368	10,189
1971	7,755	288	7,467
1972*	8,350	150	8,200
1973*	11,190	190	11,000
1974*	12,705	205	12,500
1975*	13,700	200	13,500
1976*	14,625	225	14,400
1977*	15,775	275	15,500
1978*	17,085	285	16,800
1982*	22,460	360	22,100
1983*	23,770	370	23,400

*Forecast.

Note.--Civil aircraft for export are included. Excludes all aircraft produced for military use whether for the United States or for a foreign government. All helicopter production, including air carrier transport helicopters, is included in the column for general aviation aircraft.

Table 10

CIVIL AIRCRAFT ENGINE PRODUCTION IN THE UNITED STATES

(Number of Engines)

Fiscal Year	Total	Turbojet	Turboprop	Piston
1967	20,812	2,170	318	18,324
1968	21,219	2,780	633	17,806
1969	21,790	2,245	787	18,758
1970	14,512	1,576	657	12,279
1971	11,629	1,076	625	9,928 1/
1972*	13,050	1,050	600	11,400
1973*	15,750	1,000	700	14,050
1974*	18,150	1,000	850	16,300
1975*	19,700	1,050	1,000	17,650
1976*	21,100	1,150	1,100	18,850
1977*	22,650	1,300	1,200	20,150
1978*	24,350	1,350	1,300	21,700
1982*	31,900	1,750	1,650	28,500
1983*	33,700	1,850	1,750	30,100

*Forecast.

1/ Partially estimated for Fiscal 1971.

Note.--Civil aircraft engines for export are included. Excludes all aircraft engines produced for military use whether for the United States or for a foreign government.

Table 11

TOTAL ITINERANT AND LOCAL AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In millions)

Fiscal Year	Total	Itinerant	Local
1967	47.6	29.1	18.4
1968	53.0	32.4	20.6
1969	55.9	34.6	21.3
1970	56.2	34.9	21.2
1971	54.2	33.6	20.6
1972*	58.2	35.8	22.4
1973*	62.9	38.1	24.8
1974*	68.2	41.1	27.1
1975*	74.3	45.0	29.3
1976*	81.0	49.4	31.6
1977*	87.8	53.2	34.6
1978*	95.4	57.4	38.0
1982*	130.1	76.9	53.2
1983*	140.2	83.6	56.6

*Forecast.

Note.--An aircraft operation is defined as an aircraft arrival at or a departure from an airport with FAA traffic control service. A local operation is performed by an aircraft that: operates in the local traffic pattern or within sight of the tower; is known to be departing for or arriving from flight in local practice areas; or executes simulated instrument approaches or low passes at the airport. All aircraft arrivals and departures other than local (as defined above) are classified as itinerant operations. Detail may not add to total due to independent rounding.

Table 12

ITINERANT AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In millions)

Fiscal Year	Total	Air Carrier	General Aviation	Military
1967	29.1	8.6	19.0	1.5
1968	32.4	9.9	21.0	1.5
1969	34.6	10.7	22.3	1.5
1970	34.9	10.8	22.6	1.5
1971	33.6	10.1	22.0	1.5
1972*	35.8	9.4	24.9	1.5
1973*	38.1	9.5	27.2	1.4
1974*	41.1	9.7	30.0	1.4
1975*	45.0	9.9	33.7	1.4
1976*	49.4	10.1	37.9	1.4
1977*	53.2	10.3	41.5	1.4
1978*	57.4	10.6	45.4	1.4
1982*	76.9	12.6	63.0	1.3
1983*	83.6	13.4	68.9	1.3

*Forecast.

Note.--See Table 11 for definition of itinerant operations.
Detail may not add to total due to independent rounding.

Table 13

LOCAL AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In millions)

Fiscal Year	Total	General Aviation	Military
1967	18.4	16.7	1.8
1968	20.6	18.8	1.8
1969	21.3	19.5	1.8
1970	21.2	19.4	1.9
1971	20.6	18.6	2.0
1972*	22.4	20.5	1.9
1973*	24.8	23.1	1.7
1974*	27.1	25.4	1.7
1975*	29.3	27.6	1.7
1976*	31.6	30.1	1.5
1977*	34.6	33.1	1.5
1978*	38.0	36.5	1.5
1982*	53.2	51.8	1.4
1983*	56.6	55.2	1.4

*Forecast.

Note.--See table 11 for definition of local operations.
Detail may not add to total due to independent rounding.

Table 14

INSTRUMENT OPERATIONS AT AIRPORTS
WITH FAA TRAFFIC CONTROL SERVICE

(In millions)

Fiscal Year	Instrument Operations
1967	12.1
1968	14.6
1969	16.7
1970	17.5
1971	17.4
1972*	18.9
1973*	20.6
1974*	21.5
1975*	22.5
1976*	23.5
1977*	24.5
1978*	26.0
1982*	32.3
1983*	34.6

*Forecast.

Note.--An instrument operation is defined as the handling by an FAA terminal traffic control facility of the arrival or departure at an airport of an aircraft on an IFR flight plan or the provision of IFR separation to other aircraft by an FAA terminal traffic control facility.

Includes instrument operations at FAA-operated military radar approach control facilities.

Table 15

IFR AIRCRAFT HANDLED, IFR DEPARTURES, AND OVERS BY USER CATEGORY
FAA AIR ROUTE TRAFFIC CONTROL CENTERS

(In millions)

Fiscal Year	Total			Air Carrier			General Aviation			Military		
	Aircraft Handled	IFR Departures	Overs	Aircraft Handled	IFR Departures	Overs	Aircraft Handled	IFR Departures	Overs	Aircraft Handled	IFR Departures	Overs
1967	15.1	5.8	3.4	8.5	3.4	1.7	2.2	1.0	.3	4.3	1.5	1.4
1968	18.1	7.0	4.0	10.8	4.3	2.3	2.8	1.2	.4	4.5	1.6	1.4
1969	20.6	7.9	4.7	12.6	4.9	2.7	3.2	1.4	.4	4.7	1.6	1.5
1970	21.6	8.4	4.9	13.5	5.2	3.1	3.6	1.5	.5	4.5	1.6	1.3
1971	21.3	8.2	5.0	12.9	4.9	3.1	3.7	1.6	.5	4.6	1.6	1.4
1972*	21.3	8.1	5.1	12.1	4.5	3.1	4.4	1.9	.6	4.8	1.7	1.4
1973*	22.4	8.6	5.2	12.3	4.6	3.1	5.3	2.3	.7	4.8	1.7	1.4
1974*	23.5	9.1	5.3	12.5	4.7	3.1	6.2	2.7	.8	4.8	1.7	1.4
1975*	24.8	9.7	5.4	12.7	4.8	3.1	7.3	3.2	.9	4.8	1.7	1.4
1976*	26.1	10.3	5.5	12.7	4.8	3.1	8.6	3.8	1.0	4.8	1.7	1.4
1977*	27.5	10.9	5.7	12.9	4.9	3.1	9.8	4.3	1.2	4.8	1.7	1.4
1978*	29.3	11.7	5.9	13.4	5.1	3.2	11.1	4.9	1.3	4.8	1.7	1.4
1982*	38.7	15.8	7.1	15.6	6.0	3.6	18.3	8.1	2.1	4.8	1.7	1.4
1983*	42.0	17.3	7.4	16.5	6.4	3.7	20.7	9.2	2.3	4.8	1.7	1.4

*Forecast.

Note.--Detail may not add to total due to independent rounding. The aircraft handled count consists of the number of IFR departures multiplied by two plus the number of overs. This concept recognizes that for each departure there is a landing. An IFR departure is defined as an original IFR flight plan filed either prior to departure or after becoming airborne. An over flight originates outside the ARTC area and passes through the area without landing. The forecast data assume present operating rules and procedures and a reduction of one ARTCC in 1975.

Table 16

FLIGHT SERVICES, PILOT BRIEFS, FLIGHT CONDITION MESSAGES
AND FLIGHT PLANS ORIGINATED
FAA FLIGHT SERVICE STATIONS AND COMBINED STATION/TOWERS

(In millions)

Fiscal Year	Total Flight Services	Pilot Briefs and Flight Condition Messages	Flight Plans Originated		
			Total	IFR-DVFR	VFR
1967	34.0	7.5	4.8	2.4	2.4
1968	37.1	8.6	5.2	2.7	2.4
1969	42.2	10.7	5.6	3.0	2.5
1970	45.7	11.9	6.0	3.3	2.6
1971	47.6	12.7	6.2	3.5	2.7
1972*	49.3	13.2	6.1	3.4	2.7
1973*	54.9	15.3	6.5	3.7	2.9
1974*	61.7	17.9	7.1	4.0	3.1
1975*	70.7	21.2	7.7	4.4	3.3
1976*	80.8	25.0	8.5	4.9	3.5
1977*	89.7	28.3	9.1	5.4	3.8
1978*	99.2	31.9	9.8	5.8	4.0
1982*	142.3	47.9	13.0	7.9	5.1
1983*	156.6	53.3	14.1	8.6	5.5

*Forecast.

Note.--Flight Services is weighted workload measurement derived by multiplying pilot briefs and flight condition messages and flight plans originated by two and adding the number of aircraft contacted. A flight plan may be filed orally or in writing to qualify for inclusion in the activity count. The data forecast in tables 16 and 17 are based upon the current number and configuration of the FSS and CS/T. Any change in their number or operation would have a corresponding change on the forecast. Detail may not add to total due to independent rounding.

Table 17

AIRCRAFT CONTACTED
FAA FLIGHT SERVICE STATIONS AND COMBINED STATION/TOWERS

(In millions)

Fiscal Year	Total	IFR-DVFR	VFR	Air Carrier	General Aviation	Military
1967	9.3	1.0	8.3	.7	7.9	.7
1968	9.5	1.1	8.4	.7	8.1	.7
1969	9.7	1.3	8.5	.8	8.3	.7
1970	10.0	1.3	8.7	.8	8.5	.7
1971	9.9	1.3	8.6	.7	8.6	.7
1972*	10.5	1.5	9.0	.7	9.2	.6
1973*	11.1	1.6	9.5	.7	9.8	.6
1974*	11.9	1.8	10.1	.7	10.5	.7
1975*	12.9	2.1	10.8	.7	11.5	.7
1976*	14.0	2.4	11.6	.7	12.6	.7
1977*	15.1	2.7	12.4	.8	13.6	.7
1978*	16.1	2.9	13.2	.8	14.6	.7
1982*	20.8	4.3	16.5	.8	19.3	.7
1983*	22.4	4.7	17.7	.9	20.8	.7

*Forecast.

Note.--Aircraft contacted represent a record of the number of aircraft with which FAA facilities (FSS, CS/T) have established radio communications contact. One count is made for each en route, landing or departing aircraft contacted by a facility, regardless of the number of contacts made with an individual aircraft. A flight involving contacts with five different facilities, disregarding the number of contacts with each, would be counted as five aircraft contacted. Detail may not add to total due to independent rounding.

Table 18

ACTIVE PILOTS BY TYPE OF CERTIFICATE

As of January 1	Total	Students	Private 1/	Commercial	Airline Transport	Helicopter	Glider	Instrument Rated 2/
1967	548,757	165,177	224,703	131,539	23,917	1,819	1,602	107,171
1968	617,931	181,287	256,253	150,135	25,817	2,573	1,866	122,573
1969	691,695	209,406	283,865	164,458	28,607	3,166	2,193	139,346
1970	720,028	203,520	301,568	176,585	31,442	4,286	2,627	155,879
1971	732,729	195,861	305,826	186,821	34,430	6,677	3,114	169,848
1972*	747,000	200,000	311,000	190,000	35,500	7,000	3,300	177,000
1973*	792,000	218,000	328,000	198,000	36,500	7,300	3,800	183,000
1974*	839,000	237,000	347,000	206,000	37,500	7,500	4,300	190,000
1975*	884,000	252,000	366,000	215,000	38,500	7,700	4,900	200,000
1976*	932,000	267,000	387,000	225,000	39,500	7,900	5,500	212,000
1977*	981,000	282,000	407,000	236,000	41,000	8,200	6,300	226,000
1978*	1,034,000	299,000	429,000	248,000	42,500	8,400	7,100	241,000
1982*	1,261,000	371,000	523,000	295,000	49,000	11,100	12,000	305,000
1983*	1,324,000	392,000	548,000	308,000	51,000	11,500	13,600	325,000

*Forecast.

1/ Includes pilots previously classified as "other."
2/ Not included in total.

*U.S. GOVERNMENT PRINTING OFFICE: 1972 720-493-622 1-3