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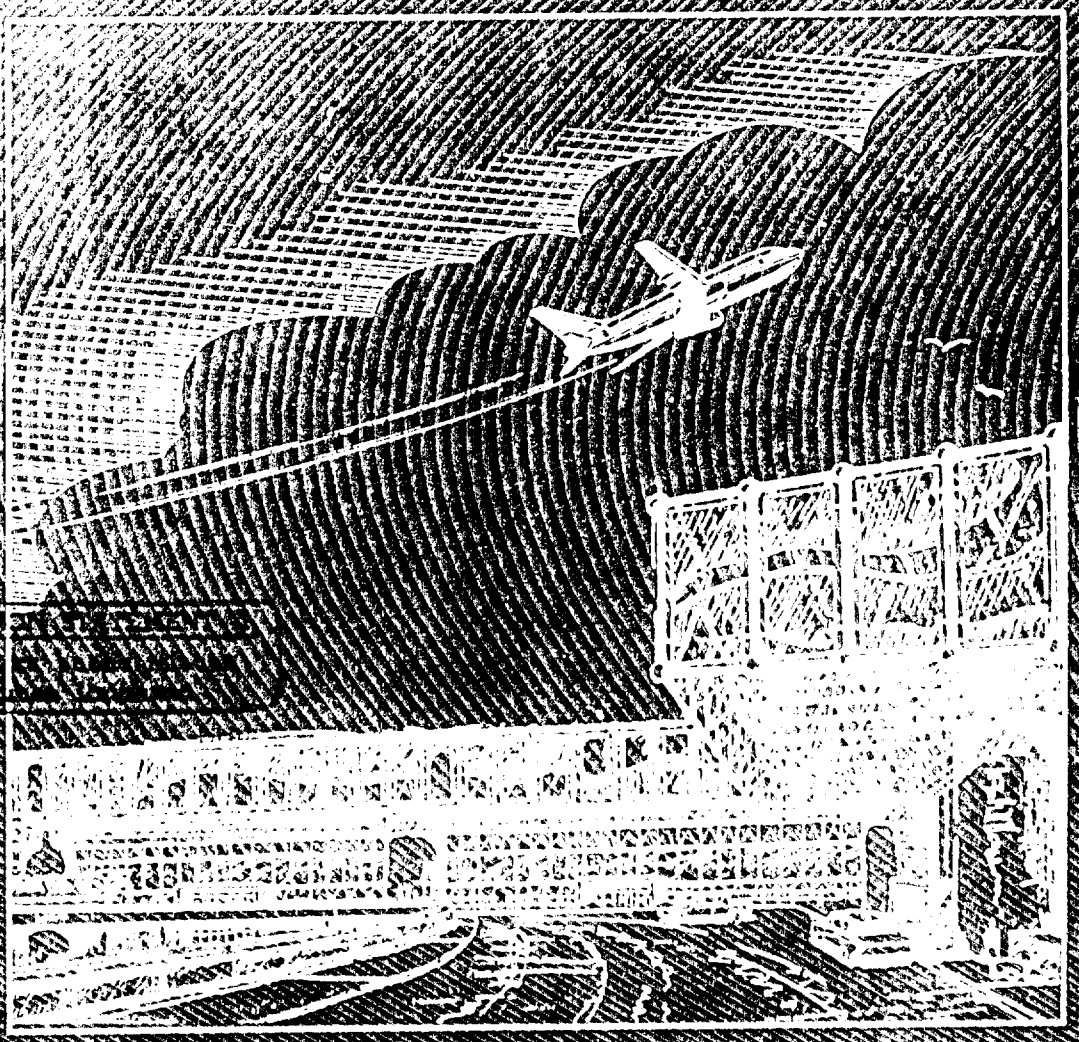

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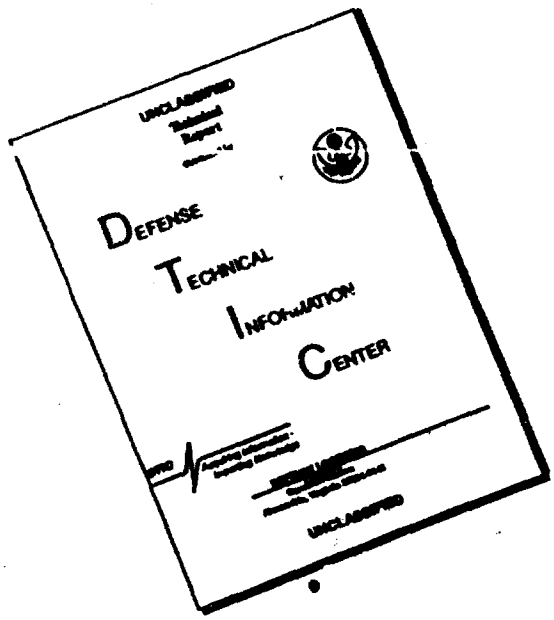

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16. Abstract

This report contains the Fiscal Years 1993-2004 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the major users of the National Aviation System: air carriers, air taxi/commuters, military, and general aviation. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public.

The lethargy of both the U. S. and world economies during the past several years has caused the aviation industry to experience continuing financial losses. However, the outlook for the 12-year forecast period is for moderate economic growth, stable real fuel prices, and modest inflation. Based on these assumptions, aviation activity for fiscal year 2004 is forecast to increase by 24.6 percent at towered airports and 27.0 percent at air route traffic control centers. The general aviation active fleet and hours flown are forecast to increase by 7.0 and 18.1 percent, respectively, during the same time period. Scheduled domestic revenue passenger miles (RPMs) are forecast to increase 58.3 percent, scheduled international RPMs are forecast to increase by 115.3 percent, and regional/commuter RPMs are forecast to increase by 145.1 percent.

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PREFACE

I am pleased to submit to the aviation community FAA Aviation Forecasts, Fiscal Years 1993-2004. These forecasts are developed annually by Robert L. Bowles and his staff in the Statistics and Forecast Branch for use by the agency in its planning and decision-making processes. In addition, the forecasts are used extensively within the aviation and transportation communities as the industry looks to and prepares for the future.

This year's report consists of nine chapters, discussing in detail three major areas: (1) the economic environment, assumptions, and predictions that are used to develop the forecasts; (2) historical data and forecasts of future traffic demand and aircraft activity for each of the major nonmilitary user groups--commercial air carriers, regional/commuter airlines, general aviation, and helicopters; and (3) workload measures for FAA towers, centers, and flight service stations. The report concludes with a discussion of our forecast accuracy and year-by-year data for our individual forecasts of aviation activity.

Briefly, the forecast predicts a moderate recovery and continued expansion of both the U.S. economy and U.S. aviation activity following 2 years of large industry losses. Internationally, aviation is anticipated to grow more rapidly than in the United States, especially along the Pacific Rim and in Latin America.

Based on economic projections provided by the Office of Management and Budget and by DRI/McGraw-Hill, Evans Econometrics, and the WEFA Group, we expect the U.S. economy (as measured by real gross domestic product) to grow at an average annual rate of 2.6 percent between 1992 and 2004, with higher increases projected for many major foreign countries and regions. Combining information on economic projections (e.g., GDP growth and oil prices) and industry assumptions (e.g., industry capacity and yield management) with analyst expertise results in an anticipated average annual growth rate (as measured in revenue

passenger miles) of 4.7 percent from 1992 to 2004. Annual domestic growth is expected to average 3.9 percent and annual international growth is projected to be 6.6 percent.

In reading and using the information in this book, it is important to recognize the limits of forecasting. That is, forecasting is not an exact science. Its accuracy depends heavily on underlying economic and political assumptions. While there is basic agreement between the Administration's short-term economic projections and those of the various econometric forecasting services, Federal policy and programs may change. Such shifts could result in changes to the short-term economic outlook, altering the demand for aviation services.

If in using this document you see opportunities for improvement, I would appreciate hearing from you. You are encouraged to send your comments to me at the Federal Avition Administration, 800 Independence Avenue, SW., Washington, DC 20591.

Dale E. McDaniel
Acting Assistant Administrator for
Policy, Planning, and
International Aviation

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Economic Environment: Thomas Henry
Commercial Air Carriers: Jack Smith
Regionals/Commuters: Charles Moles
General Aviation:
  Forecasts - James Veatch
  Data - Patricia Beardsley and Shung Huang
Helicopters: Mike Hartmann
FAA Workload Measures:
  Forecasts - Forecast Team Staff
  Data - Nancy Trembley
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Text and Table Preparation - Prudence Morris-Dance

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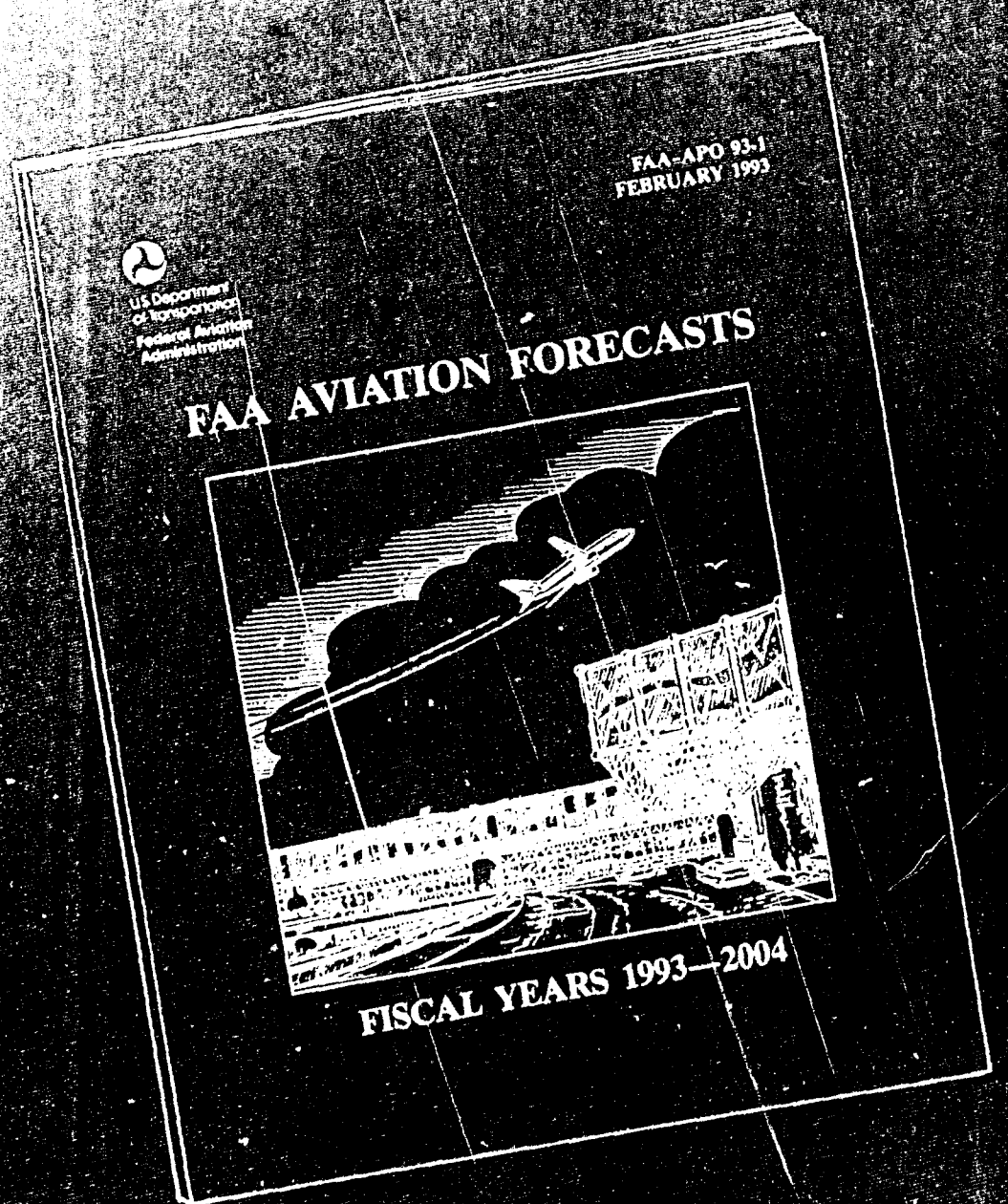
CHAPTER II

EXECUTIVE SUMMARY



CHAPTER I

EXECUTIVE SUMMARY

AVIATION DURING THE EARLY 1990s DOWN--BUT NOT OUT

The early 1990s have not been kind to the aviation industry. During the first 3 years of the decade, the lethargy of both the U.S. and the world economies has presented the U.S. aviation industry with a series of challenges.

In the United States, economic growth averaged less than 0.5 percent annually. The period included what, at first, was thought to be a mild and short-lived recession, which lingered for three quarters instead of the projected two and which saw a peak-to-trough decline in real gross domestic product (GDP) of 2.2 percent.

The U.S. economy has now grown for six consecutive quarters, but the slow pace of the rebound (2.0 percent annual rate) is unprecedented in postwar U.S. history. Historically, in the first year following a recession, growth in real GDP has averaged 5.4 percent. Prior to the current recovery, the slowest economic recovery on record was the 3.0 percent growth recorded in the first year following the 1980 recession.

Globally, economic growth has been only marginally better than in the United States. World-wide real GDP increased at an annual rate of 0.7 percent during the last 3-year period, declining by 0.9 percent in 1991. Western Europe, Eastern Europe, and Japan experienced stubborn economic slowdowns. When the effects of the Gulf War and fluctuating fuel prices are added to this economic environment, the U.S. (and world) aviation industry was virtually assured of relatively slow or negative growth.

U.S. commercial air carrier domestic passenger enplanements increased at an annual rate of only 1.1 percent during the last 3 years, while recording losses totaling over $5.0 billion. Worldwide traffic was not much better and actually recorded its first traffic decline in history in 1991. Financially, worldwide losses are expected to total more than $10.0 billion during the 1990-1992 time period.

This combination of slow traffic growth and record financial losses has been detrimental to the financial viability of a large number of U.S. commercial air carriers. The industry witnessed the liquidation of four airlines--Eastern Air Lines, Pan American Airways, Midway Airlines, and Braniff International (for the third time). Three carriers--America West, Continental, and Trans World Airlines--are now operating under Chapter 11 bankruptcy.

The cast of players in the international arena has changed considerably during the 1990s. The liquidation of Pan American and a retrenchment by Trans World have allowed Delta, followed by American and United, to become the dominant U.S. airlines on the North Atlantic. In much the same fashion, the liquidation of Eastern, followed by Pan American some 10 months later, has allowed American to become the dominant U.S. carrier in Latin America. Only the Pacific markets appear to have retained some semblance of stability, with United and Northwest remaining the dominant U.S. carriers in the area.

The increasing penetration of U.S. carriers into foreign markets has created a strong incentive for foreign flag carriers to gain a foothold in the large U.S. domestic market. In addition, the current U.S. banking crisis has closed one of the prime sources of capital for many U.S. airlines, particularly those carriers with weak balance sheets. The combination of these two factors has led several foreign flag carriers to propose acquiring equity stakes in U.S. air carriers, most notably British Airways in USAir and Air Canada in Continental. In addition, KLM has recently increased its equity stake in Northwest. These actions are viewed as the first steps in the race among the world's air carriers to establish themselves as very large multinational or "multi-mega" carriers, where the goal is to establish the most effective and far-reaching global air system possible.

The regional/commuter airline industry continues to be the fastest growing sector of the aviation community, although the performance of individual carriers has varied widely. Over the past several years, the number of airlines in operation has declined. In 1981 the number of regionals/ commuters in operation totaled 250. By 1992, the number of carriers had fallen to 140, 19 fewer carriers than existed just 3 years earlier. Part of this loss is due to the fact that regional/commuter airlines have begun their own consolidation/concentration phase, either merging with and/or purchasing the assets of financially failing carriers.

In addition, many regionals/commuters have integrated with the larger scheduled air carriers, either through code-sharing agreements and/or through acquisition in part or in total by their larger partners. As evidenced by the 1991 liquidations of Eastern, Pan American, and Midway, the demise of the larger partner is likely to have substantial impacts on the surviving smaller carrier. In this case, it caused the shut-down of three regional/commuter carriers--Eastern Express, Midway Commuter, and Pan Am Express.

The general aviation industry continues to be confronted by challenge, not the least of which is the high price of general aviation aircraft. A portion of the price increases in general aviation aircraft can be attributed to massive awards assessed against manufacturers in product liability lawsuits, which triggered extreme increases in liability insurance premiums. More recently, the imposition of a "luxury tax" has further dampened demand for general aviation aircraft.

The active general aviation fleet has remained fairly constant over the past several years, but the overall fleet composition continues to change as the more sophisticated turbine-powered fleet share of the total fleet increases. General aviation pilots are also becoming more sophisticated, with increasing numbers of them being instrument rated. With increased congestion and delay developing at major air carrier airports as the commercial industry expands, the demand for business-related general aviation services could expand greatly.

Despite the overall general decline that touched upon all segments of the aviation industry during the last

several years, the worst appears to be over and there are a number of encouraging signs which may presage a return to the growth patterns witnessed during earlier growth periods. The U.S. economy astounded most experts by growing at an annual rate of 3.9 percent during the fourth quarter of fiscal year 1992. Thus, business-cycle forces are showing signs of behaving in the manner that they traditionally do in an economic recovery. Consumer confidence has risen significantly recently and consumers have started to spend again. The Department of Commerce's composite index of leading indicators jumped 0.8 percent in November, following a 0.5 percent increase in October. These increases, in combination with recent gains in both employment and retail sales, point to renewed business confidence and a healthier economy in 1993.

In the aviation industry itself, there are also a number of positive indications of a sustained recovery. Two of the three carriers currently operating under Chapter 11 indicate that they will soon restructure and emerge from bankruptcy. The reductions/delays in air carrier capital acquisition plans, in combination with recently announced fare increases, should significantly improve the future balance sheets of most U.S. carriers and improve industry profits.

Indications of the existence of pent-up demand for air travel were demonstrated last summer by the record number of passengers flown by U.S. airlines, albeit most of it flown at uneconomic fare levels. While these deep discounted fares were discontinued in early September, passenger demand has continued to increase during the early months of fiscal 1993. If consumer and business confidence both continue to improve, U.S. airlines can build on the improved performance that began during the latter months of fiscal 1992.

REVIEW OF 1992

In fiscal year 1992, the large U.S. air carriers increased their system capacity (available seat miles) by 3.7 percent, while demand (revenue passenger miles) increased by 6.2 percent. The net result was an increase in the load factor to 63.8 percent, up from 62.3 percent in 1991.

Domestic capacity increased only 0.9 percent in 1992, while domestic traffic was up 3.8 percent. In order to stimulate weak traffic demand, particularly during the peak summer travel period, U.S. airlines resorted to deep-discounted promotional fares, offering discounts of up to 50 percent. Summer traffic did increase by almost 13.0 percent but yields also declined by 11.0 percent. The net effect was that the industry lost nearly $92 million during what is normally its most profitable quarter. Combined with earlier results, the industry reported operating losses totaling almost $2 billion in fiscal year 1992.

International traffic increased by 13.0 percent in 1992, primarily the result of recovering from depressed Gulf War traffic levels in 1991. North Atlantic traffic, the chief beneficiary of the post-Gulf War recovery, increased 22.5 percent in 1992. Pacific traffic also benefitted from the post-war recovery, but growth in that area was negated somewhat by the slowdown in Japan's economy. Nevertheless, Pacific traffic grew by 11.2 percent in 1992. Latin American traffic declined by 6.5 percent in 1992, largely the result of the liquidation of Pan American Airways and the slow buildup of replacement service by United Airlines.
Airline profits and losses have, over the past several years, been concentrated among relatively few carriers. The future viability of individual carriers, and possibly of the entire U.S. commercial airline industry, depends on the health of the U.S. economy. How-

ever, the recovery currently underway in the U.S. economy may not be enough to overcome the financially distressed carriers continuing use of deep-discounted fares to generate cash flow. If price wars continue to occur, the ranks of the losers could swell.

New commercial aircraft orders totaled only 431 (down 30.9 percent) in fiscal year 1992, while new aircraft deliveries totaled 820 (up 3.4 percent). Narrowbody aircraft orders (68.4 percent of the total) and deliveries (74.9 percent) continue to outpace those for widebody aircraft. This reflects U.S. air carriers' continuing reliance on increased schedule frequency, rather than larger aircraft, to accommodate future passenger demand.

Contrary to the relatively slow growth experienced by the large U.S. air carriers in 1992, the regional/commuter airline industry continued its rapid expansion. In 1992, regional/commuter airline passenger enplanements totaled 42.8 million, while revenue passenger miles totaled 8.2 billion, up 10.6 and 17.1 percent, respectively, over 1991.

In fiscal year 1992, there were 889 general aviation aircraft shipments, 15.6 percent less than in 1991. The shipments consisted of 528 piston aircraft (down 17.0 percent) and 361 turbine-powered aircraft (down 13.4 percent). Due to the greater average dollar value of the aircraft being shipped, billings decreased only 0.9 percent from 1991 to just over $1.8 billion.

The active general aviation fleet is estimated to have totaled 198,386 on January 1, 1992, an increase of 0.5 percent over the previous year's estimate. These aircraft flew an estimated 29.9 million hours in fiscal year 1992, down 2.0 percent from the 1991 estimate.

Air carrier operations at FAA air traffic control towers in fiscal year 1992 were virtually unchanged from the previous year. This lack of growth was due, in part, to the liquidation of Pan American Airways and Midway Airlines in December 1991 (first quarter of fiscal 1992), which caused air carrier activity to decline 0.8 percent in 1992. However, general aviation operations decreased by 1.9 percent during the same time period.

On the other hand, air taxi/commuter operations were up 4.6 percent in 1992. Military operations also increased in 1992 (12.1 percent), but this large growth was largely the result of a recovery from depressed Gulf War activity levels in 1991. The net effect of each user group's varying activity levels is that total operations at FAA air traffic control towers remained virtually unchanged at 61.6 million in fiscal 1992. However, both instrument operations at FAA towered airports and the number of aircraft at the air route traffic control centers reported increased activity counts in fiscal year 1992, up 1.1 and 0.8 percent, respectively.

In summary, the impact of depressed U.S. and world economies, the forces of deregulation, and fierce competition (both domestically and abroad) continue to alter the structure of the commercial aviation industry. In spite of back-to-back disastrous years for aviation, we expect activity at FAA facilities to resume slow to moderate levels of growth as the U.S. economic recovery gathers momentum.

ECONOMIC FORECASTS

While the recession in 1991 was anticipated by most economists, the exact timing and strength of the economic recovery has eluded most economists and economic forecasting services. This uncertainty makes it extremely difficult to predict the demand for aviation services with any degree of confidence.

FAA FORECAST ECONOMIC ASSUMPTIONS

FISCAL YEARS 1993 - 2004

ECONOMIC VARIABLE	HISTORICAL 1985	HISTORICAL 1991	HISTORICAL 1992	FORECAST 1993	FORECAST 1994	FORECAST 2004	PERCENT AVERAGE ANNUAL GROWTH 85-92	91-92	92-93	93-94	92-04
Gross Domestic Product (Billions 1987$)	4,247.0	4,819.9	4,882.3	5,000.6	5,151.9	6,644.8	2.0	1.3	2.4	3.0	2.6
Consumer Price Index (1982-84 = 100)	106.7	133.4	137.2	141.4	146.3	219.7	3.7	2.9	3.1	3.5	4.0
Oil & Gas Deflator (1987 = 100)	122.2	129.9	122.6	124.1	128.9	210.3	0.0	(5.6)	1.2	3.9	4.6

Source: 1993-98; Executive Office of the President, Office of Management and Budget

1999-2004; Consensus growth rate of DRI/McGraw-Hill, Evans Econometrics, Inc., and The WEFA Group

This year, however, there appears to be basic agreement as to both the short- and long-term economic outlooks. This basic agreement applies not only among the three economic forecasting services used by the FAA (DRI/McGraw-Hill, Evans Econometrics, and The WEFA Group) but also between the Office of Management and Budget's economic assumptions and the consensus economic forecasts of the three forecasting services.

The economic forecasts anticipate that fiscal year 1993 will likely exhibit slow to moderate growth (2.4 percent), with somewhat stronger growth in both 1994 (3.0 percent) and 1995 (2.7 percent). For the balance of the forecast period (through 2004), the consensus is that the U.S. economy will experience moderate economic growth of approximately 2.6 percent annually.

Worldwide economic growth is expected to exceed that of the United States, with real GDP growing by 2.7 percent in 1993, 3.7 percent in 1994, and averaging 3.9 percent over the 12-year forecast period. Economic growth is forecast to be greatest in the Far East/Pacific Basin countries (4.6 percent annually), followed in turn by Latin America (4.5 percent annually), and Europe (3.2 percent annually).

Inflation (as measured by the consumer price index) is projected to remain in the low to moderate range throughout the forecast period. This, of course, assumes no major disruptions in the price and availability of oil.

The projected growth of aviation demand contained herein is consistent with these national short- and long-term economic growth forecasts. The table on page I-5 summarizes the key economic assumptions used in developing the aviation demand forecasts that are discussed in subsequent chapters and presented in tabular form in Chapter IX.

It should be stressed, however, that in any given year there is likely to be some perturbation around the long-term trend. This is due to the fact that none of the economic models is sufficiently precise to predict interim business cycles. In addition, unanticipated developments, such as the 1991 Iraqi invasion of Kuwait and subsequent Gulf War, cannot be predicted at all.

AVIATION ACTIVITY FORECASTS

Domestic air carrier revenue passenger miles are forecast to increase at an annual rate of 3.9 percent between 1992 and 2004. The forecast assumes relatively modest growth in 1993 (2.6 percent), followed by stronger growth in both 1994 (5.5 percent) and 1995 (5.0 percent) as the U.S. economic recovery gathers strength. Domestic enplanements are forecast to increase by 1.8 percent in 1993, 5.0 percent in 1994, 4.5 percent in 1995, and average 3.5 percent over the 12-year forecast.

The forecasts assume that real passenger yields will increase slowly over the forecast period (0.6 percent annually) as the industry continues to consolidate. However, real yields are forecast to increase by 2.4 percent (5.6 percent in current dollars) in 1993. The relatively large increase in yields in 1993 is largely the result of the 50 percent fare discounts that were so prevalent during the summer of 1992. However, competitive forces are expected to continue to exert downward pressure on fare levels over the next several years, the result being no increase in real yields in either 1994 or 1995.

Air carrier aircraft operations are forecast to increase at an annual rate of 2.2 percent during the 12-year forecast period. The higher growth predicted for revenue passenger miles and passenger enplanements relative to aircraft activity is the result of

AVIATION ACTIVITY FORECASTS

FISCAL YEARS 1993 - 2004

AVIATION ACTIVITY	HISTORICAL 1985	1991	1992	FORECAST 1993	1994	2004	PERCENT AVERAGE ANNUAL GROWTH 85-92	91-92	92-93	93-94	92-04
AIR CARRIER											
Enplanements (Millions)											
Domestic	350.4	413.3	428.8	436.7	458.6	646.7	2.9	3.8	1.8	5.0	3.5
International	24.3	39.7	42.6	46.5	50.1	91.3	8.4	7.1	9.3	7.7	6.6
Atlantic	11.4	12.2	14.8	16.0	16.9	27.8	3.8	21.0	7.9	5.6	5.4
Latin America	7.9	14.7	13.6	15.3	16.5	30.5	8.1	(7.7)	12.8	7.8	7.0
Pacific	5.0	12.8	14.2	15.2	16.7	33.0	16.1	10.7	7.4	9.9	7.3
System	374.6	453.1	471.4	483.2	508.7	738.0	3.3	4.0	2.5	5.3	3.8
RPMs (Billions)											
Domestic	265.8	333.6	346.3	355.5	375.1	548.4	3.9	3.8	2.6	5.5	3.9
International	64.4	113.5	128.3	139.2	150.3	276.2	10.4	13.0	8.5	8.0	6.6
Atlantic	36.1	47.1	57.8	62.3	66.1	109.9	7.0	22.5	7.9	6.1	5.5
Latin America	9.7	18.3	17.1	19.5	21.1	39.9	8.4	(6.5)	13.9	8.2	7.3
Pacific	18.6	48.0	53.4	57.4	63.1	126.4	16.3	11.2	7.5	9.9	7.4
System	330.2	447.1	474.6	494.7	525.4	824.6	5.3	6.2	4.2	6.2	4.7
COMMUTERS/REGIONALS											
Enplanements (Millions)	24.4	38.7	42.8	46.2	49.5	89.9	8.4	10.6	7.9	7.1	6.4
RPMs (Billions)	3.6	7.0	8.2	9.2	10.0	20.1	12.5	17.1	12.2	8.7	7.8
FLEET											
Air Carrier	2,938	4,252	4,206	4,265	4,311	5,928	5.3	(1.1)	1.4	1.1	2.9
Commuter	1,551	1,896	1,960	2,018	2,066	2,381	3.4	3.4	3.0	2.4	1.6
General Aviation (000)	220.9	197.4	198.4	198.7	199.7	212.3	(0.1)	0.5	0.2	0.5	0.6
HOURS FLOWN (Millions)											
Air Carrier	7.7	10.5	10.6	10.9	11.4	15.7	4.7	1.0	2.8	4.6	3.3
General Aviation	36.2	30.5	29.9	30.1	30.6	35.3	(0.4)	(2.0)	0.7	1.8	1.4

Source: 1985-92; DOT-RSPA, FAA data
1993-2004; FAA forecast

higher load factors, larger seating capacity for air carrier aircraft, and longer passenger trip lengths.

International air carrier revenue passenger miles and passenger enplanements are both forecast to increase at an annual rate of 6.6 percent over the entire forecast period. These high growth rates are being driven by the strong growth being projected for both the Transpacific (7.4 percent annually in RPMs) and Latin American (7.3 percent) markets. The North Atlantic market is projected to exhibit fairly rapid growth during the first half of the forecast period (6.2 percent), due in part to the expected intense competition between North American and European carriers. Demand is expected to gradually tail off over the latter half of the forecast period (4.7 percent) as the North Atlantic market begins to exhibit some signs of maturity.

The air carrier forecasts assume that the industry will respond positively to the economic recovery taking place both within the U.S. and worldwide. In addition, it is assumed that the industry would embrace a rational pricing policy, thus improving the industry's financial performance. The delivery of large numbers of new stage-3 aircraft is expected to result in increased industry productivity, also improving the industry's financial performance. The forecast further assumes that U.S. air carriers will convert to an all stage-3 fleet (including retrofitted stage-2 aircraft) by the year 2003 (with exemptions). Present aircraft orders, options, and retrofit prospects support this assumption.

In 1993, the regional/commuter airlines are expected to enplane 46.2 million passengers (up 7.9 percent), 9.6 percent of all passenger traffic in scheduled domestic air service. By the year 2004, these carriers are expected to carry 89.9 million passengers (6.4 percent growth annually) and to account for 12.2 percent of all domestic passenger enplanements.

Regional/commuter airlines are also expected to continue the trend toward purchase of small jet aircraft and larger, propeller-driven aircraft, thus significantly increasing the average seating capacity of the aircraft, from an average 22.9 seats in 1992 to 35.7 seats in 2004.

The forecast projects increased business use of general aviation. This is reflected in the changing character of the general aviation fleet. The more expensive and sophisticated turbine-powered part of the fixed wing fleet is expected to grow much faster than is the piston aircraft portion. In 1992, there were an estimated 9,273 turbine-powered aircraft in the fixed wing general aviation fleet--5.0 percent of the total fixed wing fleet. By the year 2004, it is projected that there will be 13,000 turbine-powered aircraft--6.7 percent of the total fixed wing fleet. Similarly, there were 3,822 turbine-powered aircraft in the helicopter fleet in 1992--60.7 percent of the total rotorcraft fleet. By the year 2004, it is projected that there will be 6,800 turbine-powered aircraft--79.1 percent of the total helicopter fleet.

The various FAA aviation traffic and activity forecasts are summarized numerically in the table on page I-7.

FAA WORKLOAD FORECASTS

The FAA forecasting process is a continuous one that requires that the FAA's Statistics and Forecast Branch to interact with various FAA offices and services, other government agencies, and aviation industry groups, including individual discussions with most major carriers and manufacturers. In addition, the process uses a number of different economic and aviation data

FAA WORKLOAD MEASURES

FISCAL YEARS 1993 - 2004

WORKLOAD MEASURES (IN MILLIONS)	HISTORICAL 1985	1991	1992	FORECAST 1993	1994	2004	PERCENT AVERAGE ANNUAL GROWTH 85-92	91-92	92-93	93-94	92-04
Aircraft Operations											
Air Carrier	11.3	12.5	12.4	12.7	13.0	16.1	1.3	(0.8)	2.4	2.4	2.2
Commuter/Air Taxi	6.9	8.9	9.3	9.6	10.0	12.9	4.4	4.5	3.2	4.2	2.8
General Aviation	37.2	37.6	36.9	37.4	38.3	44.8	(0.1)	(1.9)	1.4	2.4	1.6
Military	2.5	2.5	2.8	2.8	2.8	2.8	1.6	12.0	0.0	0.0	0.0
TOTAL	57.9	61.5	61.5	62.5	64.1	76.6	0.9	0.0	1.6	2.6	1.9
Instrument Operations											
Air Carrier	11.8	13.5	13.4	13.7	14.0	17.6	1.8	(0.7)	2.2	2.2	2.3
Commuter/Air Taxi	6.4	9.5	9.9	10.2	10.6	13.7	6.4	4.2	3.0	3.9	2.7
General Aviation	16.4	18.1	18.2	18.4	18.9	22.6	1.5	0.6	1.1	2.7	1.8
Military	4.1	4.0	4.1	4.1	4.1	4.1	0.0	2.5	0.0	0.0	0.0
TOTAL	38.7	45.1	45.6	46.4	47.6	58.0	2.4	1.1	1.8	2.6	2.0
IFR Aircraft Handled											
Air Carrier	14.6	18.3	18.3	18.7	19.0	23.8	3.3	0.0	2.2	1.6	2.2
Commuter/Air Taxi	4.8	5.6	5.9	6.2	6.6	8.6	3.0	5.4	5.1	6.5	3.2
General Aviation	8.3	7.4	7.4	7.5	7.7	9.1	(1.7)	0.0	1.4	2.7	1.7
Military	5.0	5.1	5.1	5.1	5.1	5.1	0.3	0.0	0.0	0.0	0.0
TOTAL	32.7	36.4	36.7	37.5	38.4	46.6	1.7	0.8	2.2	2.4	2.0
Flight Services											
Pilot Briefs	15.0	11.0	10.8	10.5	10.1	10.3	(4.8)	(1.8)	(2.8)	(3.8)	(0.4)
Flight Plans Originated	8.4	6.6	6.5	6.3	6.2	6.9	(3.7)	(1.5)	(3.1)	(1.6)	0.5
Aircraft Contacted	8.2	5.8	5.6	5.2	4.9	5.0	(5.6)	(3.5)	(7.1)	(5.8)	(1.0)
TOTAL	55.0	41.1	40.2	38.8	37.5	39.4	(4.6)	(2.2)	(3.5)	(3.4)	(0.2)

Source: FY 1985-92; FAA data

FY 1993-2004; FAA forecasts

bases, the outputs of several econometric models and equations, and several other analytical techniques. The FAA workload measures, which are summarized numerically in the table on page I-9, are the resultant forecasts of this process. These forecasts are used by the agency for manpower staffing and facility planning.

Following back-to-back depressed years, the demand for FAA operational services is expected to increase moderately over the 12-year forecast period. This anticipated growth results not only from the increased activity levels of commercial aircraft, but from increased activity levels of general aviation aircraft as well. As such, total aircraft operations at FAA towered airports are forecast to increase to 76.6 million in the year 2004, an annual growth rate of 1.9 percent over the 61.5 million operations recorded in 1992.

The increased use of avionics by regional/commuter airlines and general aviation aircraft, combined with the implementation of additional airport radar service areas, is expected to result in instrument operations at FAA towered airports increasing at a somewhat faster rate than total aircraft operations. Instrument operations are forecast to increase from 45.6 million in 1992 to 58.0 million in fiscal year 2004, a 2.0 percent annual growth rate.

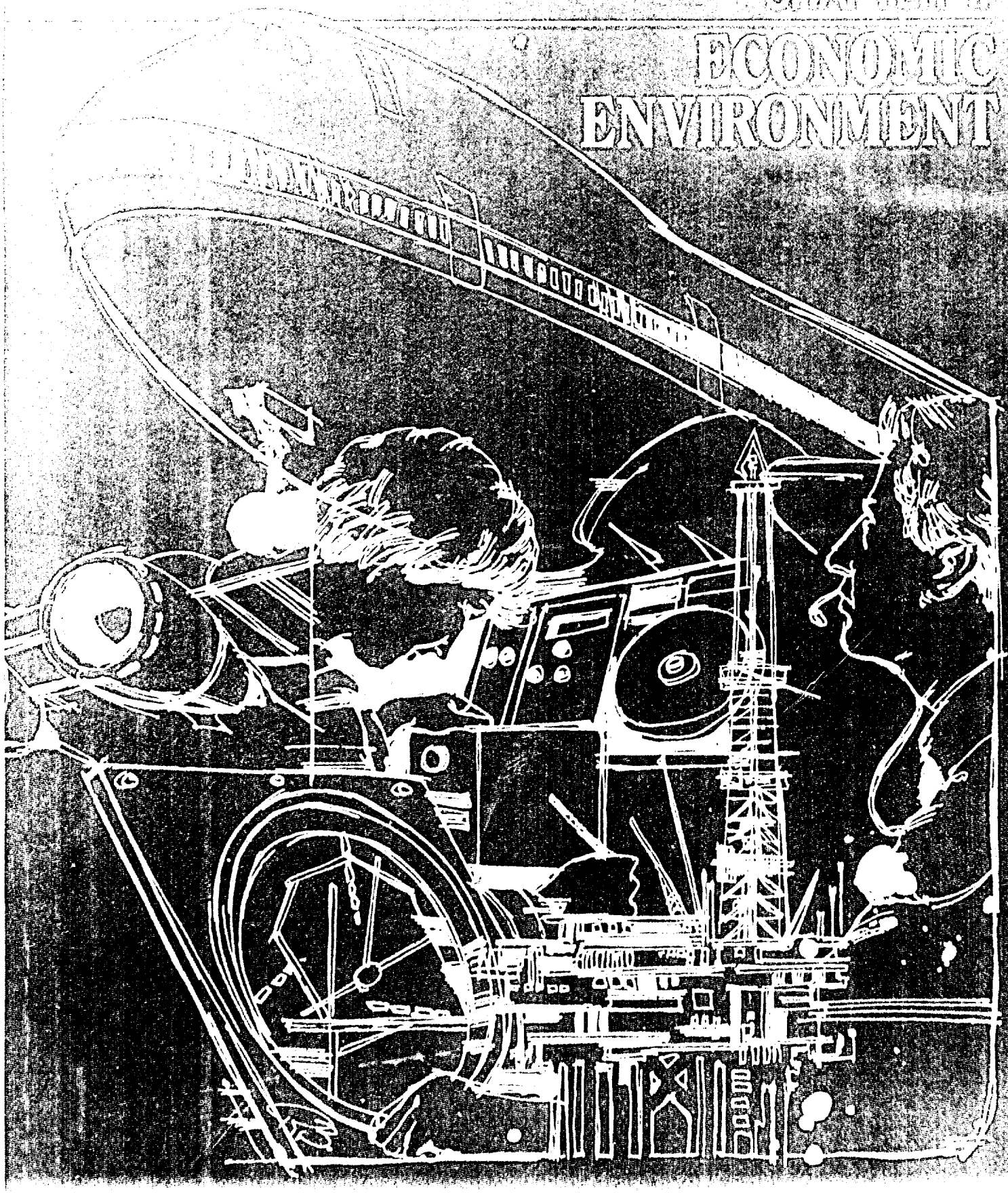
The workload at the air route traffic control centers is forecast to increase at an average annual rate of 2.0 percent during the 12-year forecast period. In 2004, FAA en route centers are expected to handle 46.6 million IFR aircraft, up from 36.7 million in 1992.

For each of the three workload measures, commercial aircraft activity is expected to increase at a significantly faster rate than is noncommercial aircraft activity. Forecast growth rates for commercial and noncommercial activity over the 12-year period are as follows: 2.4 versus 1.5 percent for FAA towered airports; 2.5 versus 1.5 percent for instrument operations at FAA towered airports; and 2.4 versus 1.1 percent for IFR aircraft handled at FAA air route traffic control centers.

In summary, aviation activity at FAA facilities is expected to grow at a somewhat slower rate than the general economy (2.0 percent versus 2.6 percent). Air transportation is expected to continue to dominate all other transportation modes in both long distance domestic intercity travel and in international passenger markets. Regional/commuter aircraft activity and the general aviation business sector are expected to achieve somewhat greater growth than that forecast for both the larger commercial air carriers and the general aviation pleasure sector.

CHAPTER II

ECONOMIC ENVIRONMENT



CHAPTER II

ECONOMIC ENVIRONMENT

REVIEW OF 1992

UNITED STATES

In fiscal year 1992, the economy of the United States was recovering from the economic recession. Real gross domestic product (GDP, the value of all goods and services produced in the nation) increased by 1.3 percent, compared to a decrease of 1.3 percent in 1991. The rate of inflation abated further; the consumer price index (CPI) increased by only 2.9 percent in 1992 compared to 3.7 percent in 1991.

Reflecting the effects of the Gulf War and the roller-coaster effect on oil prices, the oil and gas deflator decreased by 5.6 percent in fiscal year 1992 relative to an increase of 11.8 percent in the previous year.

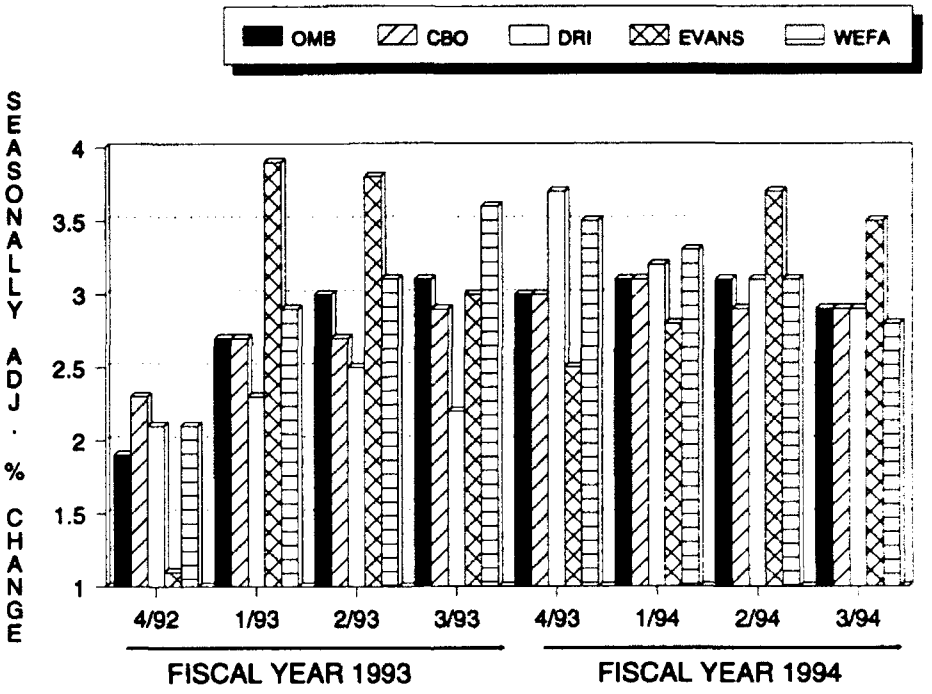
While the economy appeared poised for recovery at the end of fiscal year 1992, consumer confidence had not yet been fully restored. During 1992, many consumers reduced their personal debt and homeowners, encouraged by the low interest rates, refinanced their mortgages. Many of these "cashed out" in order to pay off other high interest personal or consumer debts such as credit cards and automobile loans.

As the fiscal year ended, the major economic concerns were the federal budget deficit, the creation of jobs, and the balance of trade. The budget deficit was running at about $350 billion a year in the fourth quarter of the fiscal year. The number of unemployed totaled 9.7 million (7.5 percent of the labor force of 129.0 million) and the trade deficit reached $26.5 billion.

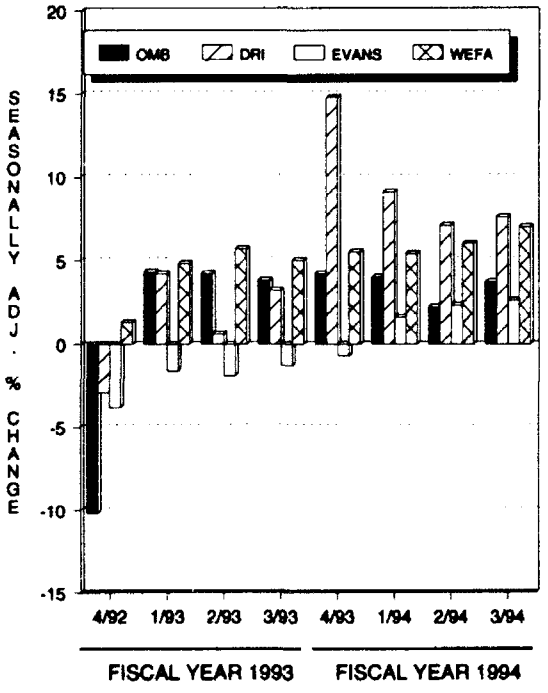
The economy ended the fiscal year on a distinctly positive note, with preliminary GDP growth indicated at a 3.9 percent annual average rate for the final quarter. Output rose by $47 billion in the final quarter of the fiscal year, fueled principally by consumer spending, exports, and government purchases. Consumer spending increased by a healthy 3.7 percent or $29.9 billion and business inventories rose by $12.4 billion. Government purchases rose $7.6 billion, up 3.3 percent. Military spending increased by 6.7 percent. Exports rose by $12.8 billion. These data suggested that a healthy economic recovery had started.

U.S. SHORT-TERM ECONOMIC FORECASTS

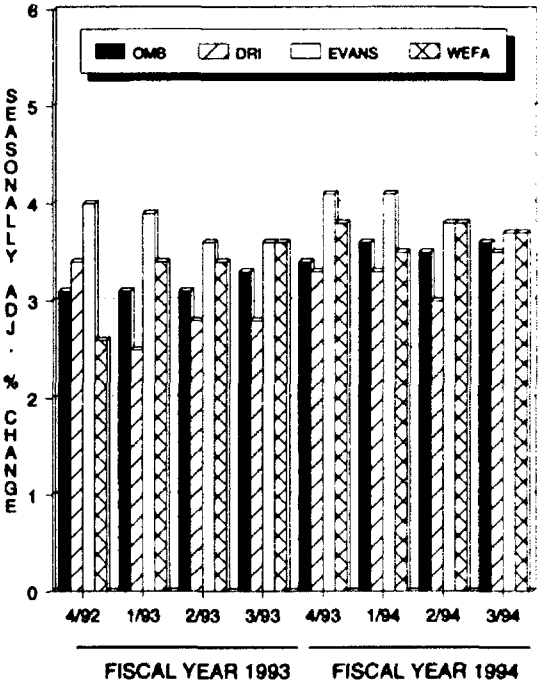
REAL GROSS DOMESTIC PRODUCT



OIL AND GAS DEFLATOR



CONSUMER PRICE INDEX



WORLD

Many of the world's economies remained sluggish through most of 1992. The combined world economy, measured by GDP, increased by only 0.5 percent in calendar year 1992. This represented a slow recovery from the negative growth (0.9 percent) registered in 1991, which marked the first decline in estimated world GDP in the post-World War II era.

In terms of the rate of growth, the Pacific Basin and the Middle East regions ranked first and second, with large increases in GDP of 6.5 and 6.0 percent, respectively. However, growth rates in Japan (1.9 percent growth in GDP), the United States (2.0 percent), United Germany (1.5 percent), and the United Kingdom (negative 1.0 percent) were not as robust. Estimated GDP in the Centrally Planned Economies fell by 8.1 percent.

Europe's GDP increased approximately 1.1 percent in 1992, up from the 0.4 percent growth achieved in 1991, and inflation was generally stable in Europe. The consumer price index for the members of the European Community rose only 4.6 percent in 1992, down from the 5.6 percent rate in 1991.

The rates of inflation varied among the key industrial countries of the world. In Japan, for example, inflation was only 1.8 percent in 1992. In United Germany it was 5.0 percent, reflecting the higher interest rates prevailing in the former East Germany.

U.S. ECONOMIC OUTLOOK

The economic scenario used to develop the FAA Aviation Forecasts for the period 1993 through 1998 was provided by the Executive Office of the President, Office of Management and Budget (OMB). For the period from 1999 through 2004, the economic scenario used consensus growth rates of the economic variables, based on forecasts prepared by DRI/McGraw-Hill (DRI), Evans Econometrics (Evans), and the WEFA Group.

The principal series used in the individual aviation models to develop the FAA aviation forecasts are discussed in the following pages. The data are presented in tabular form in Chapter IX, Tables 1 through 3.

GROSS DOMESTIC PRODUCT

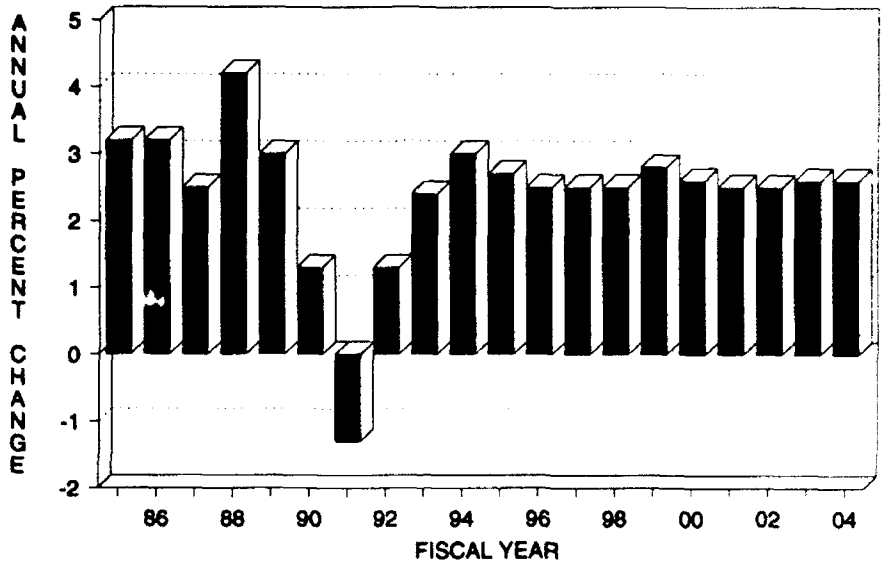
Gross domestic product is a significant indicator of business activity which, in turn, drives aviation activity. GDP is one of the key variables used by the FAA in developing projections of aviation activity.

The economic slowdown in the United States appears to be over. Real GDP grew at an unexpectedly high 3.9 percent annual average rate in the fourth quarter of fiscal year 1992. Economists are now forecasting a moderate recovery in 1993. Recently revised short-term growth projections ranged between 2.6 percent and 3.1 percent growth in GDP in 1993 (see the figure on the previous page). There are differences of opinion about the immediate short-term outlook. In part, the differences reflect both the availability of leading indicators when the forecasts were being made and the underlying assumptions about the future course of the economy.

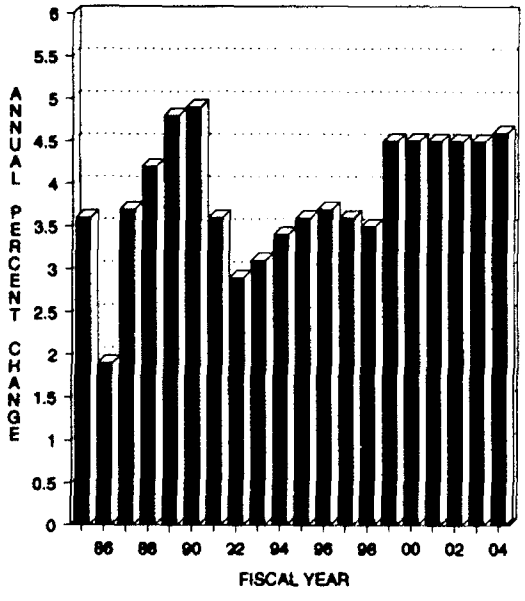
The FAA forecast reflects a moderate 2.4 percent growth in real GDP for 1993 and an average of 2.6 percent annual growth in GDP through 1998. Long-term GDP growth rates are shown graphically on page II-4. Over the entire forecast period, GDP is expected to grow at an average annual rate of 2.6 percent.

U.S. LONG-TERM ECONOMIC FORECASTS

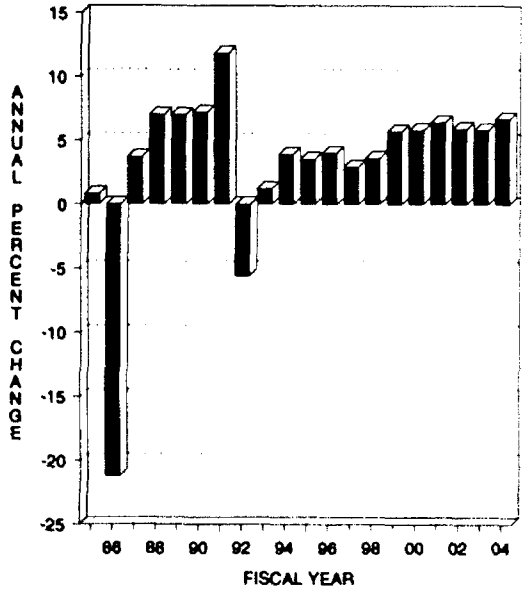
GROSS DOMESTIC PRODUCT
(1987 DOLLARS)



CONSUMER PRICE INDEX
(1982-84$)



OIL AND GAS DEFLATOR
(1982 = 100)



CONSUMER PRICE INDEX

As shown on page II-4, consumer prices in the United States are expected to remain in the moderate range, increasing at an average annual rate of 4.0 percent during the forecast period. Inflation is forecast to increase by 3.1 percent in 1993 and 3.5 percent in 1994. (The CPI is used in our models to adjust airline fares and fuel costs relative to other goods and services.)

OIL AND GAS DEFLATOR

As summarized on page II-4, fuel prices in the United States are predicted to increase at an annual rate of 4.6 percent over the entire forecast period, just slightly above the rate of inflation (4.0 percent). The rate of increase in oil prices will be relatively low (1.2 to 4.0 percent) in the earlier part of the forecast period. In later years, higher price increases of 5.7 to 6.8 percent are anticipated.

WORLD ECONOMIC OUTLOOK

The U.S. effective exchange rate index and other international data were derived from the WEFA Group's World Economic Outlook. In discussing recent developments in the European Community, particularly inflation and exchange rates, we relied heavily on work done by WEFA.

The principal series used in the individual aviation models to develop the FAA aviation international forecasts are discussed in the following pages. The data are presented in tabular form in Chapter IX, Tables 4 and 5.

GROSS DOMESTIC PRODUCT

As shown in the graph on page II-6, the combined real GDP for Europe, Africa, and the Middle East, adjusted for price changes, is expected to grow at an average annual rate of 3.2 percent during the forecast period. In the short term, real GDP for these countries will increase by 2.6 percent in 1993 and by 3.7 percent in 1994.

Gross domestic product in United Germany is forecast to grow at 2.8 percent during the forecast period. Like many other industrialized countries, Germany is recovering slowly from the economic recession. Some of the problems facing United Germany and other European economies will be discussed in the section on the Consumer Price Index.

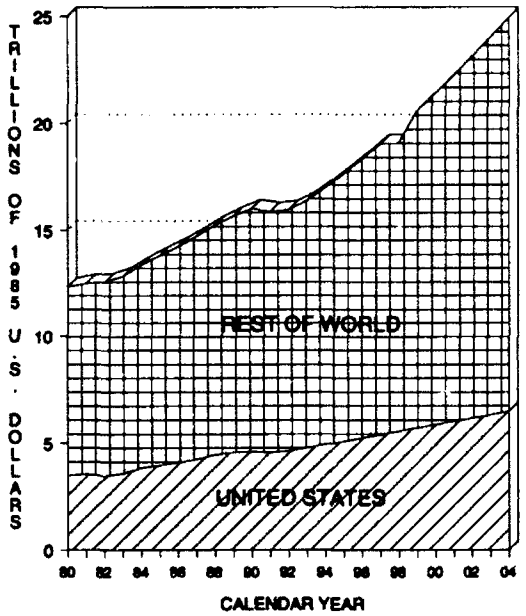
Latin American economic growth is expected to be considerable in the forecast period. The combined GDP for Latin America (including South America, Central America, and Mexico), adjusted for price changes, is expected to grow at an average annual rate of 4.5 percent throughout the forecast period. In the short term, GDP in Latin America should increase by a moderate 3.5 to 3.7 percent in 1993 and 1994.

The combined GDP for Japan, Australia, New Zealand, and the Pacific Basin countries, adjusted for price changes, is expected to grow at an annual rate of 4.6 percent throughout the forecast period. In the short term, GDP should increase by 4.0 percent in 1993, then by a strong 4.9 percent in 1994.

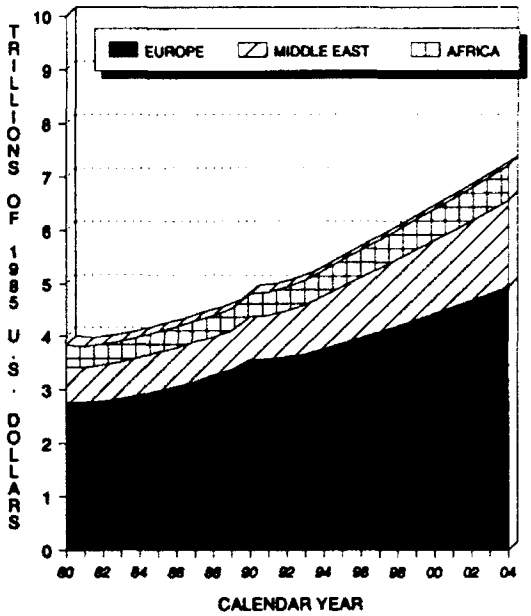
The Japanese economy is expected to expand at a rate of 3.8 percent during the 1992-2004 period. The economy is expected to expand by 2.9 percent in 1993, compared with 1.9 percent growth expected in 1992.

GROSS DOMESTIC PRODUCT BY WORLD REGION

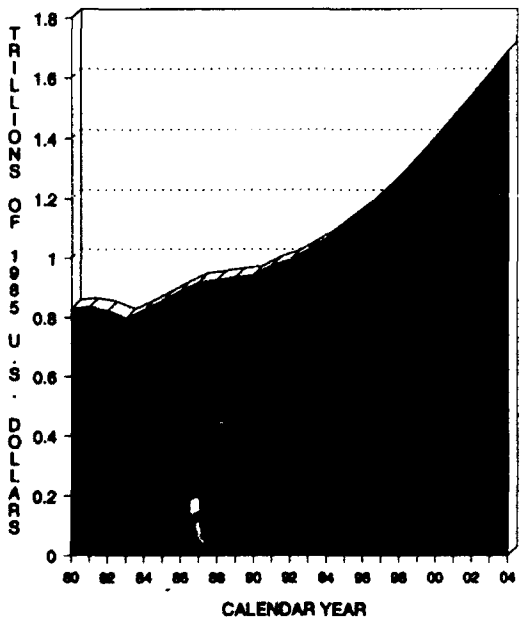
WORLD



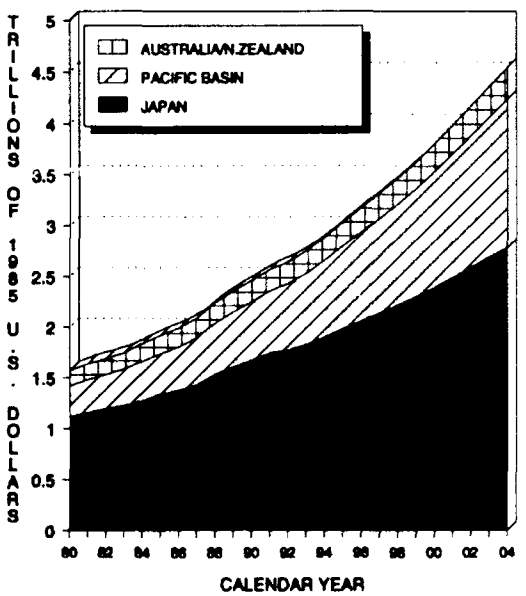
EUROPE/MIDDLE EAST/AFRICA



LATIN AMERICA



JAPAN/PACIFIC BASIN/ AUSTRALIA/NEW ZEALAND



CONSUMER PRICE INDEX

Europe

In general, consumer price inflation in most major industrialized countries is expected to remain relatively stable. Among the members of the European Community, for example, the consumer price index is expected to increase by 4.2 percent in 1993 and by 3.8 percent in 1994. These rates of increase are slightly lower than the rates of 5.2 and 4.6 percent experienced in 1991 and 1992, respectively. For the medium term (and, perhaps, for the long term) inflation is expected to decline--with an annual average growth of no more than 3.7 percent.

Within the European Community, recent developments in United Germany are of special interest. The monetary policy implemented by United Germany caused significant fluctuations in interest and exchange rates. In its attempts to control the increase in the money supply, Germany continued to export high interest rates to members of the European Economic Community. In response to government pressure to support the Exchange Rate Mechanism, the Bundesbank cut interest rates in mid-September, but the threat of inflation remains relatively high.

In the short term, inflation in United Germany is forecast to increase by 4.4 percent in 1993 and 2.8 percent in 1994. These rates compare quite favorably with the 5.0 percent rate experienced in 1992. During the 1992-2004 forecast period, inflation in United Germany is projected to increase at a moderate 2.7 percent.

Consumer price inflation in the United Kingdom is expected to remain moderate, increasing by an average annual rate of 3.7 percent over the forecast period. Inflation is forecast to increase by 3.3 percent in 1993 and by 4.6 percent in 1994.

In France, the rate of inflation eased during 1992. The year-to-year rate of consumer price rise in August was 2.7 percent. High unemployment and the relative weakness of the unions have led to a moderation of the wage rates, which, in turn, contributed to a decrease in inflation. The need to maintain parity between the franc and the German mark also helped to keep inflation in check.

During the forecast period, inflation in France is expected to rise by an annual average of 2.7 percent. In the short term, inflation is expected to increase by only 2.4 percent in 1993 and by 2.7 percent in 1994.

Japan

Reflecting the slack in the Japanese economy, inflation remains stable. For both July and August, the CPI increased less than 2.0 percent from the level 12 months earlier.

Consumer price inflation in Japan is expected to remain low, increasing by an average annual rate of 2.6 percent during the forecast period. Inflation is forecast to increase by 1.2 percent in 1993 and by 1.9 percent in 1994.

Latin America

Recession in the developed countries had only minor spillover effects in the developing countries. In Latin America and Asia, intra-regional trade growth and capital flows are diminishing the reliance on the United States and Japan.

An important trend in the future may involve shifts in labor costs among different regions of the world. One forecaster projected a change in foreign trade based on increases in Asian wage rates compared to those in Latin America--especially Brazil and Mexico. In the year 2000, Japan's

labor cost index for manufacturing production workers is expected to be slightly higher than that of the United States. The index for Korea is expected to jump from 28 percent of U.S. costs to 87 percent. Over this same period, Brazil's labor cost is expected to increase from 19 percent of the U.S. rate in 1990 to 53 percent in 2000. Mexico's cost index over the same period is expected to increase from 12 to 34 percent of U.S. rates. As foreign labor rates approach those of U.S. workers, the U.S. economy should benefit.

DOLLAR EXCHANGE RATES

The charts on page II-9 show that the U.S. dollar effective exchange rate is expected to decline slightly throughout the forecast period at an average annual rate of about 1.2 percent per year. Following a decline of 2.0 percent in 1992, the U.S. effective exchange rate is expected to rebound with an increase of 5.1 percent in 1993 and then resume a long-term decline in 1994 and beyond. The projected decline in the U.S. effective exchange rate will make imports of foreign goods more expensive to U.S. buyers, possibly reducing imports.

The German mark is expected to gain in value relative to the U.S. dollar, averaging 2.3 percent growth annually over the 12-year forecast period.

The Japanese yen is also expected to gain in value relative to the U.S. dollar, averaging 1.6 percent over the forecast period.

As these currencies gain in value relative to the U.S. dollar, foreign travel to the United States becomes relatively less expensive. Conversely, travel by U.S. nationals to foreign countries becomes more expensive and, other things being equal, Americans would tend to travel less to foreign destinations.

AFFIRMATION OF CHANGE

The election of a new President and changes in Congress assures the country of immediate political change. The impact of this change on the economy, in general, and the aviation industry, in particular, depends on how the Administration and the legislative bodies address key short- and long-term economic and social issues.

SHORT-TERM EXPECTATIONS

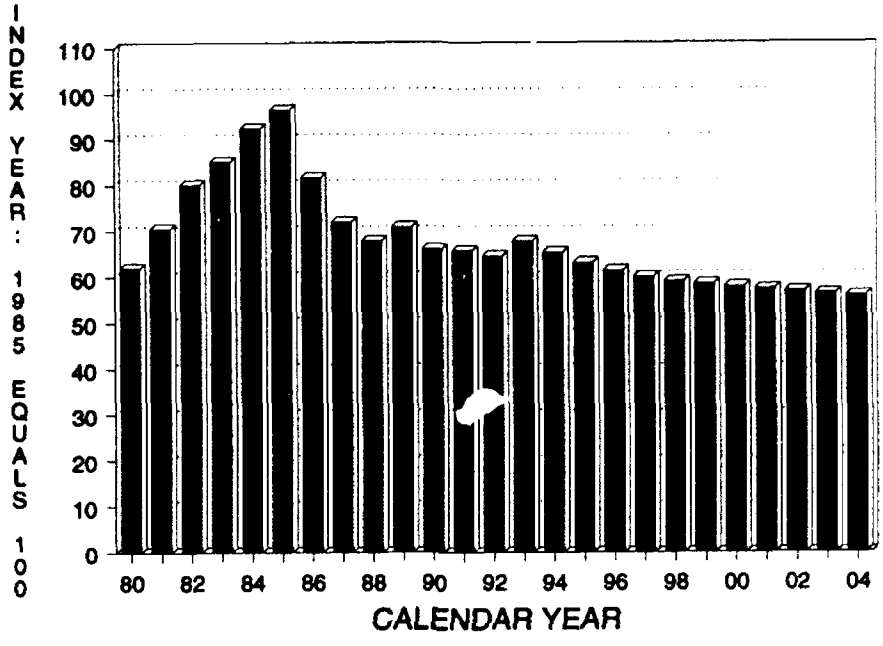
We should examine the economic prospects for both the short-term--the next 12 to 18 months--and the long term--18 months and beyond. The economy has begun to turn around, as evidenced by the strong 3.9 percent growth in GDP in the fourth quarter of fiscal year 1992.

Both the Conference Board and the University of Michigan surveys reported increased consumer confidence in the last quarter of calendar year 1992. Orders for durable goods rose 3.9 percent in October, the largest increase since July 1991, and sales of existing single family residences rose 9.1 percent. New applications for unemployment benefits fell by 12,000 to 374,000 during the week of November 14, the sixth decline in eight weeks. Automobile sales, single family housing starts, and employment and unemployment trends have all shown signs of economic growth.

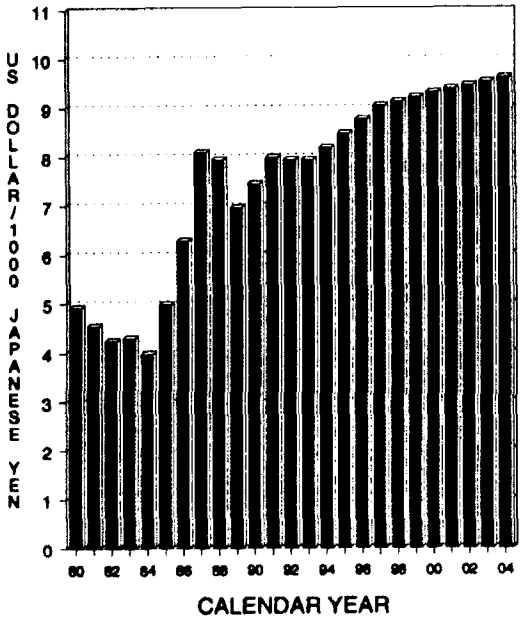
Preliminary indications are that consumers have returned to the market

EXCHANGE RATE TRENDS AND FORECASTS

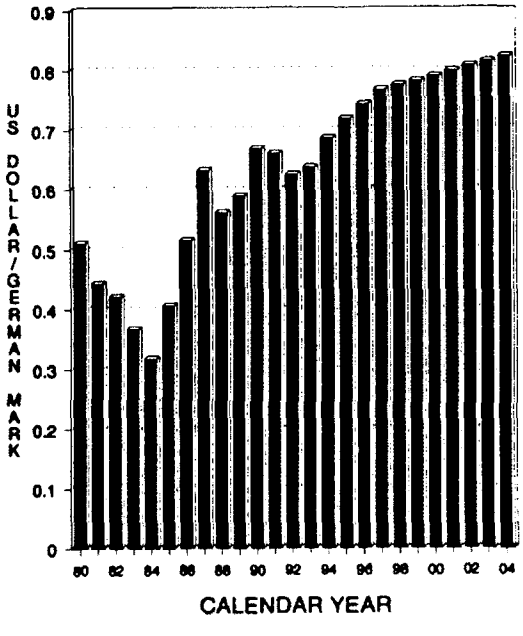
U.S. EFFECTIVE EXCHANGE RATE



JAPANESE YEN



GERMAN MARK



place in large numbers, prompting retail merchants to anticipate significant increases in retail sales during the holidays. Subsequent reports indicate that these expectations were justified as retail sales increased substantially.

Some economists doubted that the strong fourth quarter fiscal year growth signalled a robust recovery. They felt that the results could be a one-time occurrence based on such factors as new investments that resulted in large inventories, year-end spending by some government agencies, purchases due to hurricanes Andrew and Iniki, and additional exports resulting from the low value of the dollar. Similarly, questions are being raised about the permanency of the consumers' return to the market place.

LONG-TERM CHANGES

On the campaign trail, the Democratic nominee outlined a comprehensive program for economic growth. The proposals focused on policy issues such as:

1. Reinstatement of the investment tax credit
2. Cuts in the long term capital gains tax rate
3. Investments in the infrastructure
4. Emphasis on jobs programs, education, and training
5. Emphasis on health care
6. Reduction in dependence on foreign sources of energy

The plan called for a $220 billion increase in spending: $80 billion for public works, $60 billion for job training and education, and $80 billion for other programs. It also called for a 50-percent decrease in the budget deficit by 1996.

The proposals included spending cuts of $140 billion, primarily from defense and the bureaucracy, and tax increases of $150 billion--$90 billion of which would come from an increase in income taxes. An additional $60 billion would come from U.S. corporations who do business abroad and foreign corporations who do business in the United States. The proposals also included an increase in the alternative minimum tax.

Based on the programs outlined above, it appears that expenditures could, at least in the short term, exceed revenues. Depending on economic conditions and budget deficit trends, other tax measures may follow. How these issues are balanced will be determined by the need for short-term economic stimulation relative to long-term deficit control.

In the long run, the Administration's programs could have a significant impact on the economy. The Reagan tax cut package shaped the economy for much of the 1980s. But the Reagan programs did not have much effect until 1983--two years after he took office. This was similar to the Kennedy programs of the 1960s.

Under the scenario discussed, inflation would be expected to increase slightly, based on the stimulus of increased spending generated by the additional dollars pumped into the economy.

Another possible effect of the proposed programs is an increase in the interest rate. This increase could come from a rise in the core inflation rate, the immediate effects of a possible economic stimulus package, and an anticipatory factor from fears that the deficit would rise even further in later years.

EFFECTS ON AVIATION

What will the possible changes mean to aviation? In the short term, aviation is expected to follow the path of the general economy. The aviation industry would benefit from increased spending to rebuild the infrastructure to make America more competitive. In the aviation industry, there are many candidates for infrastructure expenditures: airports, terminals, runways, tarmac, roads, bridges, equipment, and manufacturing plants. There should also be opportunities for education and training, if the industry continues on a healthy growth path, and for the development of a "high-tech short-haul aircraft."

A permanent 10 percent investment tax credit, if applied to all purchases over 80 percent of a company's 1992 investment purchases, could more than double the increase of business equipment purchases. In the national economy, purchases of machinery, computers, and other equipment increased at an average annual rate of 11 percent in 1992.

The 10 percent investment tax credit could add 500,000 to 900,000 jobs in 2 years and increase GDP by a full percentage point, depending on how much of the new equipment is imported. Some of the jobs might be created in the manufacturing sector of the aviation industry; some might be generated through acquisition and upgrading of equipment for providing services to the aviation community. Any stimulus that might result from the proposed programs may result in increased travel for business purposes and/or tourism.

Airline passenger fares and tourism are sensitive to exchange rate changes. The globalization of the industry also affects the financial and capital investment structures of the airlines. USAir and British Airways discussed one such financial restructuring arrangement. It was met with strong opposition and it is in the process of being revised.

Independent of the FAA, the U.S. Travel and Tourism Administration predicts an excellent year for growth in travel to and from the United States. Overseas visitors to the U.S. are expected to register an increase of 8.0 percent or better from most of the popular origination sites such as Japan, the United Kingdom, and Germany. U.S. citizens travelling abroad are expected to set a new record (16.7 million) in 1993, up one million from the previous year. With the ending of the Gulf War, the subsiding of the fear of terrorism, and the restoring of consumer confidence--at least in the American economy--U.S. citizens and other nationals are travelling more.

One proposal would raise taxes paid by foreign corporations doing business in the United States. This could raise approximately $45 billion over a four-year period, but it could be a possible disincentive to foreign carriers seeking to invest in the United States. The revenue could be raised by tightening the tax code to discourage the low transfer pricing methods used by the majority of multinational companies. However, this stance on the issue may impair U.S. airlines' ability to tap foreign sources of capital for much needed funds. Similarly, some economists are concerned that major shifts in free trade policies and decisions could damage the cooperative economic efforts being undertaken by some nations. This might not be a very attractive outlook for the world airline industry after two consecutive years of recording significant losses.

Proposed measures that include tax credits for research and development and increased spending on education and the infrastructure could have an estimated cost of $60 billion. Specific ideas being pursued include increasing infrastructure spending by up to

$20 billion a year. One proposal suggested that companies, including airlines and airframe manufacturers, spend at least 1.5 percent of their wage bill on training or pay an equivalent amount into a government-sponsored training scheme. Although many companies exceed this percentage currently, it will place an extra burden on financially strapped airlines.

The prevailing view is that, despite the proposed increase in income taxes and the suggested cuts in government spending, the net effect of the proposed economic changes will be mildly expansionary, putting $15-20 billion into the economy. These expenditures are expected to raise gross domestic product initially by between 0.25 percent and 0.5 percent.

Economic growth during the last 4 years has been so low that even this small increase might be enough to give some global economic impetus. However, the United States (like Japan) will put economic growth close to the top of its agenda. The focus on capital spending, such as for infrastructure replenishment, could have important long-term benefits for the aviation industry if it accelerates work on modernizing air traffic control systems, building more runways and terminals, and improving public transportation links. Apart from contributing to growth, this would ensure improved capacity when full recovery and expansion in passenger traffic resume.

SUMMARY

Under the FAA's baseline economic outlook, the economy is expected to rebound and to sustain a moderate rate of growth averaging 2.6 percent throughout the forecast period. In the short term--at least for 1993--the economy and the aviation industry will continue on their current courses, uninfluenced by the change in Administration.

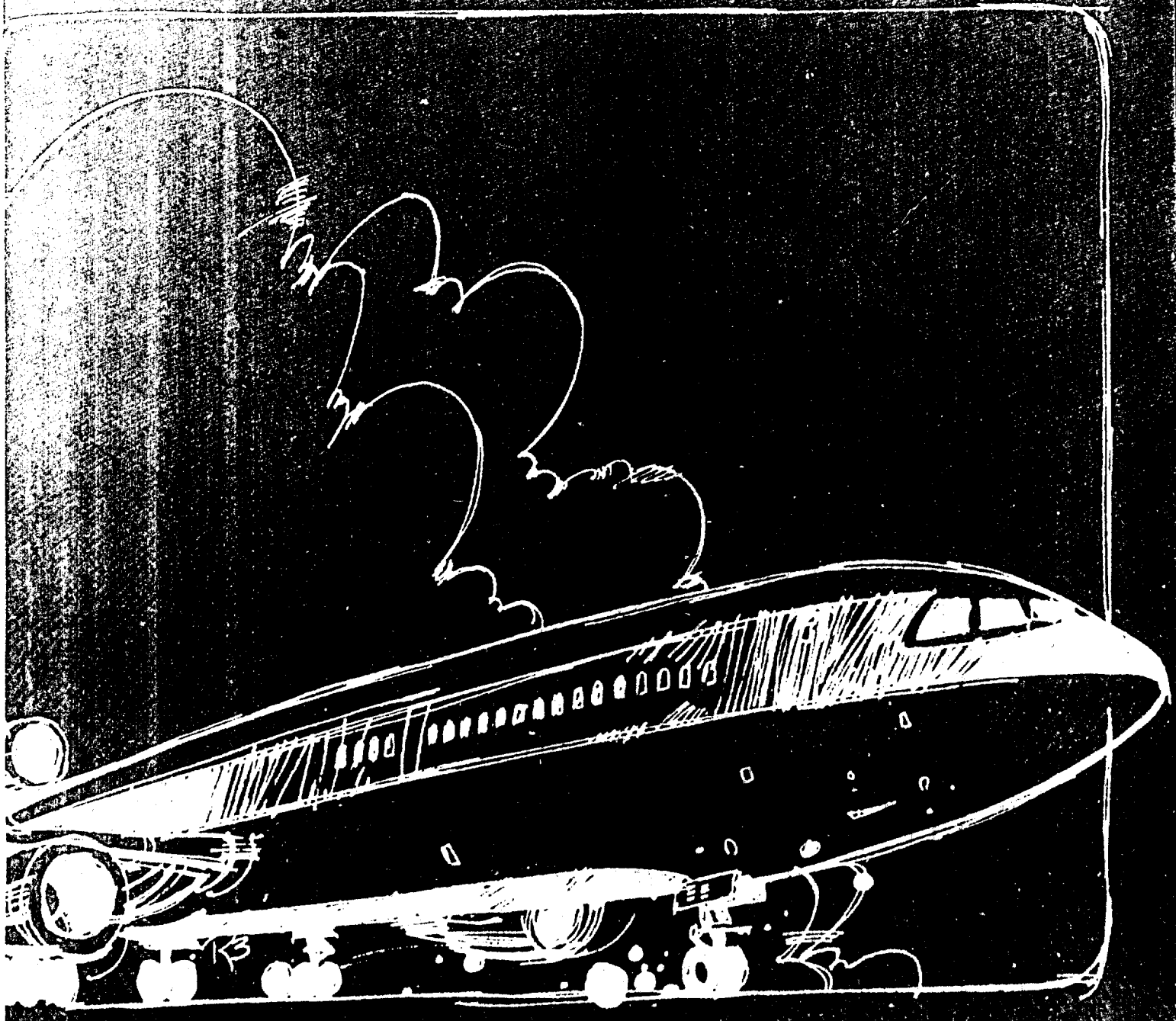
Under one possible proposed economic scenario, with explicit focus on the injection of $40 billion divided among three programs ($15 billion public works, $15 billion health care transfer payments, and $10 billion jobs program), the deficit would increase to $321 billion by the end of 1993.

There would also be some increase in inflation and in interest rates. Many of the ideas discussed during the campaign and reiterated at the Little Rock, Arkansas, summit represent long-term programs and expected results. Their implementation also require the cooperation of the U.S. Congress.

At this time, it is difficult to estimate the net effects of the proposed programs of the new Administration on aviation beyond 1993. However, all programs that will be expansionary and that will improve the infrastructure and increase productivity should be beneficial to the aviation industry. Short-term policy changes are not expected to impact the baseline forecasts significantly.

CHAPTER III

COMMERCIAL AIR CARRIERS



CHAPTER III

COMMERCIAL AIR CARRIERS

In fiscal year 1992 there were 67 U.S. commercial airlines (both scheduled and nonscheduled) reporting traffic and financial data to the Research and Special Programs Administration (RSPA), Department of Transportation (DOT), on Form 41. There were 48 passenger airlines (operating aircraft with over 60 seats) and 19 all-cargo carriers. While there are more carriers this year than last, it should be noted that additions are primarily in the nonscheduled and all-cargo segments of the industry.

Thirty-four of the airlines provided scheduled passenger service and constitute the data base (both domestic and international) for the air carrier forecasts discussed in this chapter. Thirty-one of the carriers provided scheduled domestic service (within the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands), while 16 of the carriers provided scheduled international service. Of the 16 carriers providing scheduled international service, nine served Atlantic routes, eleven served Latin American routes, and seven served Pacific routes.

Air carrier traffic forecasts and assumptions discussed herein are presented in Chapter IX (Tables 6 through 17). FAA air carrier workload forecasts are discussed in Chapter VII and presented in Chapter IX (Tables 27 through 33).

A list of domestic and international commercial passenger and cargo air carriers active in fiscal year 1992 is in Appendix A. A listing of inactive commercial passenger and cargo air carriers is found in Appendix B.

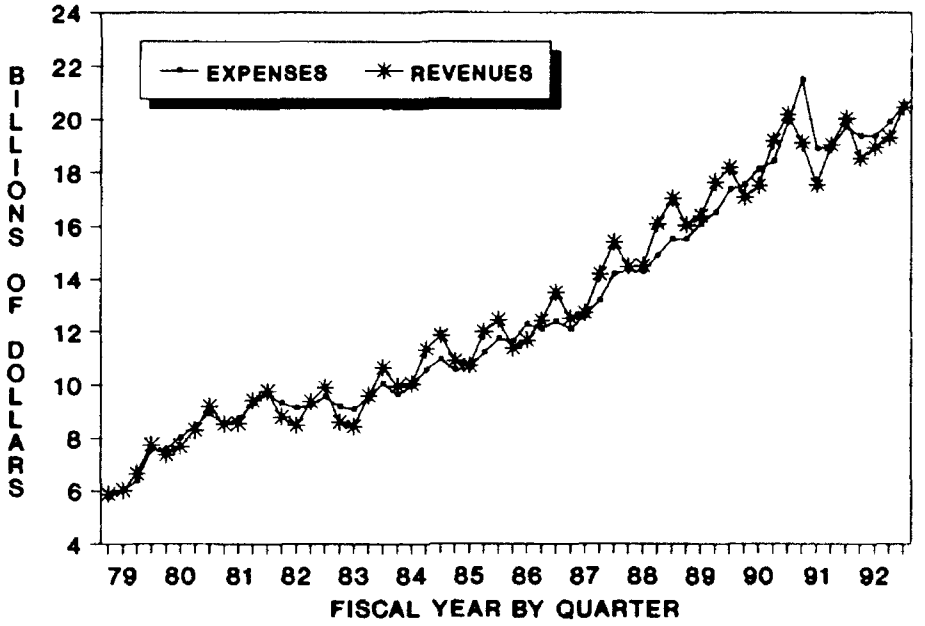
REVIEW OF 1992

FINANCIAL RESULTS

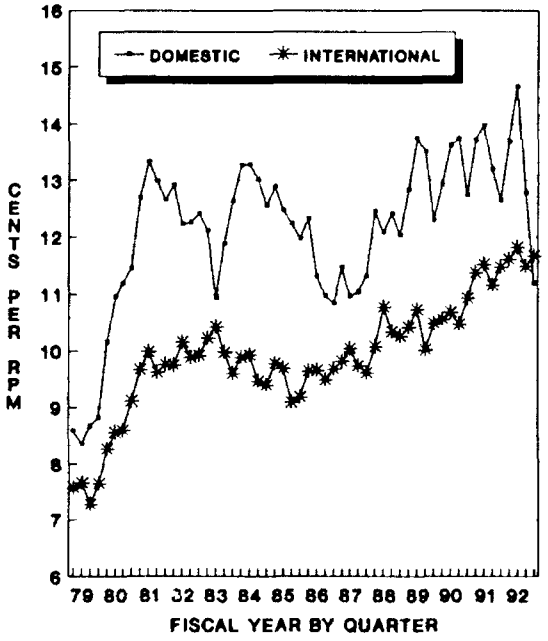
Fiscal year 1992 saw a continuation of poor financial performance for the U.S. commercial airline industry. The U.S. economy was sluggish throughout 1992, and the recession took hold in foreign economies to a greater extent than expected. Excess capacity (relative to demand) continued to be a major factor in the aviation industry in 1992, resulting in fare wars that included the peak travel period of the year. The continued sluggishness of the U.S. economy exacerbated the capacity problems of the industry. Also, some carriers had large expenses associated with absorbing new routes.

U.S. AIR CARRIER REVENUE AND COST TRENDS

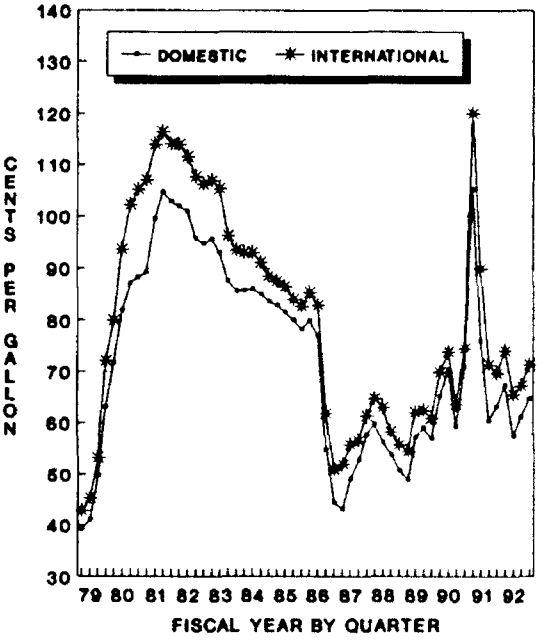
OPERATING REVENUES AND EXPENSES



PASSENGER YIELDS

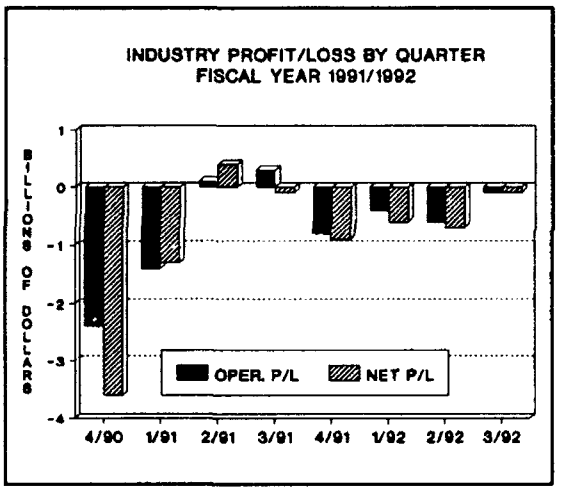


JET FUEL PRICES

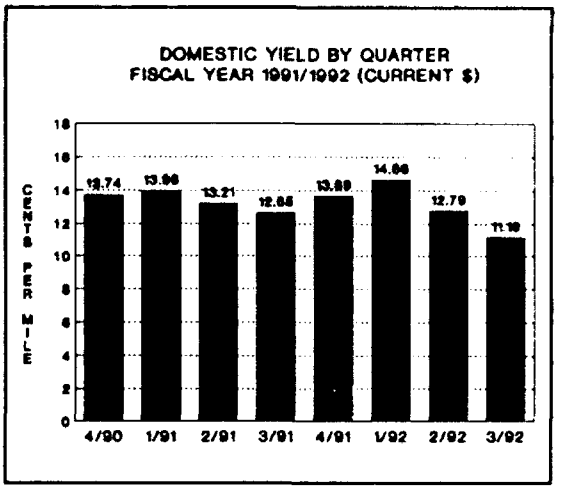


Again, as in 1991, the losses were not confined to the financially weaker carriers. Most major airlines suffered substantial losses in 1992, leading to an industry operating loss of over $1.9 billion. This follows on the heels of 1991, when the industry lost $3.3 billion, the largest single-year loss in industry history. Three major carriers, Continental Airlines, America West Airlines, and Trans World Airlines entered or remained in Chapter 11 bankruptcy during 1992.

While experiencing a smaller loss for the year, compared to fiscal year 1991, the industry showed weakness by having all four quarters in the negative, for both operating and net losses.



One major effect of the fare wars was lower yields, especially domestically. Usually, financial gains made in the peak summer travel season offset losses in other seasons. In 1992, however, the deep discount fares offered in the summer did not cover the high expenses of the industry, so that losses were experienced even in the traditionally profitable third quarter.



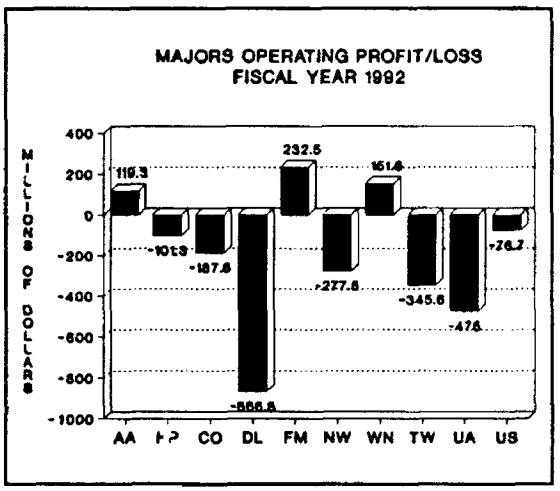
Most believe that the increase in domestic RPMs (up 3.8 percent) in 1992 was due almost entirely to the deep discount fares. Passenger yields (as measured by revenue received per passenger mile) decreased by 2.6 percent in current dollars and 5.6 percent in constant dollars.

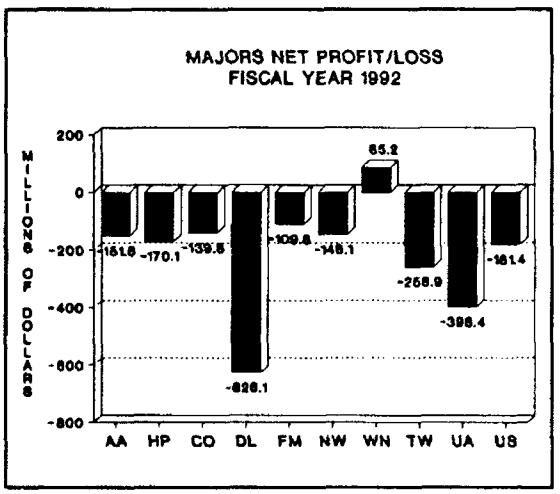
The international air travel sector, after recording a decrease in traffic in 1991 (when it declined 1.4 percent) increased 13.7 percent. International yields decreased marginally (1.1 percent) in real terms, and increased 2.0 percent in current dollars.

U.S. airlines posted a net loss of almost $2.3 billion in fiscal year 1992, a considerable improvement from the $4.7 billion net loss in 1991.

Only three major airlines showed an operating profit in fiscal year 1992, and only one, Southwest, earned a net profit.

As shown in the following two graphs, Delta and United Airlines, two carriers who generally enjoy solid financial results, experienced the worst losses. Between them, they had an operating loss of $1.34 billion and a net loss of $1.02 billion. This represents 69 percent of major carrier operating loss and 45 percent of major carrier net loss in fiscal year 1992.





As was the case last year, if the industry is to return to profitability within the near future, it is imperative that the industry establish rational pricing policies whose goal is to ensure both short- and long-term industry profitability. However, the current forecast does not offer hope of significant financial improvement in fiscal year 1993. Should poor growth conditions persist, and the expected economic turnaround be weak, additional carriers could be forced into bankruptcy or liquidation.

SCHEDULED PASSENGER TRAFFIC AND CAPACITY

Scheduled system (domestic and international) passenger traffic on U.S. commercial airlines increased in 1992, reversing 1991's decline. The increase in passenger demand in 1992 was largely the result of two factors: the effects of domestic fare wars and international travel rebounding from the depressed levels of 1991, so negatively affected by the Gulf War.

In 1992, the system demand for air travel (as measured in revenue passenger miles [RPMs]) increased 6.2 percent. This increase follows 1991's decline in RPMs (the first in 10 years).

Available seat miles (ASMs) increased only 3.7 percent, resulting in a system load factor of 63.8 percent, the highest level in recent history. The modest capacity growth was due in large part to the continued effects of the liquidation of carriers like Eastern and Pan American. Few of these carriers' aircraft (largely stage-2) were put into service by surviving airlines. Also, carriers in bankruptcy operated lower capacity levels than they did before bankruptcy.

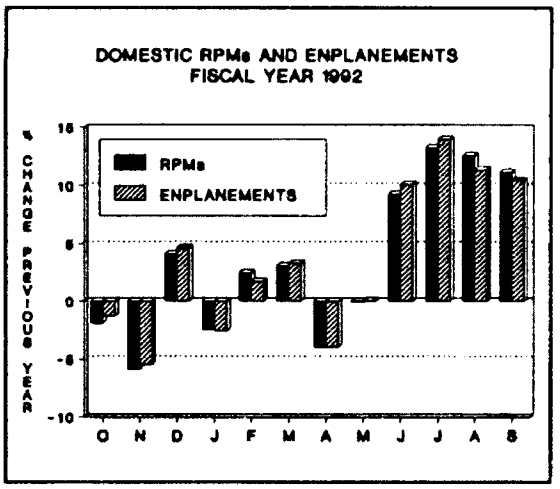
Domestic Passenger Traffic and Capacity

Domestic RPMs increased by 3.8 percent in fiscal year 1992 to 346.3 million. This growth, while encouraging, continues the sluggish development of traffic demand within the United States that began in 1988. Domestic passenger enplanements (428.8 million) increased by 3.7 percent in fiscal year 1992.

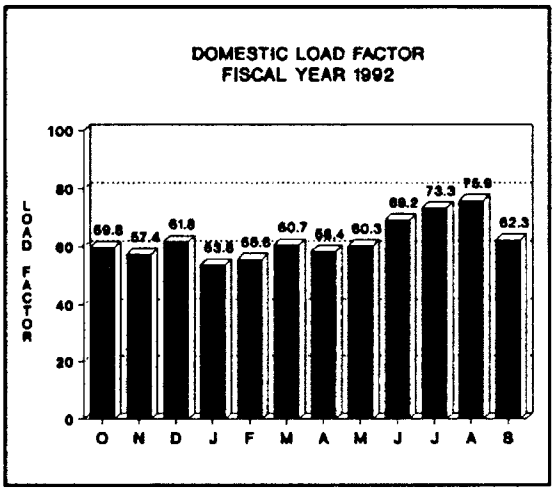
Real yields declined by 5.9 percent in 1992. This was unexpected at the start of the year, as many felt that yields had to be improved, not reduced. The decline in 1992 was the largest decrease in real yield since 1986, when real yield dropped some 10 percent. While the decreases in yield during the 1980s seemed driven primarily by cost improvements of the industry, the 1992 drop seemed driven primarily by fare wars prompted by financial weakness of carriers, as well as a lack of industry consensus over fare structure.

The yield decline was most severe, comparing percentage decline from the previous year, during the summer of 1992. In the fourth quarter of the fiscal year, yield was down some 11.5 percent from 1991 (without adjustment for inflation). While it is unusual to have deep discount fares promoted during peak seasons, the situation in 1992 was unusual, with the recession dragging out and unemployment threatening both the professional employee and the production worker. Before the deep discount fares were announced, reports in the press noted that advance bookings for the summer season were extremely poor and leisure travel seemed to be depressed even more than anticipated.

By all traffic measures, the results of the deep discounting were successful. The July and August domestic RPMs (up 13.0 percent) and load factors (74.6 percent) were extremely high.



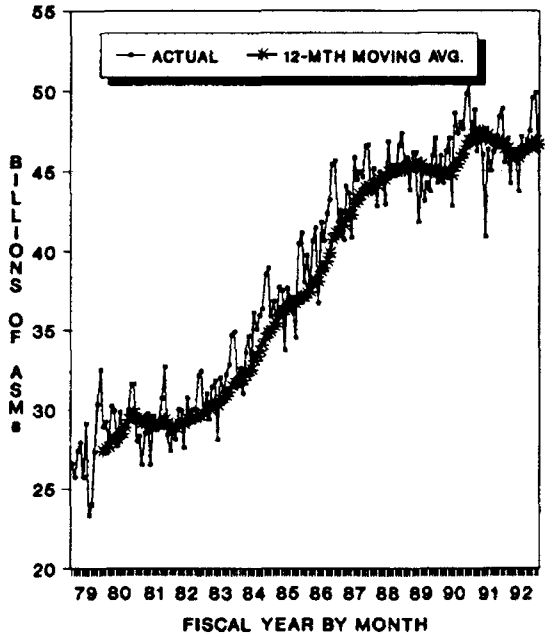
Domestic capacity increased by only 0.9 percent in fiscal year 1992. This modest growth improved the load factor to the best level since 1979. However, an underlying weakness can still be seen in the industry, since the yearly load factor was the result of extremely high load factors in the summer months, coupled with moderate load factors over the balance of the year.



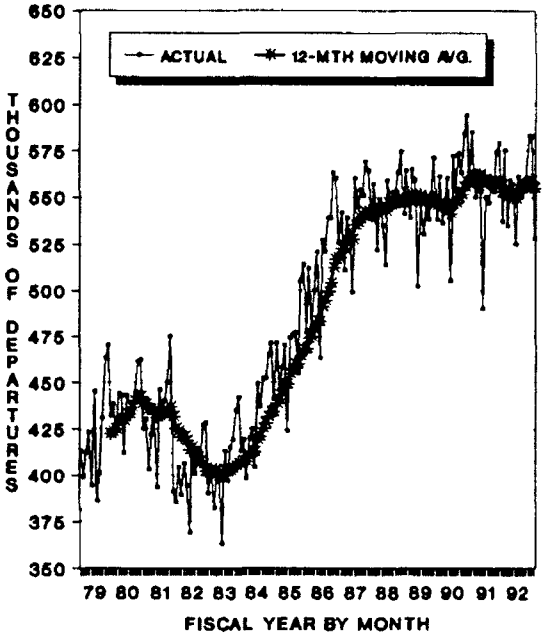
Industry concentration, in terms of the percentage of RPMs carried by the three largest carriers, increased in 1992. American, United, and Delta increased their share of RPMs to 54.7 percent in 1992, up from 52.3 percent in fiscal year 1991. The share for these three carriers is expected to increase

U.S. AIR CARRIER DOMESTIC TRAFFIC TRENDS

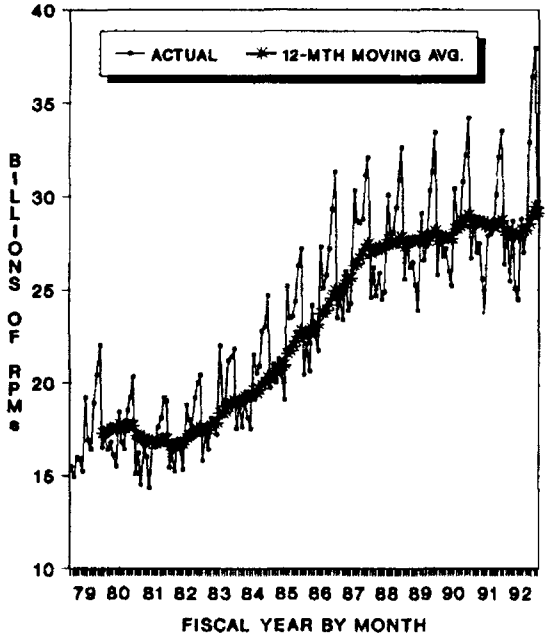
AVAILABLE SEAT MILES



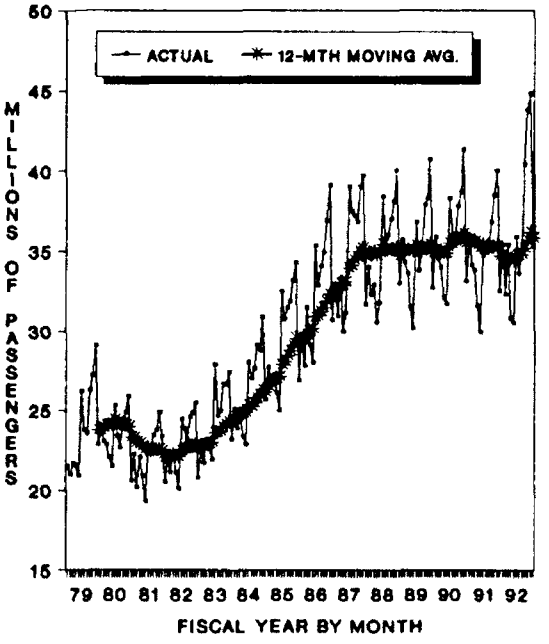
AIRCRAFT DEPARTURES



REVENUE PASSENGER MILES



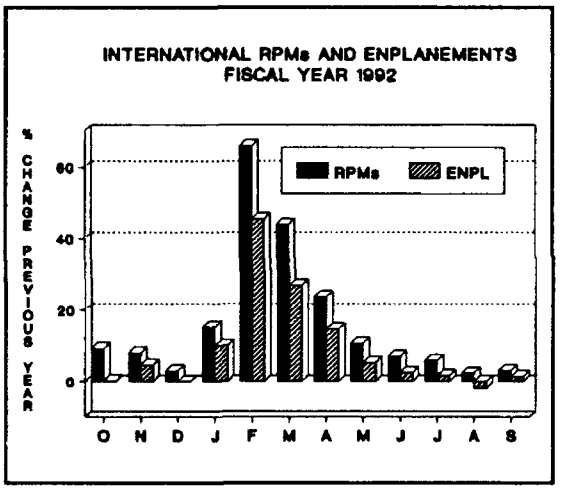
PASSENGER ENPLANEMENTS



further, and as of September 1992 their share stood at 56.2 percent.

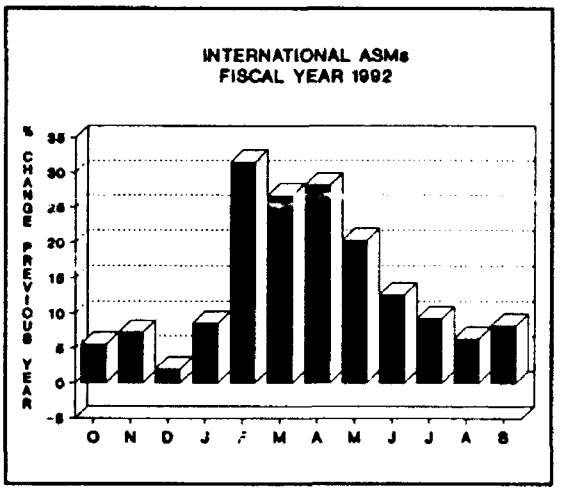
International Passenger Traffic and Capacity

International traffic and capacity rebounded significantly in fiscal year 1992, with RPMs increasing 13.0 percent and ASMs increasing 12.8 percent. Load factor increased one tenth of a percent to 67.1 percent. These increases came on top of 1991's low levels, which were depressed primarily due to the effects of the Gulf War.

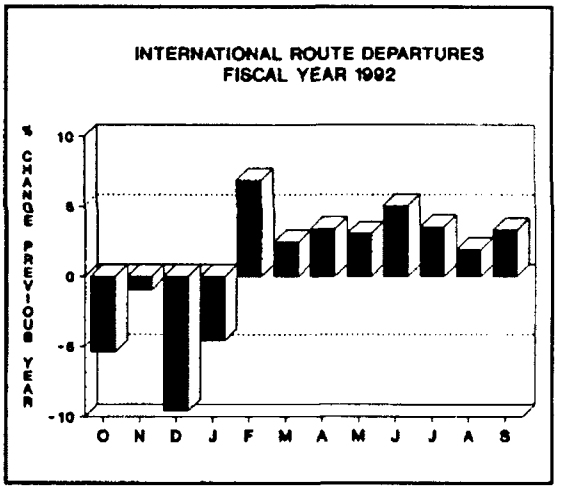


The international load factor of 67.1 percent is the second highest load factor ever achieved in the international sector, lower by 2 points than that achieved in 1990.

In fiscal year 1992, increases in traffic were greatest from February through April, reflecting the rebound from the months most depressed by the Gulf War in fiscal year 1991. The fourth quarter was negatively affected by the domestic fare wars, with many travelers switching from international to domestic destinations, to take advantage of deep discount fares not usually available in the peak season



and not generally available in international markets.

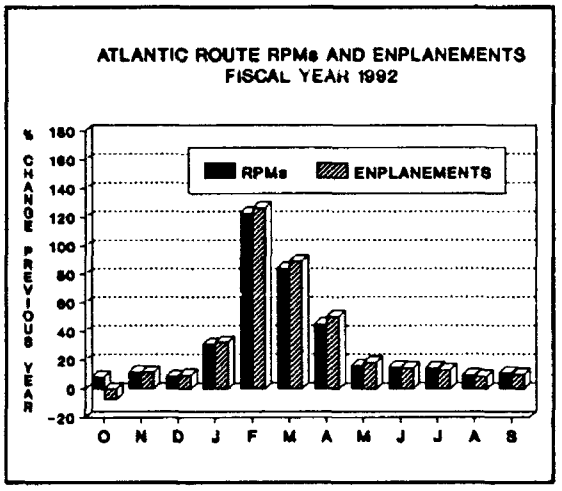


From 1991 to 1992, traffic and capacity increased at about the same rate, so that load factor remained at about the same level, slightly over 67 percent.

Atlantic Routes

Transatlantic traffic demand rebounded sharply in 1992, with RPMs, ASMs, and enplanements up between 21 and 24 percent over the depressed levels of 1991. In reviewing monthly changes, the months of February and March 1992 showed extraordinary increases, with

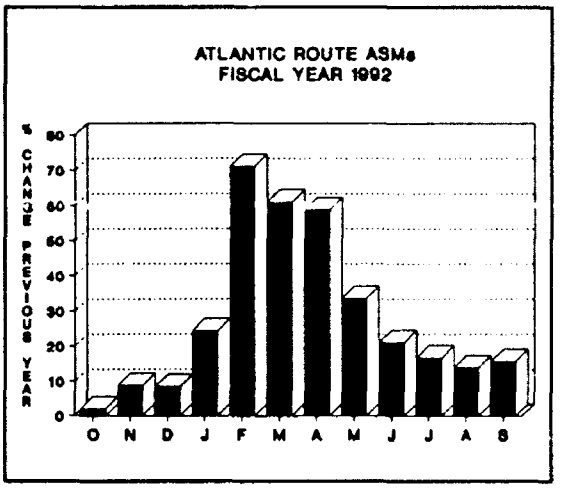
February 1992 up about 120 percent over 1991. But the same months in 1991 were those most adversely affected by the Gulf War.



The real yield in the Atlantic market decreased 2.5 percent, with nominal yield up 0.4 percent from 1991. The same conditions that occurred in the domestic market, namely carrier financial weakness and heavy price discounting, also affected the international markets, driving fares lower. However, percentage reductions were not as steep in international markets as in domestic, and the deepest discounts of the peak third quarter applied only to domestic markets.

The traffic increase in 1992 was aided somewhat by a weaker U.S. dollar, coupled with stronger European currencies, especially the German mark. This factor is further discussed in Chapter II. Whereas these currency changes had a negative effect on U.S. travelers, they stimulated travel to the United States by Europeans.

The number of passengers enplaned on the Atlantic routes in fiscal year 1992 totaled 14.8 million, an increase from 1991's 12.2 million, but lower than the peak of 16.1 million in 1990. It is important to bear in mind that on the Atlantic route especially, there has been greater growth in the RPMs than enplanements in recent years, due to



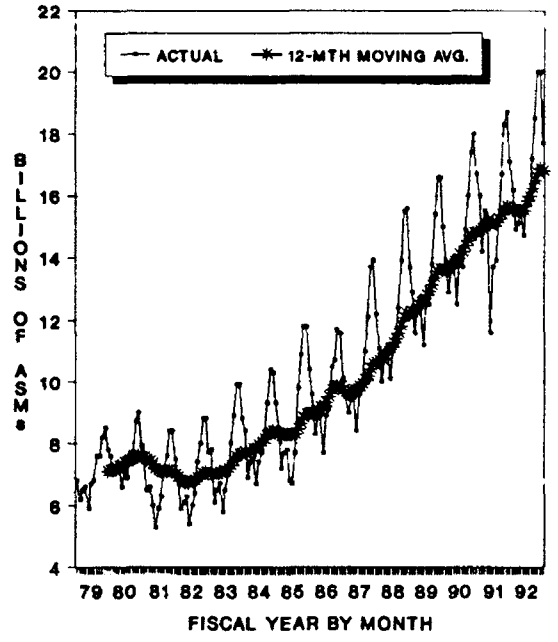
the fact that new routes were added that involved interior U.S. points, overflying the traditional East Coast gateways to Europe. From 1981 to 1988 the average trip length remained stable, fluctuating from 3,005 miles in 1981 to 3,163 miles in 1988. Since then, trip length has increased rapidly as new U.S. routes began service and as short-haul intra-Germany trips were dropped as a result of Pan American's sale of routes to Lufthansa.

Some of the problem with understanding the level of enplanements is due to the fact that Pan American's previous intra-German service was counted in the Atlantic market entity as defined by the Research and Special Projects Administration. In November 1990, Pan American completed the sale and transfer of its intra-Germany routes to Lufthansa. While the short-haul intra-Germany service (an average of 259 miles in fiscal year 1990) accounted for only a small percentage of total Atlantic route passenger miles (1.1 percent in fiscal year 1990), it accounted for a substantial percentage of total Atlantic route passenger enplanements (13.7 percent in fiscal year 1990).

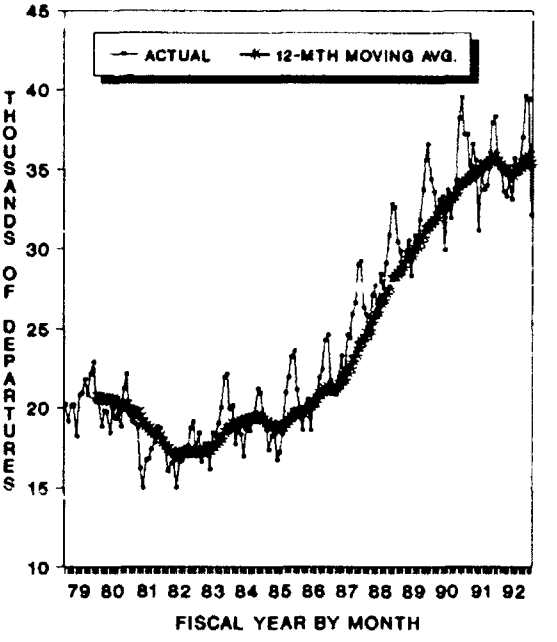
The trend toward smaller aircraft size continued in 1992, with the average flight having 12 fewer seats on it, dropping from 257.7 in 1991 to 245.2 in 1992. Departures decreased in the

U.S. AIR CARRIER INTERNATIONAL TRAFFIC TRENDS

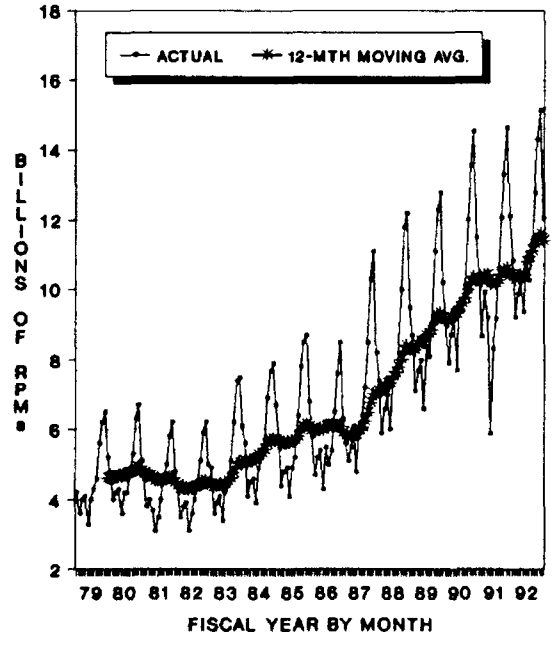
AVAILABLE SEAT MILES



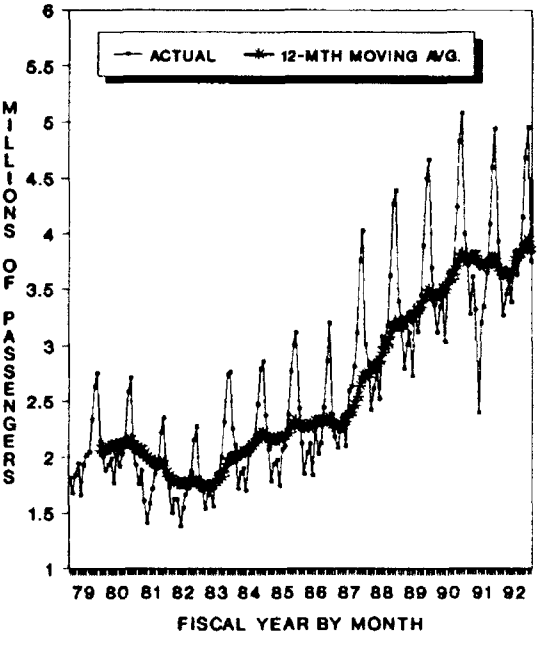
AIRCRAFT DEPARTURES



REVENUE PASSENGER MILES

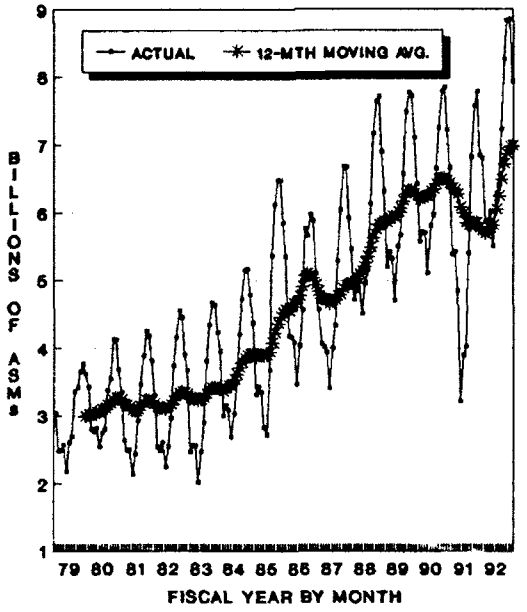


PASSENGER ENPLANEMENTS

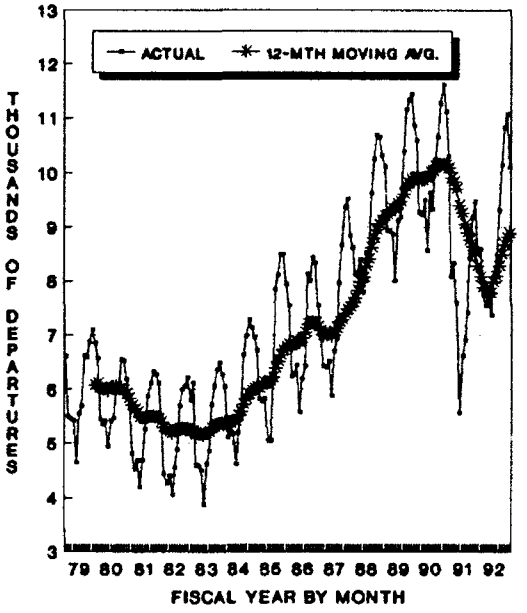


U.S. AIR CARRIER CAPACITY AND TRAFFIC TRENDS
INTERNATIONAL OPERATIONS - ATLANTIC ROUTES

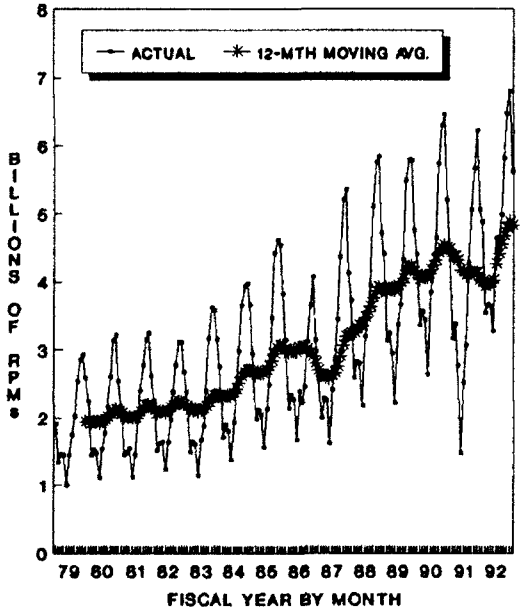
AVAILABLE SEAT MILES



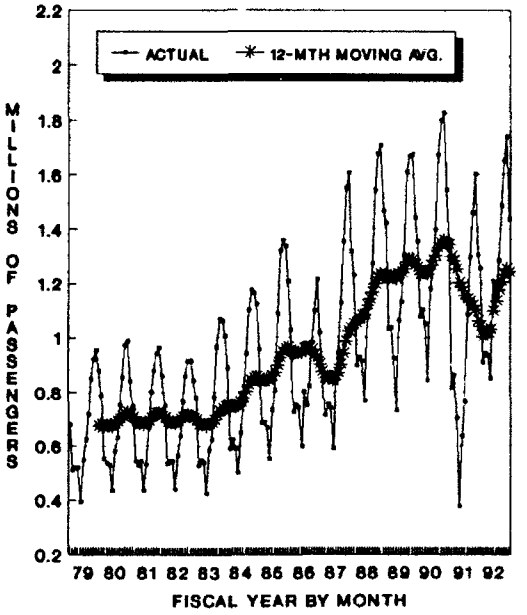
AIRCRAFT DEPARTURES



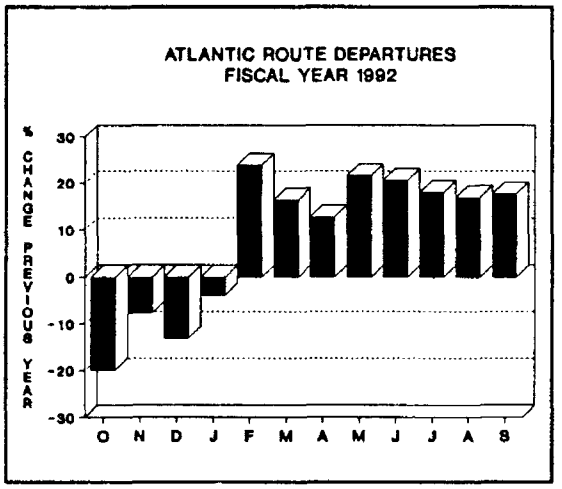
REVENUE PASSENGER MILES



PASSENGER ENPLANEMENT

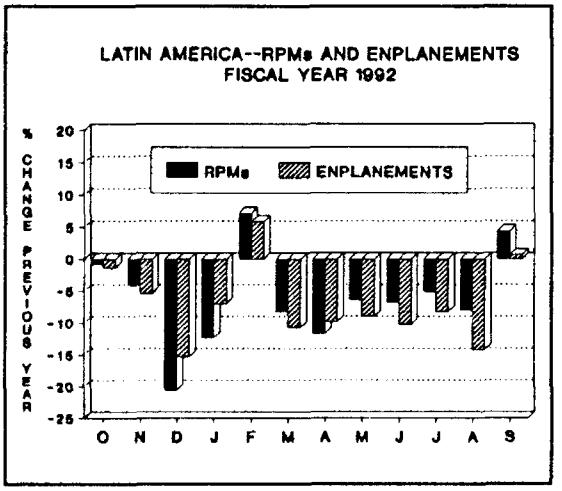


first 4 months of fiscal year 1992, when compared to 1991. Increases were the pattern after January, however, as the market rebounded from 1991 levels, which were depressed by the effects of the Gulf War. Load factor in 1992 was 68.9 percent, down somewhat from 69.5 percent in 1991.



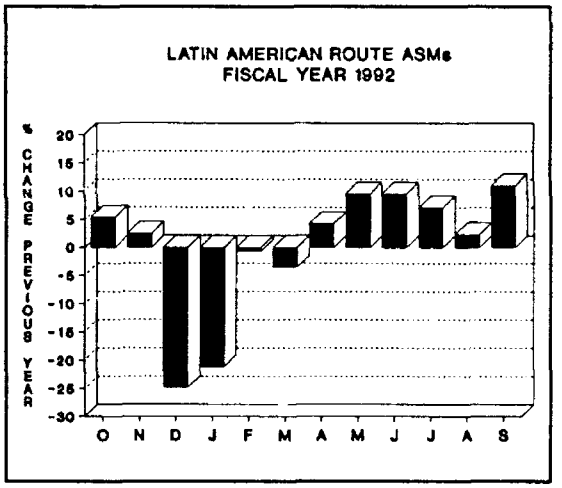
Latin American Routes

Traffic demand to Latin America (destinations in South America, Central America, Mexico, and the Caribbean) declined in 1992. RPMs were down 6.5 percent, capacity was unchanged, and load factor decreased 4 points to 58.3 percent.



While 1991 appeared to be relatively unaffected by either the U.S. economic recession or the Middle East conflict, the decline in 1992 appears to be a result of changed service patterns in the market area. In particular, many Pan American routes were taken over by United, and this appears to have resulted in a temporary drop in capacity and traffic.

Likewise, in 1991 the market area seemed to have been a favored destination during the Gulf War, with many discretionary travelers perhaps substituting a vacation in the Caribbean or Mexico for a European vacation. This "favor" was lost in 1992 as other markets returned to normal.



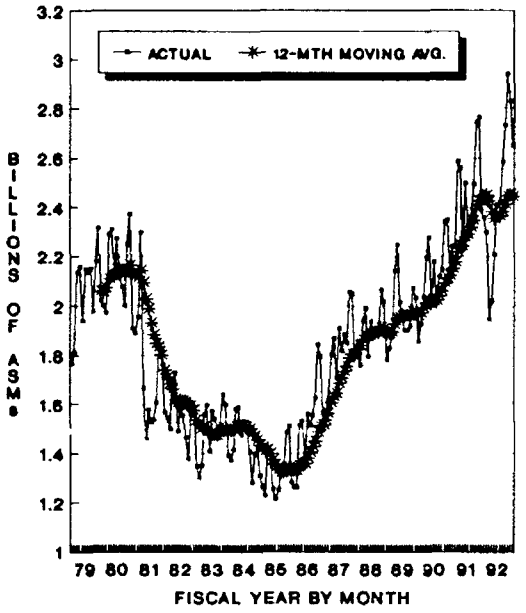
Monthly changes in capacity and traffic illustrate the slow startup of United in the markets they took over from Pan American. Pan American was operating in the market area until November 1991. In the following two months, departures, traffic, and capacity were down considerably. United did not begin reporting service until February 1992, and capacity was below previous year levels until April 1992.

Another factor in the market area was a significant increase in fares in 1992. Real yield increased 9.3 percent while

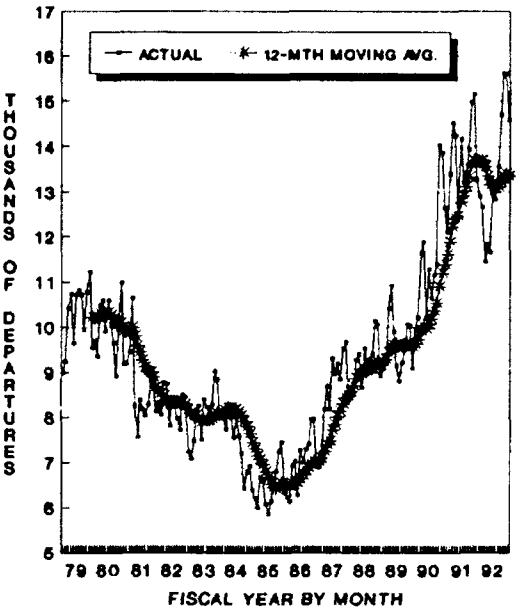
U.S. AIR CARRIER CAPACITY AND TRAFFIC TRENDS

INTERNATIONAL OPERATIONS - LATIN AMERICAN ROUTES

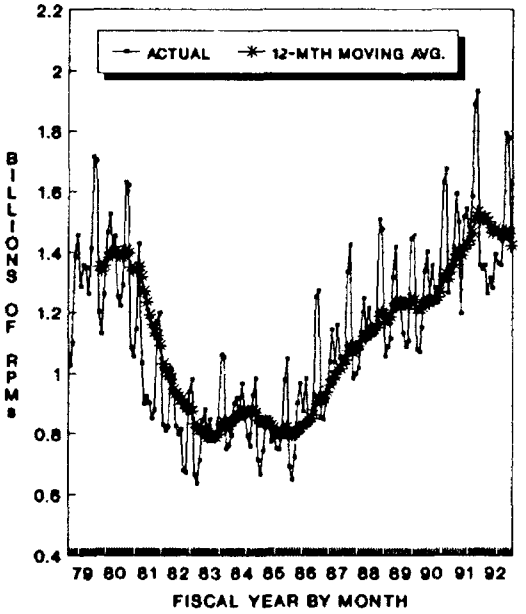
AVAILABLE SEAT MILES



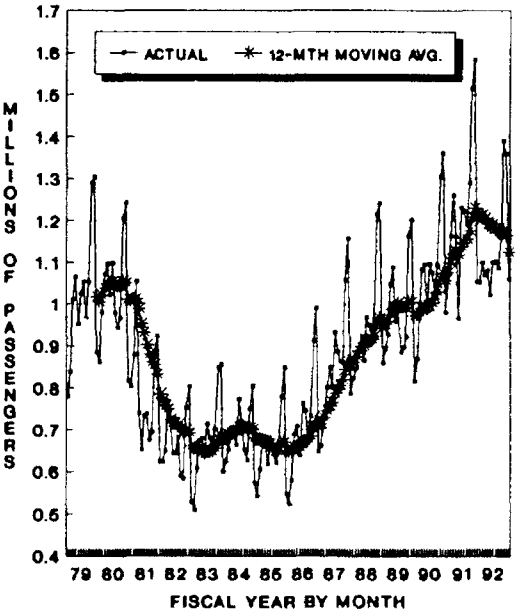
AIRCRAFT DEPARTURES



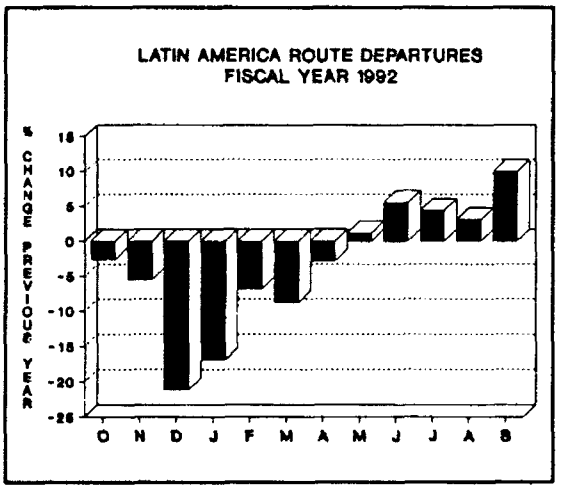
REVENUE PASSENGER MILES



PASSENGER ENPLANEMENTS



nominal yields increased 12.5 percent. The increase in real yields was the highest observed in any of the international entities for the period from 1969 to the present. This increase in yield is largely due to the absence of Pan American, which had been offering deep discount fares in the market.



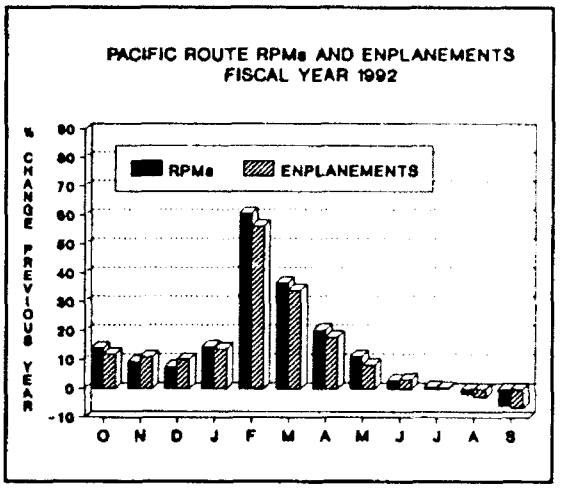
Latin American ASMs (29.4 billion) showed virtually no change in fiscal year 1992. Load factor decreased 4 points to 58.3 percent.

Pacific Routes

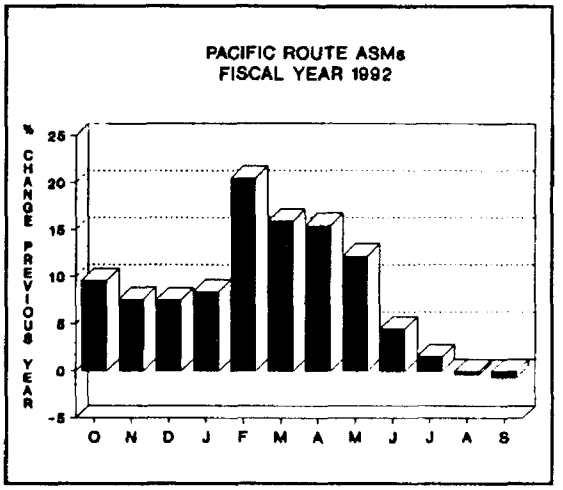
Passenger traffic to Pacific destinations increased for the eleventh consecutive year in 1992. Over this 11-year period, RPMs and passenger enplanements have more than quadrupled, each increasing at an average annual rate of 14 percent.

Demand to Pacific destinations remained strong in 1992, with RPMs and enplanements both increasing approximately 11 percent. The increase came despite only moderate growth in the Japanese economy. It was aided by a 0.8 percent decrease in real yield (nominal 2.2 percent increase).

Capacity on the transpacific routes increased only 8.0 percent in 1992 and



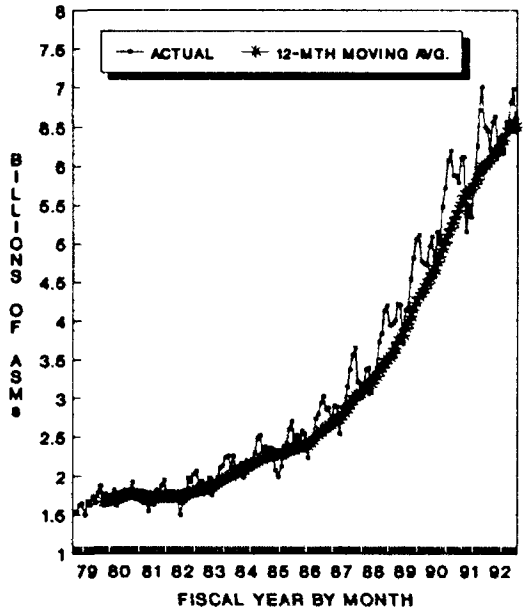
load factor increased 2 points to 68.6 percent. This load factor is about the average for the last 6 years, and it appears that the high load factor has become a permanent part of this market. In the 6 years ending in 1983 the load factor averaged only 60.6 percent. The market has become a highly discounted market in the recent past, and needs a high load factor to be profitable.



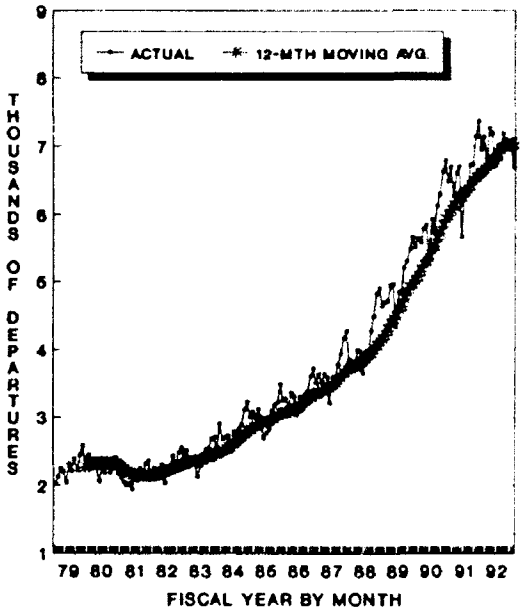
U.S. AIR CARRIER CAPACITY AND TRAFFIC TRENDS

INTERNATIONAL OPERATIONS - PACIFIC ROUTES

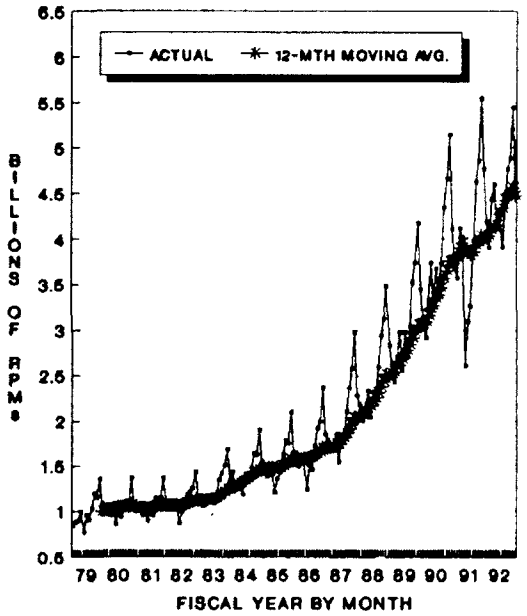
AVAILABLE SEAT MILES



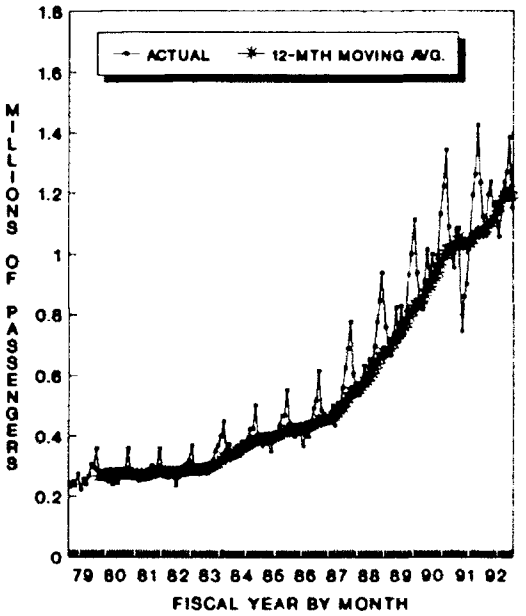
AIRCRAFT DEPARTURES



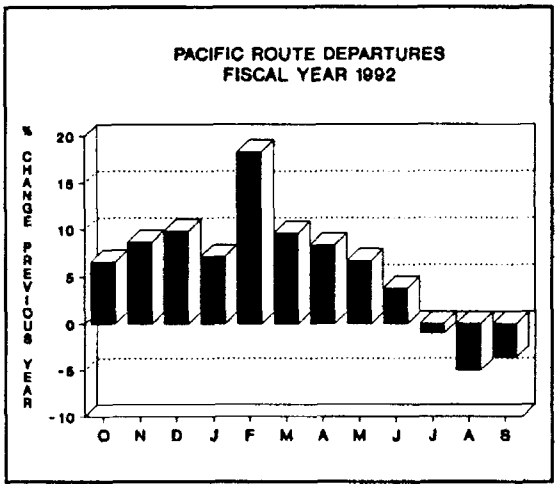
REVENUE PASSENGER MILES



PASSENGER ENPLANEMENTS



Again in this market area we note a pattern of significant increases in departures, capacity, and traffic in the period of February and March 1992, which represents a rebound from the deepest declines caused by the Gulf War of the previous year.



NONSCHEDULED TRAFFIC AND CAPACITY

The number of nonscheduled (charter) passengers flying on U.S. commercial air carriers declined by 6.3 percent in fiscal year 1992, to a total of 8.7 million. Domestic enplanements (5.1 million) increased by 2.1 percent, while international enplanements (3.5 million) decreased 16.4 percent.

Nonscheduled revenue passenger miles decreased 12.7 percent in fiscal year 1992, to 14.0 billion. Domestic passenger miles (5.1 billion) were down 6.2 percent, while international passenger miles (8.0 billion) decreased by 24.3 percent. It should be noted, however, that the 1991 figures were inflated by the large numbers of troops transported between the United States and the Middle East on civil aircraft.

Nonscheduled available seat miles (18.5 billion) decreased 23.5 percent. This decline is considerably greater than for revenue passenger miles, resulting in considerably higher load factors. Nonscheduled load factor increased to 75.7 percent from 66.3 percent in fiscal year 1991.

Historical (1982-1992) nonscheduled traffic (RPMs and enplanements), capacity (ASMs), and load factor statistics may be found in Appendix C.

AIR CARGO TRAFFIC

Air cargo revenue ton miles (RTMs) flown by U.S. air carriers reporting on RSPA Form 41 totaled 16.5 billion in fiscal year 1992, up from 16.3 billion in 1991. This included an increase of 2 tenths of 1 percent in system freight/express RTMs (14.4 billion) and an increase of 6.9 percent in mail RTMs (2.1 billion).

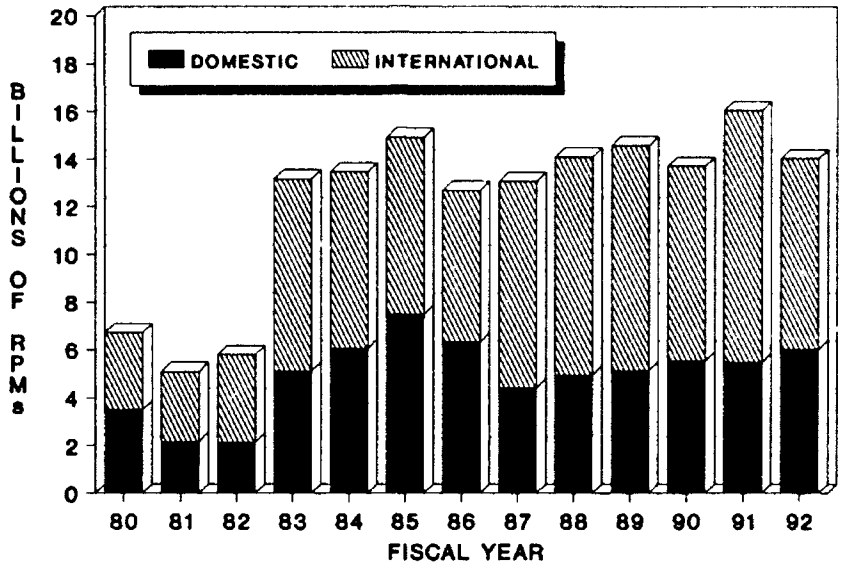
Domestic freight/express ton miles (7.7 billion) increased by 3.6 percent in fiscal year 1992, while international freight/express RTMs (6.7 billion) decreased by 3.5 percent. International RTMs in 1991 were higher, in part as the result of the movement of military supplies between the United States and the Middle East.

Domestic mail RTMs (1.6 billion) increased by 9.8 percent and international mail RTMs (0.5 billion) declined by 1.6 percent in fiscal year 1992.

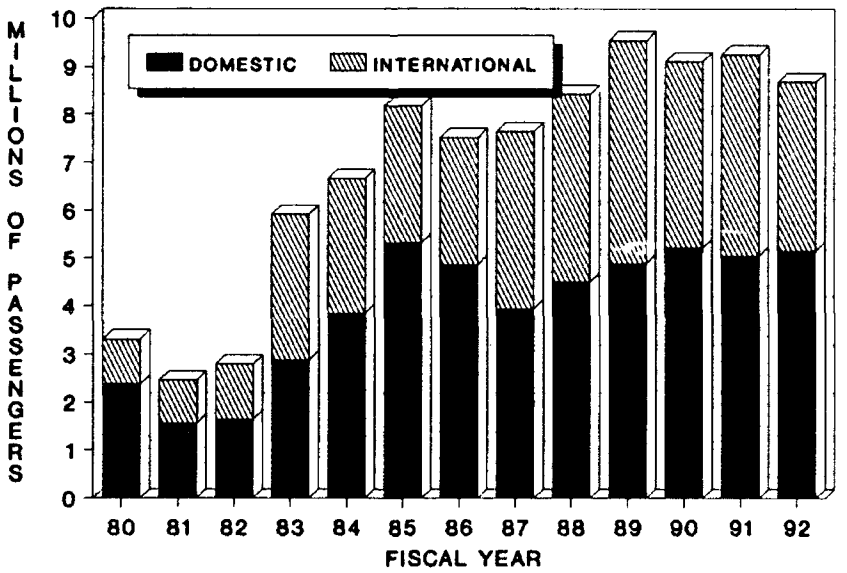
Historical (1982-1992) domestic and international air cargo statistics may be found in Appendix D.

U.S. COMMERCIAL AIR CARRIERS
NONSCHEDULED TRAFFIC

REVENUE PASSENGER MILES

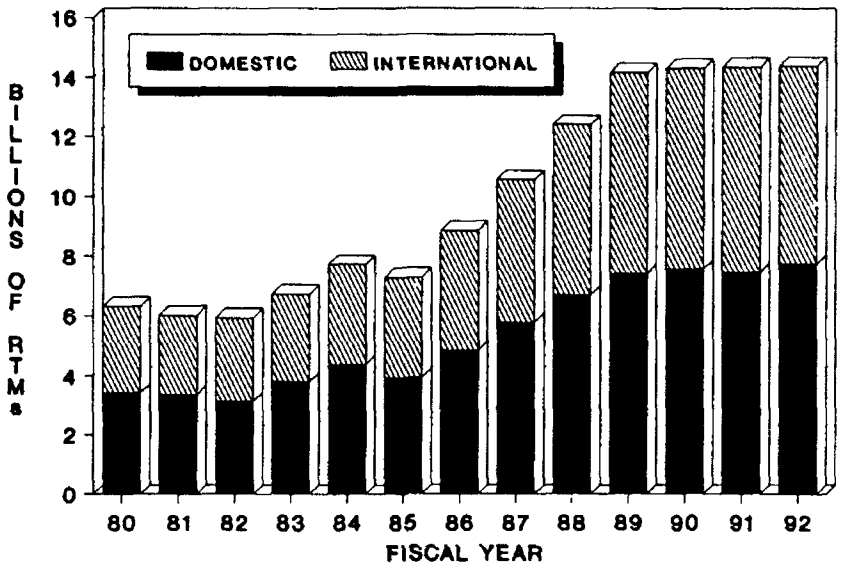


PASSENGER ENPLANEMENTS

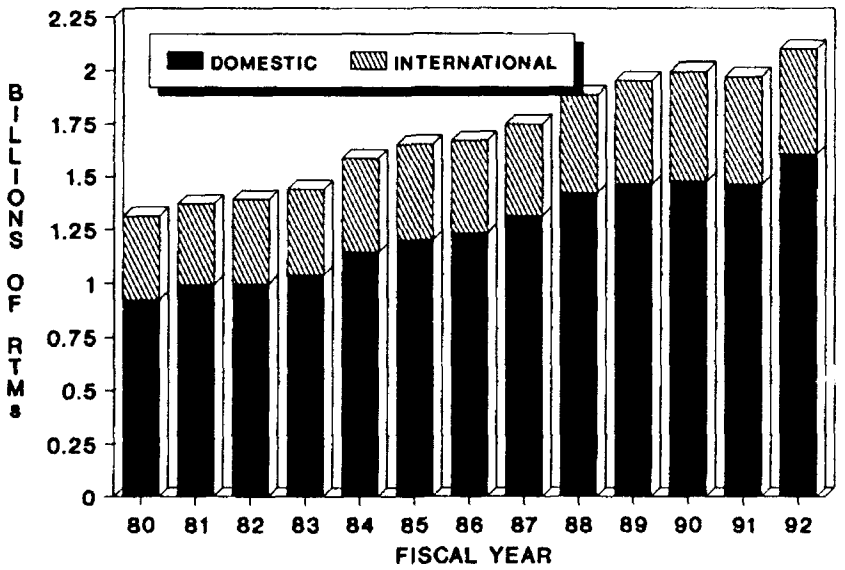


U.S. COMMERCIAL AIR CARRIERS
AIR CARGO REVENUE TON MILES

FREIGHT/EXPRESS TON MILES



MAIL TON MILES



FORECAST ASSUMPTIONS

The baseline forecasts of commercial air carrier traffic and activity during the next 12-year period (1993 to 2004) are made against a complex background. The economy is expected to enter an extended period of moderate expansion. Chapter II discusses the economic assumptions in detail.

An important assumption is that the economic recovery, while not robust, will restore air traveler consumer confidence, in both business and leisure travel markets. The recent recession affected air travel more than one might have expected, in large measure because business travel budgets were trimmed as a cost-cutting measure. We anticipate that this was a short-term adjustment and not a permanent shift in business travel demand.

On the leisure travel side, a high proportion of those who lost jobs were in the professional ranks. The confidence of those who tend to be air travelers--primarily the professional "white collar" workers--was greatly affected. For most of the year, persons in this consumer category withdrew in significant numbers from the air market. The perception was that if a job was lost by a neighbor, friend or relative, it could be lost by any person in the neighborhood, circle or family. Therefore everyone spent cautiously. This resulted in extremely low levels of consumer confidence.

The forecast also assumes that while the industry will continue to consolidate into a smaller number of air carriers, competitive forces will remain strong. The extent and speed of industry consolidation will depend, in part, on the timing and strength of airline industry recovery. A prolonged continuation of the current slowdown in U.S. economic growth could result in the loss of one or more of the carriers currently operating under Chapter 11 bankruptcy protection. A stronger than expected economic recovery in 1993 and 1994 could breathe new life into some of the financially weaker carriers, thus slowing industry consolidation.

Continued consolidation of the U.S. commercial aviation industry, however, does not preclude the emergence of new low-cost airlines seeking to establish a market niche for themselves--such as Air Reno. The current favorable market for used aircraft actually facilitates this kind of entry. However, such carriers are expected to be relatively few in number. In any case, present low-cost carriers, such as Southwest, will continue to exert an important competitive force in the market.

The industry is expected to continue toward globalization, despite a recent setback to this trend. In December 1992, British Airways pulled out of a proposal to take a substantial equity stake in USAir. The proposed deal was opposed by many carriers, and such opposition will presumably occur with any major globalization proposal, since the stakes are high. The international market is highly complex, and major deals seem to inevitably involve issues of bilateral fairness. Globalization will obviously not come easy, but it will come.

Existing arrangements, such as the association between Northwest and KLM, became stronger in 1992. New associations, such as that proposed involving Continental and Air Canada, are currently pending approval. Whether this agreement is approved or not, we expect that each of the large U.S. air carriers will become increasingly global in scope.

Stronger alliances will take shape and may be in the form of cooperative marketing agreements, including joint flights, shared frequent flyer programs, and/or schedule coordination

to feed one carrier's passengers into the other carrier's hub system.

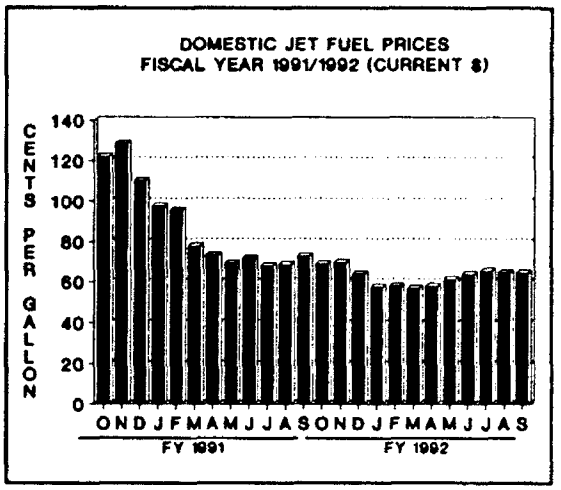
If there is increased industry consolidation, it will result in the merger and/or liquidation of a number of the financially weaker carriers, carriers that have been recent leaders in the promotion of deep discounted fares. Even if more consolidation occurs, the surviving carriers are expected to remain competitive and to continue to experiment with methods to stimulate travel markets, either through the use of innovative discount fares or through other travel incentives.

In the last year there was little new hub development in the industry and there were some hub reductions. In the immediate short term, air carriers are likely to slow the expansion of their present domestic hub systems or delay the development of new hubs at medium and small airports. It is notable that one of the most profitable airlines in recent years has been Southwest Airlines, a carrier that is fully committed to point-to-point service, rather than hub service. If more carriers turn to this approach, there could be less emphasis on new hub development in the future.

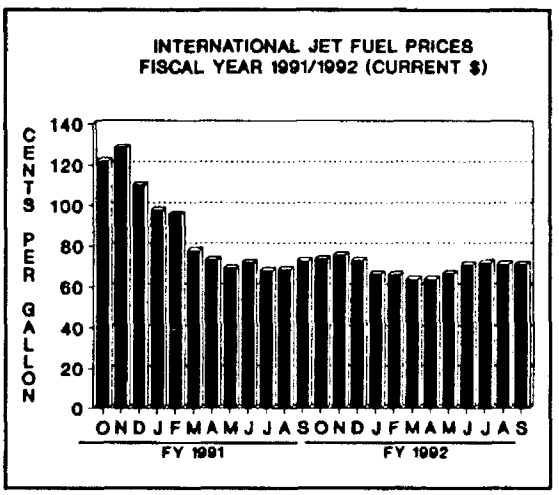
JET FUEL PRICES

While jet fuel prices created havoc in the aviation industry in fiscal year 1991, the availability and supply of fuel was not a severe concern in 1992. During fiscal year 1992, prices generally declined, as stability returned to the jet fuel market. Fuel costs averaged 64.5 cents a gallon in fiscal year 1992, with the average 62.7 cents for the domestic purchases and 69.6 cents for international. The system price was 18.8 percent lower than the average paid in 1991.

Jet fuel prices have a major impact on air carrier financial performance.



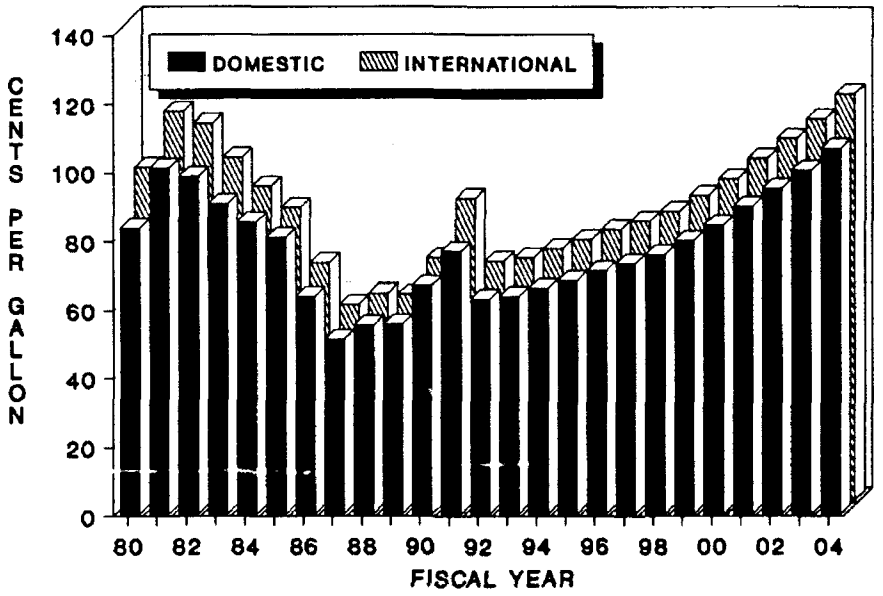
When jet fuel prices reached a peak during the third quarter of 1981 ($1.09 per gallon), fuel costs accounted for over 31.0 percent of U.S. air carrier operating costs. However, by the second quarter of 1989, jet fuel costs as a percentage of total operating costs had declined to only 13.7 percent. The run-up in oil prices during the first quarter of fiscal year 1991 (October to December) increased this percentage to 23.0 percent. The decline in oil prices since November 1990 reduced this percentage to more reasonable levels, and in 1992 they



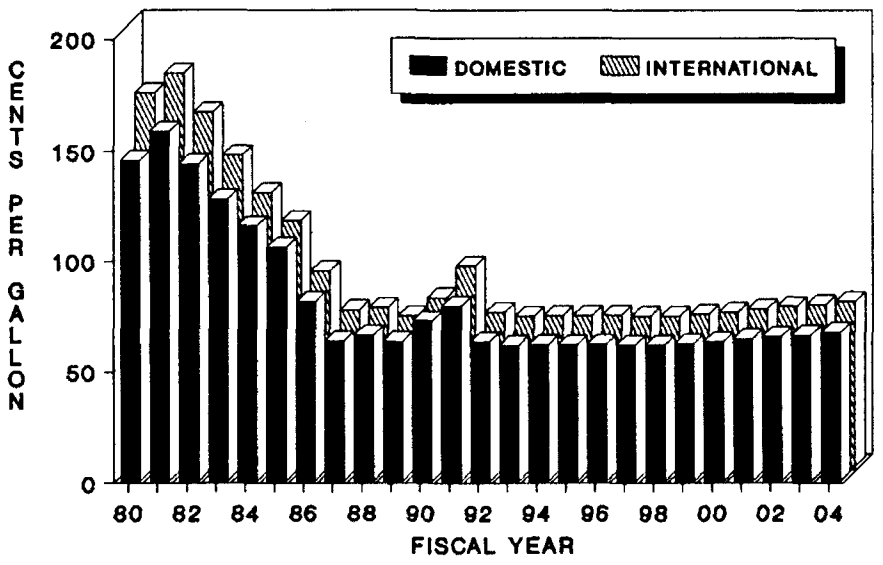
were 12.8 percent of total operating costs. Barring any unforeseen fuel supply disruptions or major new oil discoveries, jet fuel costs are expected to increase only gradually over the 12-year forecast period.

U.S. COMMERCIAL AIR CARRIERS

JET FUEL PRICES - CURRENT DOLLARS



JET FUEL PRICES
REAL (FY-1992) DOLLARS



System jet fuel current dollar costs are expected to increase to 65.3 cents per gallon in 1993, up 1.2 percent, then to 67.8 cents in 1994, up 3.9 percent. By 2004, system jet fuel in current dollars is expected to be $1.096 a gallon, an average annual percent change during the forecast period of 4.5 percent.

PASSENGER YIELDS

There has been a long downward trend in airline passenger yields over the modern history of transportation. In terms of real yield (discounting fares for inflation), fares in the years 1969 to 1971 averaged a little over 20 cents per passenger mile (1992 dollars). There has been a steady decrease in real yield over the years, with the causes of the decrease changing, but always with the result that fares have trended downward.

In the 1970s the dominant reason for the decrease was probably the introduction of large numbers of more efficient jet aircraft into the fleets operated by air carriers. In the 1980s the continued decrease was fueled in part by the deflationary impact deregulation had on the industry. Not only were airlines able to rationalize their route structures, but some labor costs decreased. In the last several years, financial weakness in the industry, coupled with high levels of capacity relative to demand, brought about intense fare competition.

We believe that the future will not see a continuation of the rapid decline in real yields. The industry can not continue with large losses, which result from the negative spread between breakeven costs and actual revenues. We believe that there is no new engine on the horizon to fuel major decreases in real yield. Therefore, real yields should no longer decline significantly, and will better match real costs. Our forecasts anticipate moderate increases in real yield in the domestic market and very moderate decreases in real yield in the international arena, where competition is expected to force additional efficiencies.

On a system basis, real yield is expected to increase 1.5 percent in 1993 to 12.8 cents per mile, while nominal yield will increase 4.6 percent to 13.2 cents per mile. In 1994, real yield is forecast to decrease slightly (down 0.2 percent), primarily as a result of stable domestic fares. Nominal yield increases 3.2 percent in 1994, to 13.6 cents per mile. On a system basis, real yield is expected to increase an average of 0.2 percent during the forecast period. Nominal yield in 2004 is expected to stand at 20.4 cents per mile, up an average of 4.1 percent per year.

Domestic Passenger Yields

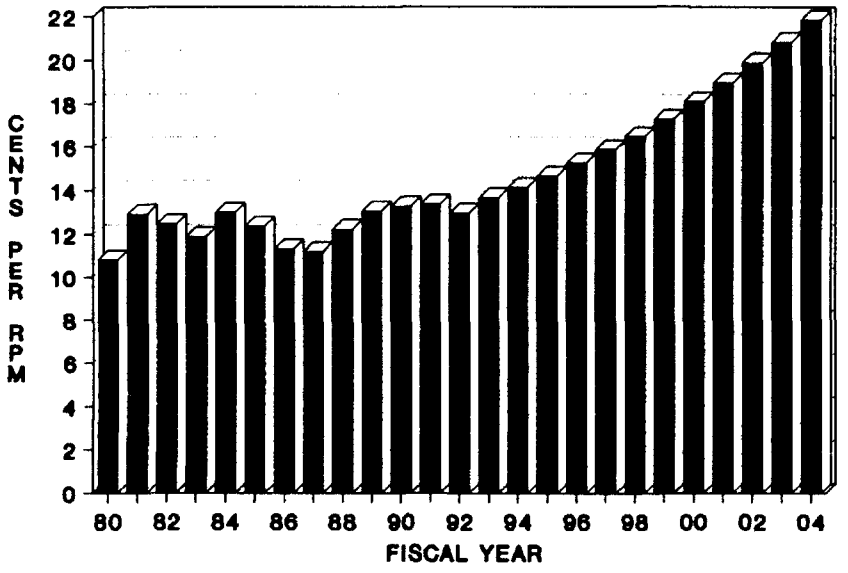
Domestic real yield is expected to increase 2.4 percent in 1993. Some of this increase is already in place, as fare increases in the fall of 1992 have taken hold in the system. Nominal (current dollar) yield is expected to increase 5.6 percent in 1993. This increase is the largest in four years, but comes on the heels of the large real yield decrease in 1992 of 5.9 percent.

The yield change in 1992, comparing quarterly changes in current dollar yield, shows the important effect of the fare wars during the peak third quarter of the calendar year. Yield was down 11.5 percent during the quarter.

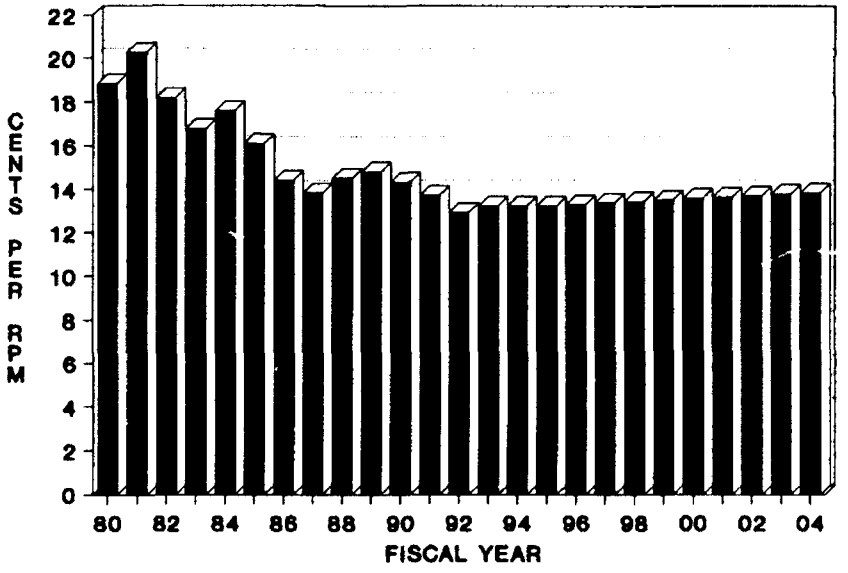
The forecast assumes no repetition of deep discount "fare wars" in the peak season. There are two major factors that have the potential to disrupt the

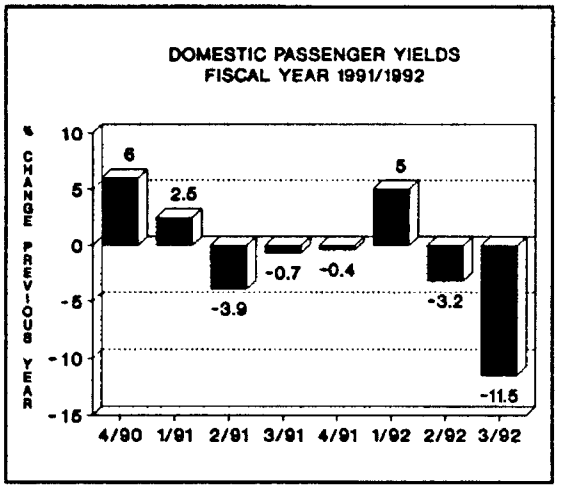
U.S COMMERCIAL AIR CARRIERS
DOMESTIC PASSENGER YIELD

CURRENT DOLLARS



REAL (FY-1992) DOLLARS





short-term fare outlook for U.S. air carriers: (1) the strength and timing of the U.S. economic recovery, and (2) the financial position of those U.S. air carriers currently operating under Chapter 11 bankruptcy. A slow economic recovery could again pressure the financially weaker carriers to introduce deep discounted fares to maintain cash flow.

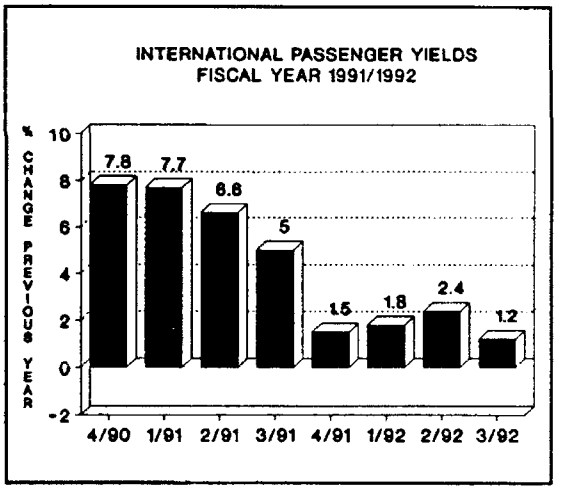
Domestic real yield decreased approximately 3.3 percent per year from 1982 to 1992, and approximately 1.3 percent per year in the decade before that. In the period of this forecast we project a moderate 2.4 percent increase in real yield in 1993, with no change in the following 2 years. Thereafter, domestic real yield is expected to increase an average of 0.5 percent annually over the balance of the forecast period. Current dollar or nominal yields will increase also, at an average of 4.5 percent per year during the forecast period.

International Passenger Yields

The setting of international fare levels differs from the domestic process in that many international fares must meet International Air Transport Association (IATA) guidelines and/or approval by foreign governments.

There has been a long-term decrease in international real yield similar to that in the domestic industry (and for largely similar reasons). Real international yield has decreased an average of 2 percent per year from 1982 to 1992, and an average of 1.5 percent per year in the decade before that. Real yields in the international market are generally lower than in the domestic market, primarily because operating costs tend to be lower in these markets. These lower costs are associated with the long average stage length internationally and with the use of higher density aircraft, which tend to have lower seat mile costs.

On a quarterly basis, the international (current dollar) yield was up moderately each quarter in 1992.

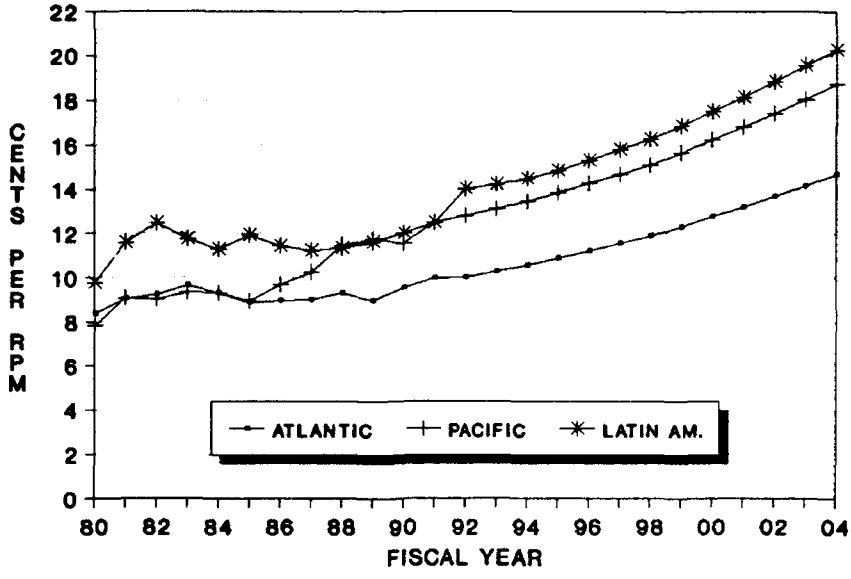


We assume that the international markets have little additional efficiencies to allow significant decreases in real yield in the future. Real yield will continue to decrease moderately in all markets. The total international real yield is expected to decrease an average of 0.6 percent annually during the forecast period, with the Atlantic market at that average, and the Pacific and Latin American markets at 0.7 percent average annual decrease.

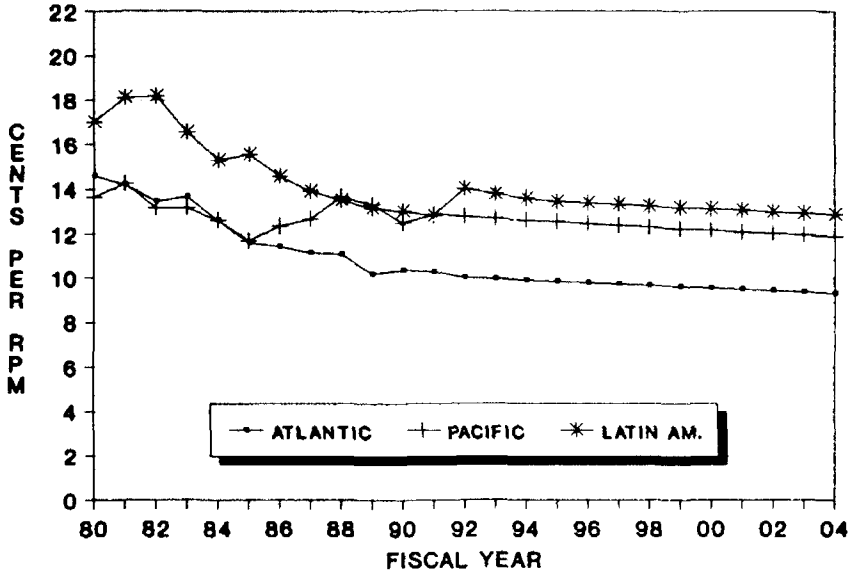
U.S COMMERCIAL AIR CARRIERS

INTERNATIONAL PASSENGER YIELD

CURRENT DOLLARS



REAL (FY-1992) DOLLARS



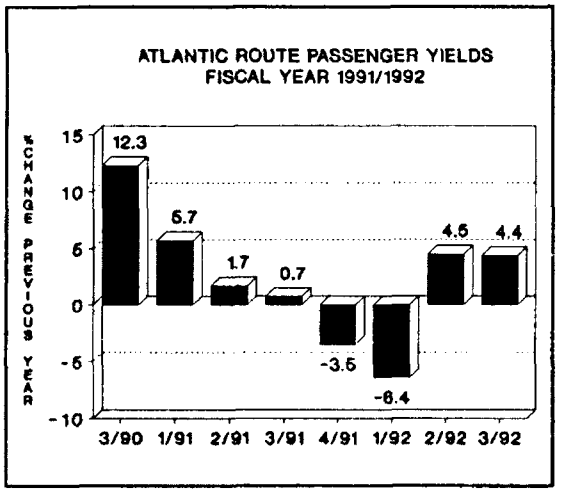
While real yield in international markets is expected to decrease an average of 0.6 percent per year during the forecast period, current dollar yield is expected to increase 3.3 percent yearly.

Atlantic Routes

In 1992, the major U.S. carriers on the transatlantic routes were American, Delta, and United. Average real yield in the market decreased 2.5 percent for the year, while nominal fares were up 0.4 percent.

Regardless of new alliances that may be formed in the transatlantic market, we assume that such alliances will make the markets more competitive, not less competitive. Such competition will involve fares as well as non-price factors. Lower fares will be reflected in moderately decreased real yield.

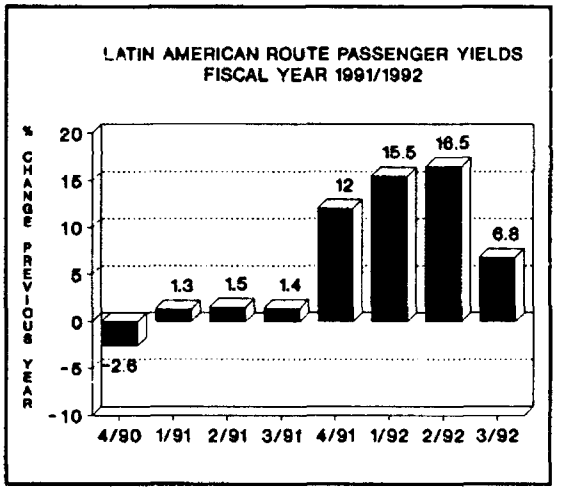
In 1992, quarterly yield was down in the first two quarters and up in the last two quarters. This result was due to the fact that fares were somewhat high in fiscal year 1991 due to increases associated with fuel costs. Also there was considerable discounting in the markets in 1992.



During the forecast period, we forecast that fares will decrease in real terms by 0.6 percent annually. In current dollar terms, yield will have an annual average rate of growth during the forecast period of 3.2 percent, growing from 10.0 cents per mile in 1992 to 10.3 cents in 1993, 10.6 cents in 1994, and 14.7 cents per mile in 2004.

Latin American Routes

Latin American yield increased significantly in 1992. This change was due primarily to Pan American's cessation of service in late 1991. Pan American had been offering highly discounted fares and these were not continued by the carriers that remained in the market. Each quarter in 1992 saw a substantial increase in yield compared to the previous year.



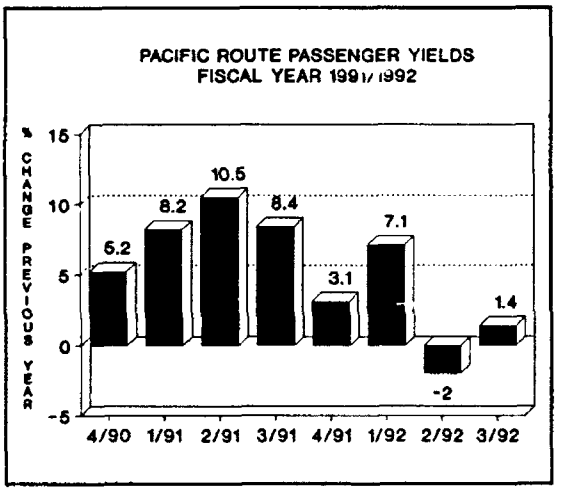
These markets should see a change in yield as they become more competitive. In 1992 there was a 9.3 percent increase in real yield and 12.5 percent increase in nominal yield in Latin American markets. The forecast assumes that this increase is temporary and that future changes will reduce average yield.

In 1993 and 1994, we expect real yield to decrease by 1.5 percent each year, then by 1.0 percent in 1995, and by 0.5 percent per year for the balance of the forecast period. On average for the

12-year forecast, real yield is expected to fall 0.7 percent per year in real terms and increase on average 3.1 percent annually in nominal terms.

Pacific Routes

Real yield in the Pacific markets decreased 0.8 percent in 1992, and increased 2.2 percent in current dollar terms. There is no significant change anticipated in these markets, and we expect a continued trend of moderate decrease in real yield.



Infrastructure development needs for the aviation industry in the Far East are significant. The forecast assumes that these infrastructure problems will be solved gradually, and not add significantly to present costs, especially delay costs. New airports are underway or planned in a number of locations. Without these developments, costs could rise in the area, making it necessary to charge higher fares to be profitable.

Real yield in the Pacific market is forecast to decrease an average of 0.6 percent per year during the forecast period. Nominal yield is forecast to increase an average of 3.2 percent per year during the same period. In 1993, the nominal yield is expected to increase 2.5 percent, to 13.1 cents per mile. In 1994, nominal yield is forecast to increase 2.8 percent to 13.4 cents per mile.

PASSENGER TRIP LENGTH

The average system passenger trip length (1,007.0 miles) increased by 20.2 miles in fiscal year 1992, largely the result of a change in the mix of domestic and international traffic. The primary reason for the large change is that Latin American enplanements, with a low average passenger trip length, declined, while other international enplanements, with very long trip lengths, increased.

Average trip length is forecast to increase by more than nine miles annually over the 12-year forecast period, reaching 1,117 miles by fiscal year 2004.

It should be noted that there can be unusual swings in individual market trend lines. The movement in any one year will depend largely on the fare policies adopted by U.S. air carriers and by changes in the mix of business/vacation and domestic/international travelers.

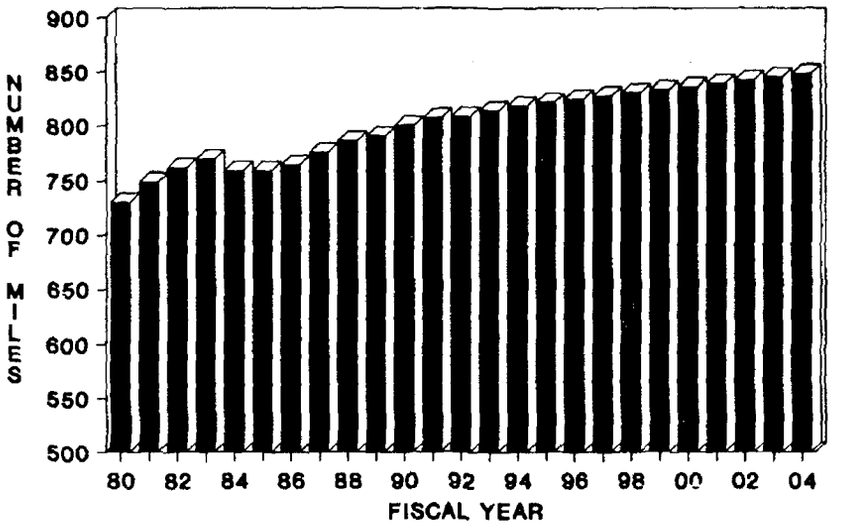
Domestic Passenger Trip Length

Over the 5 years from 1986 to 1991, the average domestic passenger trip length increased by 44 miles, growing from 764.1 miles in fiscal year 1986 to 807.7 miles in fiscal year 1991. However, the domestic passenger trip length increased only 0.7 miles in 1992.

We assume the average trip length will continue to increase, and will add three to six miles per year during the

U.S COMMERCIAL AIR CARRIERS
PASSENGER TRIP LENGTH

DOMESTIC



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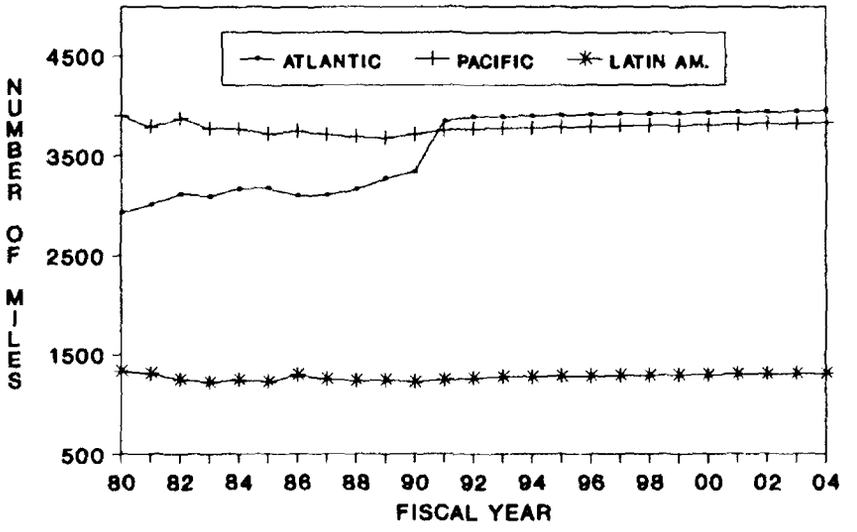


forecast period, increasing to 848 miles by 2004. This continues a trend, primarily caused by increased shifting of short distance services from large carriers to commuters.

International Passenger Trip Length

The international passenger trip length (3,015.2 miles) increased by almost 159 miles in fiscal year 1992. The increases over the past 5 years result largely from two factors. First, the relatively larger traffic growth in the longer haul transpacific markets tends to exert a disproportionate effect on the average international trip length. Second, the increase in the number of transatlantic gateways and the overflying of established gateways in both the U.S. and Europe have substantially increased the average transatlantic passenger trip length.

The change in 1992 was exceptional, and resulted because the short distance Latin American market enplanements decreased, while other markets, with trip lengths over 3,000 miles, increased.

The international trip length is projected to drop slightly in 1993 (to 2,994 miles) due to the recovery in Latin American markets and to increase slowly thereafter.

The individual international markets are expected to increase in trip length:

Atlantic trip length increases from 3,895 miles in 1992 to 3,955 miles in 2004.

Latin American trip length increases from 1,262 miles in 1992 to 1,309 miles in 2004.

Pacific trip length increases from 3,773 miles in 1992 to 3,835 miles in 2004.

AVERAGE AIRCRAFT SIZE

Between 1978 and 1983, the average system seating capacity of aircraft utilized by U.S. commercial air carriers increased by almost 20 seats (from 147.2 to 167.1 seats). Since 1983, however, the average seating capacity of the U.S. fleet has remained surprisingly stable, standing at 168.8 seats in 1992, up one seat from 1991, and less than two seats above 1983.

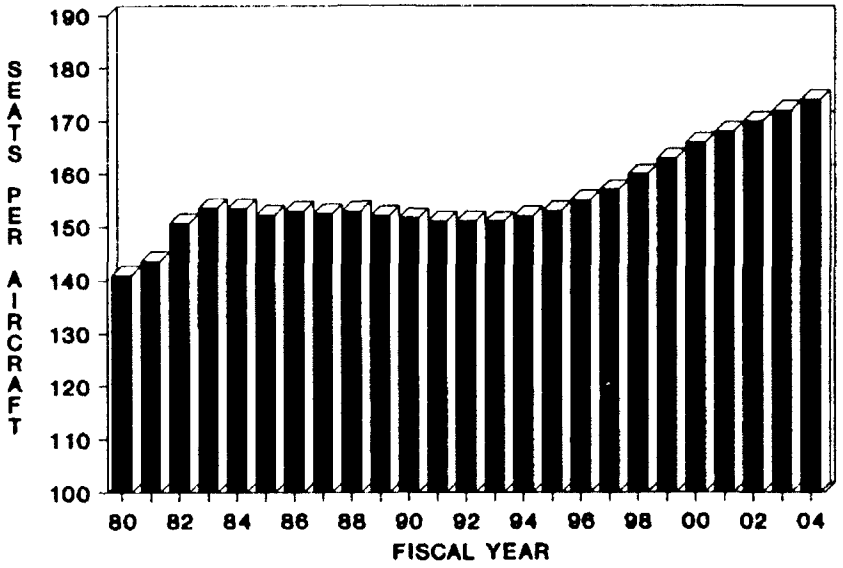
A number of factors are responsible for the constant average seating capacity of the U.S. airline fleet. These factors are: (1) deregulation, (2) generally declining fuel prices, (3) the continued expansion of hubbing route systems, and (4) the increased utilization of widebody twins on transatlantic routes.

New legislation will require stage-2 aircraft to be out of the U.S. fleet by January 1, 2000 (with waivers possible for some continued use until December 31, 2003). This legislation should result in the retirement of significant numbers of the smaller stage-2 fleet throughout the forecast period. This, added to the fact that the aircraft being delivered to the U.S. fleet are generally larger than the ones being replaced (the exception being the Fokker 100), should result in an increase in the average seating capacity of the air carrier fleet throughout the 12-year forecast period.

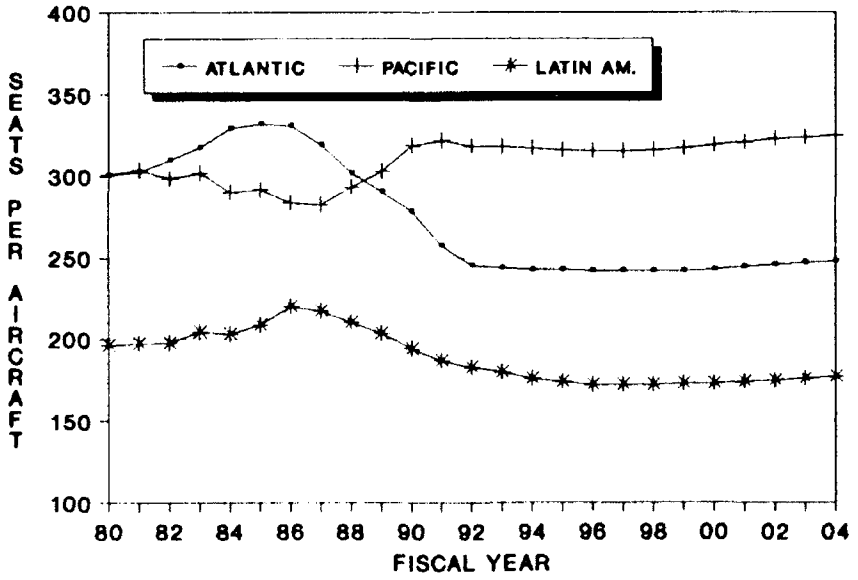
The forecast assumes that the average seating capacity of the U.S. commercial airline fleet will increase by an average of about two seats per year over the 12-year forecast period. In fiscal year 2004, U.S. air carrier aircraft are expected to have an average seating capacity of 195 seats. This forecast is lower than that made last year, for two primary reasons. First, 1992 saw a surprisingly small increase over 1991,

U.S COMMERCIAL AIR CARRIERS
SEATS PER AIRCRAFT

DOMESTIC SERVICE



INTERNATIONAL SERVICE



compared to what was expected. The increase was one seat, when an increase of three was expected. Second, U.S. airlines made a number of capital equipment decisions in 1992 that had the effect of stretching out or canceling orders for a number of larger aircraft. This has the effect of decreasing the size of the average aircraft in the future.

Domestic Routes
Average Aircraft Size

The average aircraft size of the domestic fleet remained virtually constant in the last decade. It stood at 150.7 in 1982 and has been within a few seats of that level each year, standing at 151.1 in 1992. This will change, with slow increases expected in average aircraft size as stage-2 aircraft are phased out of the fleet. By 2004, the average aircraft size should approximate 175.

International Routes
Average Aircraft Size

The average seating capacity of aircraft flown in international passenger service (255.2 seats in 1992) has declined by 37 seats since its peak of 292.2 in 1985. This decrease is largely a result of the increased utilization of the smaller two-engine widebody aircraft (B-767 and A-310) on both the transatlantic and Latin American routes. The increased presence of American, Delta, and United in the international travel arena should sustain this aircraft downsizing trend at least through the middle of the decade.

The main unknown in the Pacific area will be the extent of use of new aircraft like the B-777 or smaller twin engine aircraft such as the B-767 as more of these aircraft enter air carrier fleets. There may be marketing reasons for operating more of these aircraft, similar to their operation in the transatlantic markets. However, there are serious problems in the Asia-Pacific area that argue against widespread use of these aircraft, especially the shortage of capacity at the primary market, Tokyo. This forecast assumes that there will be increased use of aircraft smaller than the B-747, and that the average aircraft size in the Pacific market will remain roughly constant through the end of the century, then increase very moderately thereafter.

The average seating capacity of international passenger aircraft is expected to decrease somewhat in 1993, then remain roughly constant through the year 2000, and increase moderately thereafter. The market groups are expected to change as follows:

The Atlantic market average aircraft stood at 245.2 seats in 1992, down 12.5 seats from 1991. It is forecast to change very little in the future and to be at 248 seats in 2004.

The Latin American markets decreased 4.2 seats in 1992 to 182.8 seats. The average size will change little in the forecast period and stand at 177 seats in 2004.

The Pacific fleet averaged 318.1 seats in 1992, down almost four seats from 1991. It is forecast to remain basically constant until the end of the century, then increase slowly to 325 seats in 2004.

PASSENGER LOAD FACTOR

U.S. scheduled air carriers recorded a systemwide load factor of 63.8 percent in fiscal year 1992. This was a new record high load factor, beating the former high of 63.2 percent achieved in 1979. As discussed earlier, the industry had an extraordinary domestic load factor in the summer of 1992, but there was also a record high load factor in the international market.

Factors now affecting the industry are forecast to act together to create higher load factors in the next 5 to 6 years. In 1992, air carriers dramatically reduced their capital plans to delay or cancel aircraft they had on order. Every major carrier has made significant changes in its fleet plans. This will act to limit capacity increases in the short run. Absent new equipment, carriers can only increase capacity by increasing aircraft utilization or by changing the seating density of their aircraft. This is a limited source of capacity improvement. We assume that the capital plans of the scheduled carriers are relatively fixed for the next 5 years.

The industry has made decisions that will affect it for years and the implicit decision is that the industry must operate at higher load factors in order to make a reasonable financial return. Profitability for airlines is achieved by exceeding a moving target, namely the breakeven load factor. It is apparent that the breakeven load factor has increased in recent years, and even at a record load factor in 1992, the aviation industry had an operating loss of approximately $2 billion. Load factors, at least for the intermediate term, should increase as a result of fleet actions taken in 1992.

The air carrier industry seems to have improved marketing and capacity management in recent years to operate more efficiently--that is, with higher load factors. We expect that air carrier scheduling policies can adapt to this need for higher load factors during the forecast period. Therefore, it is expected that systemwide load factors will increase to almost 66 percent in fiscal years 1996 and 1997 and remain in the 64 to 65 percent range for the balance of the forecast.

Domestic Passenger Load Factor

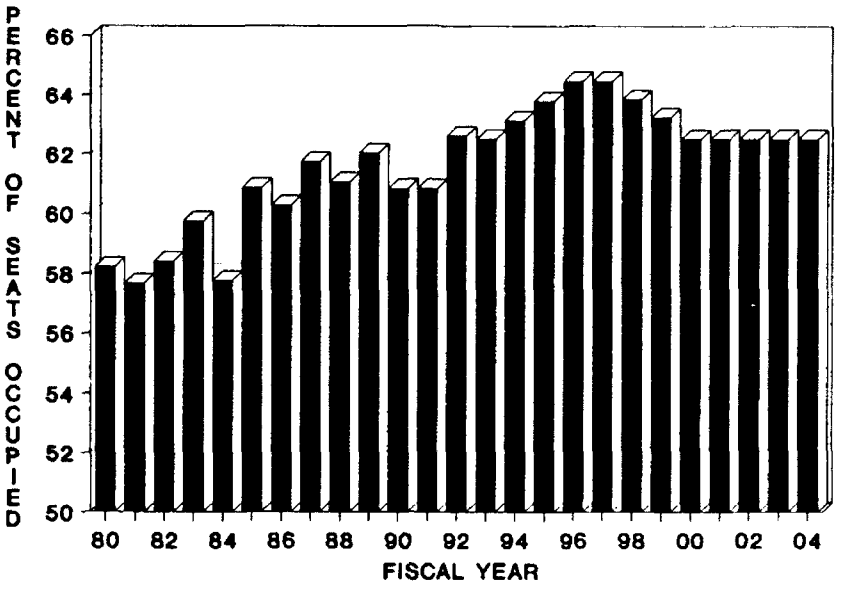
U.S. scheduled domestic air carriers achieved a load factor of 62.6 percent in fiscal year 1992, up 1.8 points from 1991. Airlines are capable of adjusting capacity levels to changing levels of demand. Domestic load factors have varied very little over the past 8 years, ranging from a low of 60.3 percent in 1986 to a high of 62.6 percent last year.

The extraordinary traffic in the domestic market that resulted from the peak season fare discounting was a major factor in 1992's high load factor. There have never been 2 months (July and August 1992) with such high load factors in recent years.

In 1993, we expect that capacity will increase only moderately, at 3 percent annually. This, coupled with about the same increase in RPMs, will result in a load factor of 62.5 percent for 1993. Beyond 1993, however, we expect that present fleet plans will provide capacity levels that should make load factor increase moderately, increasing to 64.5 percent in 1996 and 1997, before declining moderately to 62.5 percent in 2000. We believe that beyond 5 years, fleet plans are not set, so that capacity and traffic will be balanced at slightly lower load factor levels.

U.S COMMERCIAL AIR CARRIERS
PASSENGER LOAD FACTOR

DOMESTIC



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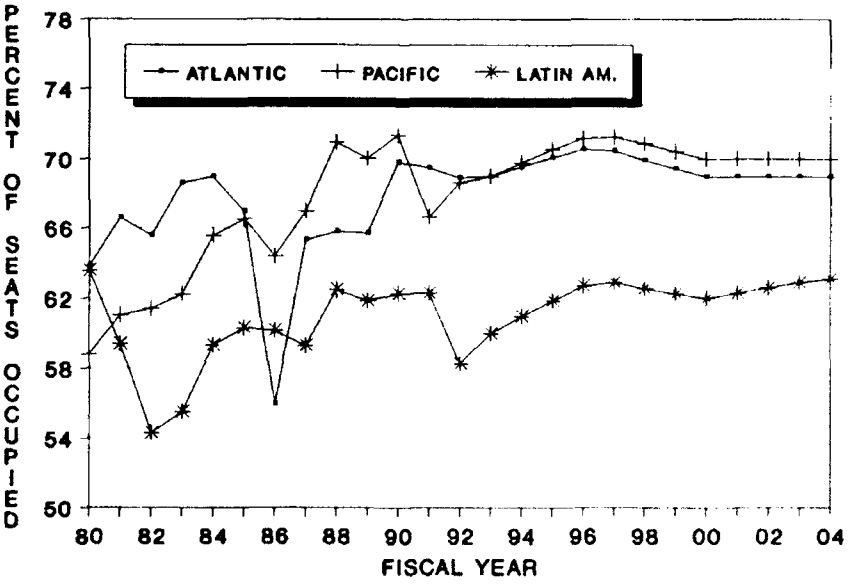


International Passenger Load Factor

The international load factor edged up to 67.1 percent from 67.0 percent in 1991. While lower than the record of 69.2 percent in 1990, it is still the second highest annual load factor in history.

The same forces that affect domestic capacity (fleet plans and breakeven load factors) affect international capacity. As in domestic markets, it appears that U.S. airlines are capable of adjusting their international capacity levels to changing levels of demand. The international load factor is forecast to increase moderately during the forecast period, reaching a level of 69.6 percent in 1996 and 1997, and remaining between 68 and 69 percent for the balance of the forecast period.

A load factor of approximately 70 percent may be a practical limit in the long term for international load factors, unless air carriers provide some new services that modify the market. Consistently exceeding these levels would involve greater sales of block space for low-priced travel, or perhaps a new means of selling last minute "fill-up" travel to fill what would otherwise be empty seats.

The expectations for the individual market segments are as follows:

In the Atlantic, the 1992 load factor was 68.9 percent, only slightly lower than achieved in the previous 2 years. We expect it to increase gradually to a peak of 70.6 percent in 1996, then to level off at 69 percent for the period of 2000 and beyond.

In Latin America, load factor declined to 58.3 percent in 1992, down four points from 1991. We forecast that it will increase to 60 percent in 1993, then increase during the forecast period to 63.1 percent in 2004.

In the Pacific, load factor increased to 68.6 percent in 1992, up two points from 1991. We forecast the load factor to increase gradually to a peak of 71.3 percent in 1997, then decline to a level of 70.0 percent for the period 2000 and beyond.

AIR CARRIER FORECASTS

The forecasts of air carrier demand are based on a specific set of assumptions, not the least of which is the economic and political environment in which they will take place. There are a number of uncertainties that could significantly alter the short- and/or long-term environment and cause the results to be significantly different from those forecast.

Some of the economic and/or political developments that could significantly alter the forecast results include, but are not limited to, the following:

(1) the current U.S. economic recovery could stagnate and/or take a longer time to get underway;

(2) oil prices could be much higher than predicted;

(3) economic problems in Europe and Japan could become more serious than expected, slowing growth in international markets, and;

(4) structural changes in the international markets could affect U.S. carrier shares, either positively or negatively.

As always, the network of bilateral pacts that the United States currently has in place in Europe, the Far East, and South America could significantly inhibit the expansion plans (current and future) of air carriers operating in these international regions and restrain traffic growth.

Three U.S. carriers--America West, Continental and Trans World Airways--are currently operating under Chapter 11 bankruptcy protection. Additional bankruptcies or liquidations of U.S. airlines could negatively affect the financial health of the industry, including the aircraft markets.

The driving force for a turnaround in the airline industry, especially in the short term, is the strength of the U.S. economy. If economic recovery occurs sooner or is stronger than predicted, passenger demand could be higher than forecast. On the other hand, if the economy stalls, and frequent travelers do not change their confidence levels, then traffic demand is likely to be lower than forecast.

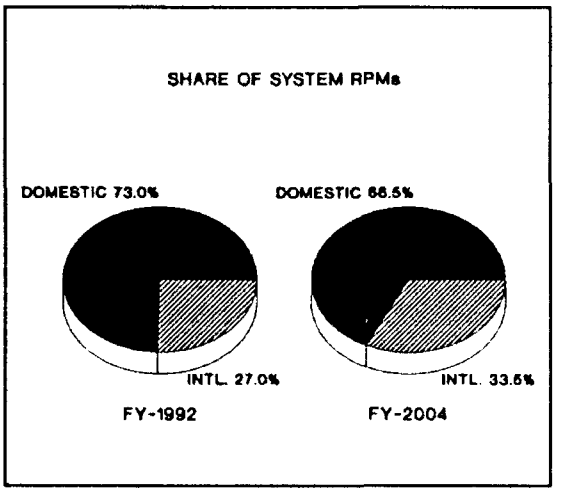
Additionally, this forecast has assumed that the U.S. commercial airline industry will continue to move toward greater concentration among a smaller number of larger airlines. Inherent in this assumption is a move toward a more rational industry pricing policy. These assumptions have been incorporated into the FAA forecast process by assuming a moderation in the long-term trend of declining real domestic passenger yields. The forecasts contained herein assume a gradual increase (0.2 percent annually) in real yields over the 12-year forecast period. Should the increase in real yields be considerably higher than forecast, then traffic levels could be significantly lower. Likewise, if fleet plans of air carriers change dramatically, load factors and utilization of equipment could be somewhat different than forecast.

On the other hand, should real passenger yields continue to fall throughout the forecast period, traffic could be higher than forecast. This last situation, however, would raise serious questions about the financial viability of the industry as we know it today.

REVENUE PASSENGER MILES

U.S. scheduled air carriers recorded a total of 474.6 billion revenue passenger miles in fiscal year 1992, up 6.2 percent. System passenger miles are forecast to increase to 494.7 billion in fiscal year 1993, an increase of 4.2 percent. The worldwide economic picture is expected to improve in 1994 and 1995, with RPMs forecast to increase 6.2 and 5.7 percent respectively in those years. After 1995, annual growth in RPMs is expected to be in the 4 to 5 percent range, and the overall average rate of growth from 1992 to 2004 is expected to be 4.7 percent.

International growth is anticipated to be somewhat higher than domestic growth, with the average annual international growth in RPMs during the 12-year forecast period being 6.6 percent,



versus 3.9 percent for the domestic market. In the year 2004, the international share of the U.S. carriers' system RPMs is expected to be 33.5 percent, up from 27.0 percent in 1992, and 21.1 percent in 1980.

Domestic Revenue Passenger Miles

Scheduled domestic passenger miles totaled 346.3 billion in fiscal year 1992, up 3.8 percent. Domestic traffic is projected to increase only slightly in 1993, with RPMs totaling 355.5 billion, up 2.6 percent. The relatively slow traffic growth in 1993 is largely due to the moderate growth of the U.S. general economy (real GNP up 2.4 percent), coupled with an increase in real yield of 2.4 percent.

In 1994 and 1995, with increased levels of activity in the U.S. economy (real GNP up 3.0 percent in 1994 and 2.7 percent in 1995) and no change in real yield, the forecast is for a higher rate of growth in domestic passenger demand. Domestic RPMs are forecast to increase to 5.5 percent in 1994 and 5 percent in 1995. RPMs are expected to grow thereafter at slightly lower annual growth rates, tapering from 4.5 percent growth in 1996 to 3.3 percent growth in 2004.

Tapered growth rates for the later years of the forecast period are consistent with recent history, and also reflect the slightly higher fares that are anticipated during the forecast period. Domestic real yield is expected to increase an average of one half percent per year from 1996 through the balance of the forecast period.

Domestic RPMs are projected to total 548.4 billion in fiscal year 2004, an average annual growth rate of 3.9 percent over the 12-year forecast period.

Although the FAA does not develop high/low scenarios, it is felt that, based on the assumptions that underlie the forecasts (moderate growth in real GNP and 0.5 percent growth in real yields), the forecasts represent not only a best case scenario but potentially, a high scenario as well. In other words, it is believed that most of the risk is on the downside, i.e., U.S. economic growth may be lower than projected and domestic real yields may increase at a higher rate than assumed Therefore, users of these forecasts should be aware that the actual long-term growth could be lower than projected.

International Revenue Passenger Miles

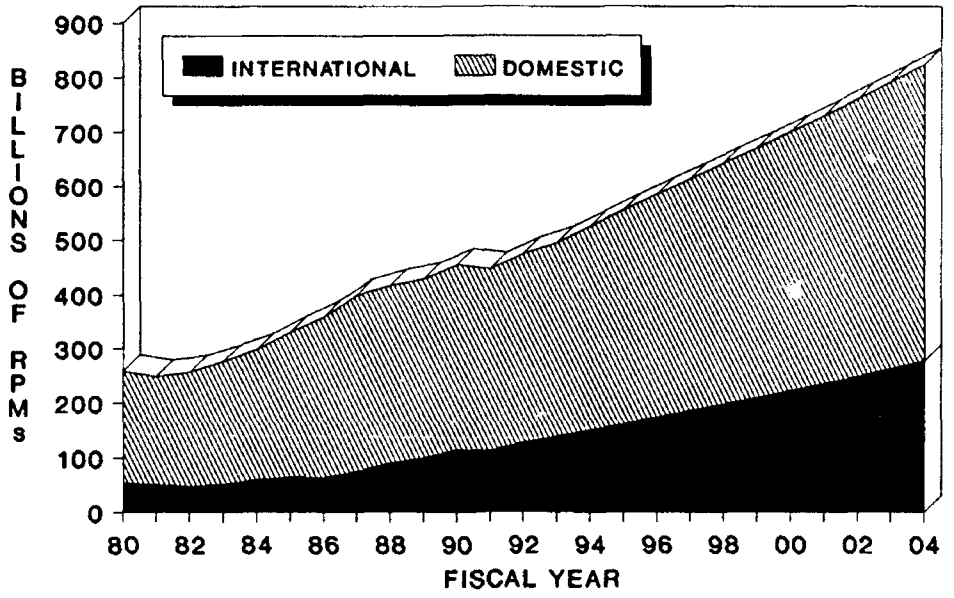
After experiencing a decrease in international RPMs in 1991, caused by the weak economy and the effects of the Gulf War, international RPMs grew almost 14 percent in 1992. The growth was uneven, however, with increases of 22.5 percent in Atlantic markets and 11.2 percent in Pacific markets, and a decline of 6.5 percent in Latin American markets.

Total RPMs in international markets are expected to more than double during the forecast period, from 128.3 billion in 1992 to 276.2 billion in 2004. The average annual growth rate over this period is 6.6 percent. This is 2.7 percentage points higher than the domestic growth rate, and continues a trend that will see a greater percentage of system RPMs in the international market.

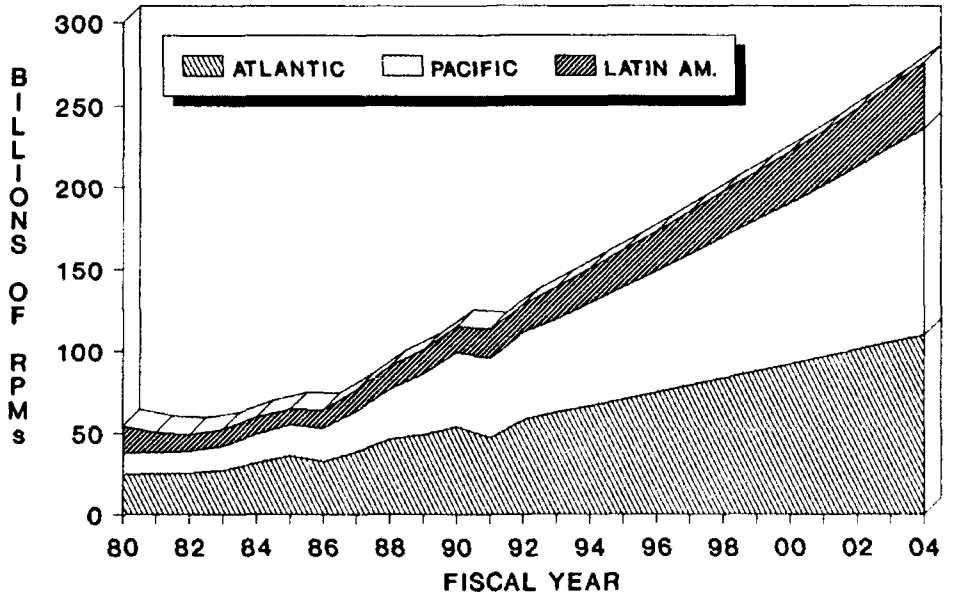
International RPMs are forecast to increase to 139.2 billion in 1993, up 8.5 percent, and to 150.3 billion in 1994, up 8 percent.

The relative importance of international market areas changes during the forecast period, with Atlantic RPMs decreasing from 45.0 percent of the total in 1992 to 39.8 percent in 2004.

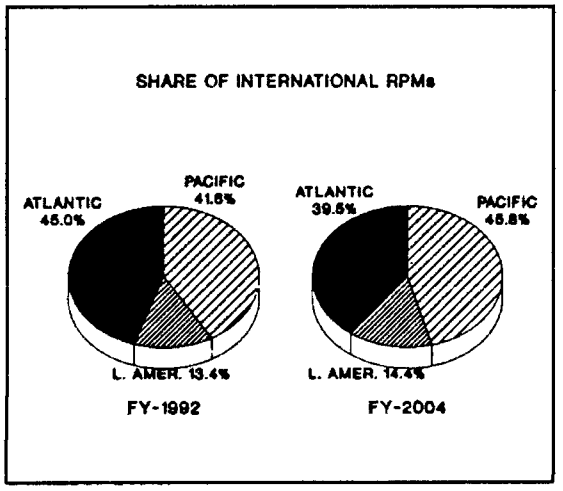
U.S. COMMERCIAL AIR CARRIERS
SCHEDULED REVENUE PASSENGER MILES



SCHEDULED INTERNATIONAL RPMS
BY TRAVEL REGION



The shares of the other two market entities increase during the forecast period, with Latin American RPMs increasing from 13.4 percent in 1992 to 14.4 percent in 2004, and Pacific RPMs increasing from 41.6 percent in 1992 to 45.8 percent in 2004. These changes result from the differing market growth rates anticipated during the forecast period.



Atlantic Routes

Scheduled revenue passenger miles on transatlantic routes totaled 57.8 billion in fiscal year 1992, up 22.5 percent from 1991's depressed level. Transatlantic RPMs are expected to increase by 7.9 percent in 1993, to 62.3 billion. This represents a return to normal growth in the market.

Traffic growth is expected to remain strong in transatlantic markets after 1993, averaging 5.5 percent annually during the full 12 years of the forecast period. Atlantic RPMs are forecast to increase to 66.1 billion in 1994 and to 70.1 billion in 1995. In 2004, Atlantic route RPMs are forecast to total 109.9 billion.

Latin American Routes

Latin American passenger miles totaled 17.1 billion in fiscal year 1992, down 6.5 percent from 1991. This result appears to be due to the changeover from Pan American to United Airlines on a number of routes, with United getting a slower start on the routes than expected. It is also due to a sharp increase in real yield of almost 12 percent. This is the sharpest year over year change in real yield in any international market in the period since 1970.

Strong economic growth is forecast for most Latin American countries, and United's capacity and traffic in 1993 is expected to increase significantly over 1992, as United continues the development of former Pan American routes.

RPMs in 1993 are expected to rebound some 13.9 percent over 1992, and growth after 1993 is expected to be good, with average annual growth of RPMs of 7.3 percent during the forecast period. RPMs will increase during the forecast period by more than double 1992's traffic and will total 39.9 billion RPMs in the year 2004.

Pacific Routes

Passenger demand between the United States and the Pacific showed moderate growth in fiscal year 1992, with RPMs totaling 53.4 billion, up 11.2 percent. This was a rebound after the slow growth of 5.9 percent in 1991. The market area has been affected by relatively slower growth in Japan's economy, with ripple effects felt in many other Asian economies.

Growth in 1993 is expected to be moderate, reflecting continued weakness in the Japanese economy. RPMs are expected to total 57.4 billion, up 7.5 percent. Growth beyond 1993 should improve somewhat, with 9.9 percent

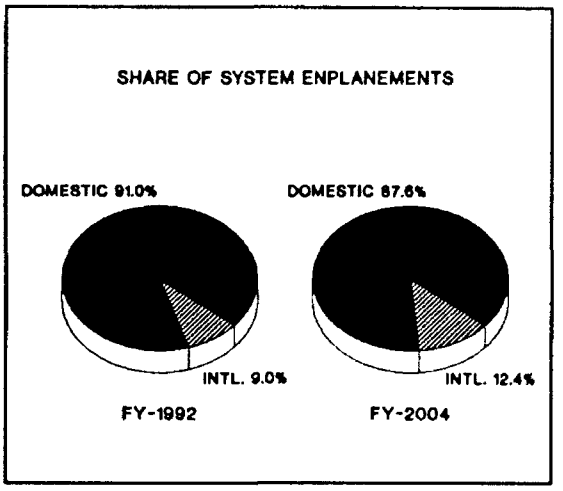
growth anticipated in 1994 and 9 percent expected in 1995. Annual growth rates should taper off beyond 1995, and are expected to average 7.4 percent during the full 12-year forecast period. By 2004, we forecast 126.4 billion RPMs in the Pacific market, up 135 percent from 1992.

One wild card in the later years of this forecast is the development of China and the extent of trade and travel between the United States and China. China represents a vast market potential whose dimensions are difficult to estimate.

PASSENGER ENPLANEMENTS

In fiscal year 1992, U.S. scheduled air carriers enplaned a total of 471.3 million passengers, up 4.0 percent. The gradual recovery of the U.S. economy is expected to result in moderate traffic growth in 1993, followed by somewhat higher volumes in 1994 and 1995. System passenger enplanements are forecast to increase to 483.2 million in 1993, up 2.5 percent, with increases of 5.3 percent in 1994 and 4.9 percent in 1995. Thereafter, the growth rate will taper off, similar to the change in RPMs discussed above. Overall average annual growth of enplanements for the 12-year forecast period is expected to be 3.8 percent. Enplanements grow at a slightly lower rate than RPMs because of the gradual increase in average trip length.

In 1992, 91.0 percent of enplanements were domestic. This will drop slightly to 87.6 percent in 2004.



Domestic Passenger Enplanements

U.S. scheduled domestic air carriers enplaned a total of 428.8 million passengers in fiscal year 1992, up 3.7 percent. The fare wars in 1992, which affected even the peak season travel, were largely responsible for the growth in 1992. Domestic passenger enplanements are forecast to increase to 436.7 million in fiscal year 1993, up 1.8 percent.

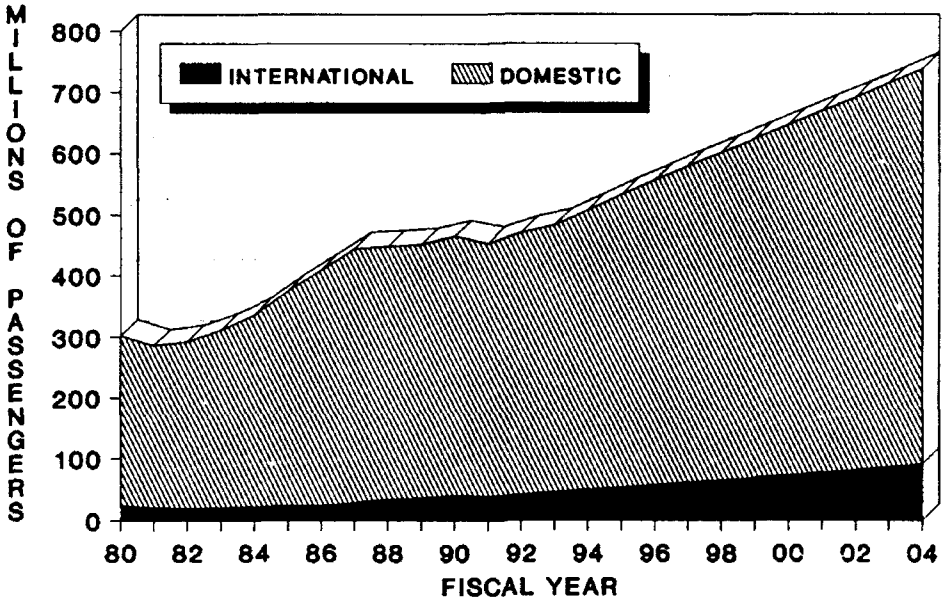
Domestic passenger enplanements are forecast to increase to 458.6 million in 1994 and to 479.8 million in 1995.

The projected growth in domestic enplanements is expected to average 3.5 percent annually during the 12-year forecast period, with the number of domestic enplanements reaching 646.7 million in fiscal year 2004.

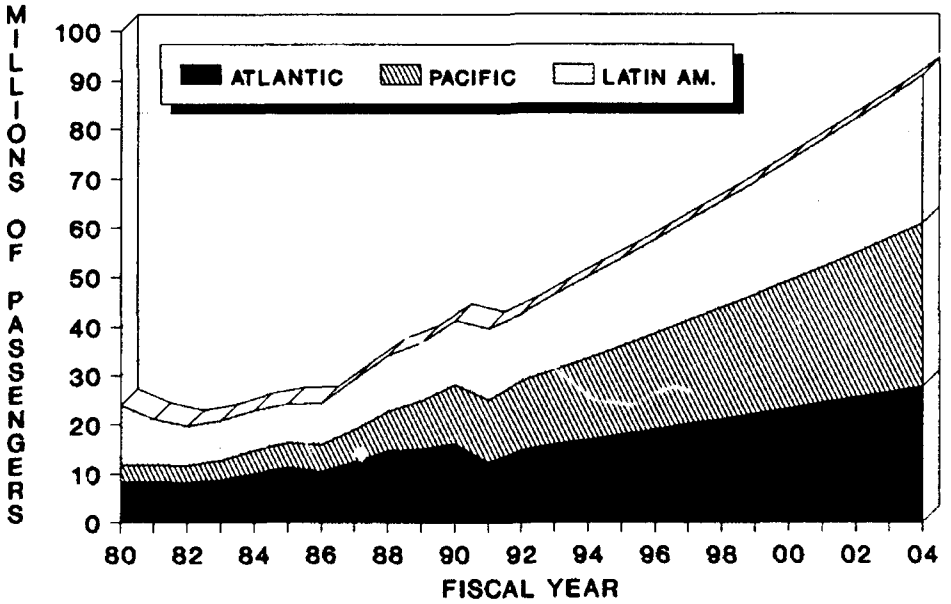
International Passenger Enplanements

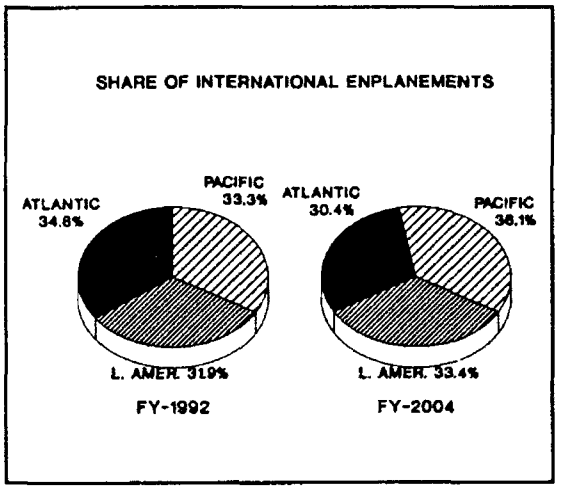
A total of 42.5 million passengers were enplaned by U.S. scheduled international airlines in fiscal year 1992, up 7.1 percent. International enplanements are forecast to increase to 46.5 million in 1993, up 9.3 percent.

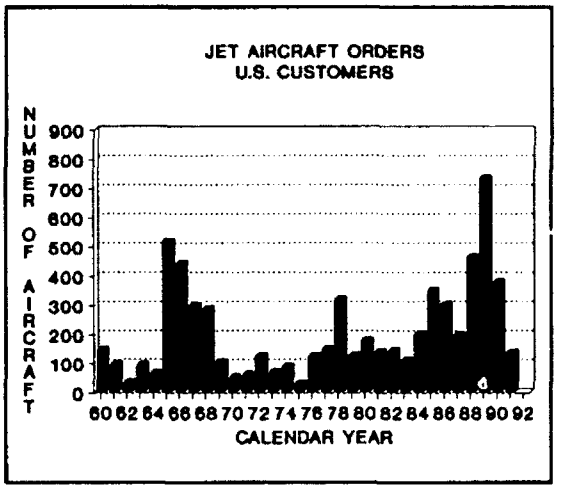
U.S. COMMERCIAL AIR CARRIERS
SCHEDULED PASSENGER ENPLANEMENTS



SCHEDULED INTERNATIONAL ENPLANEMENTS
BY TRAVEL REGIONS







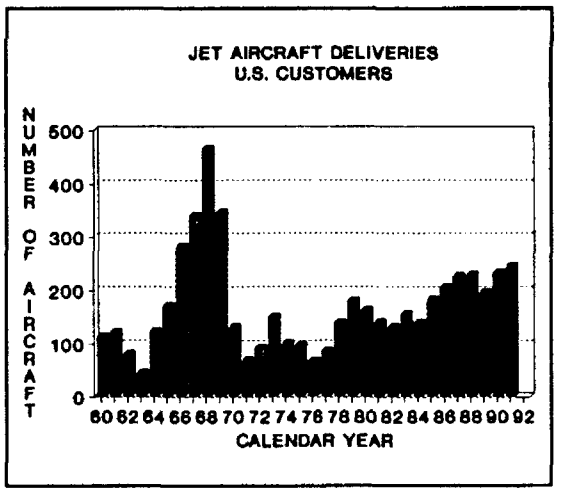
Enplanements will grow at about the same rate as RPMs. The average annual rate of growth during the forecast period will be 6.6 percent. The individual international markets will all see significant growth during the forecast period:

Atlantic enplanements will increase from 14.8 million in 1992 to 27.8 million in 2004, an average annual increase of 5.4 percent;

Latin American enplanements will increase from 13.6 million in 1992 to 30.5 million in 2004, an average annual increase of 7.0 percent; and

Pacific enplanements will increase from 14.2 million in 1992 to 33 million in 2004, an average annual increase of 7.3 percent.

Aircraft manufacturers delivered approximately 820 large jet aircraft worldwide in 1992. Of this total, 602 (73.4 percent) were two-engine narrowbody aircraft.



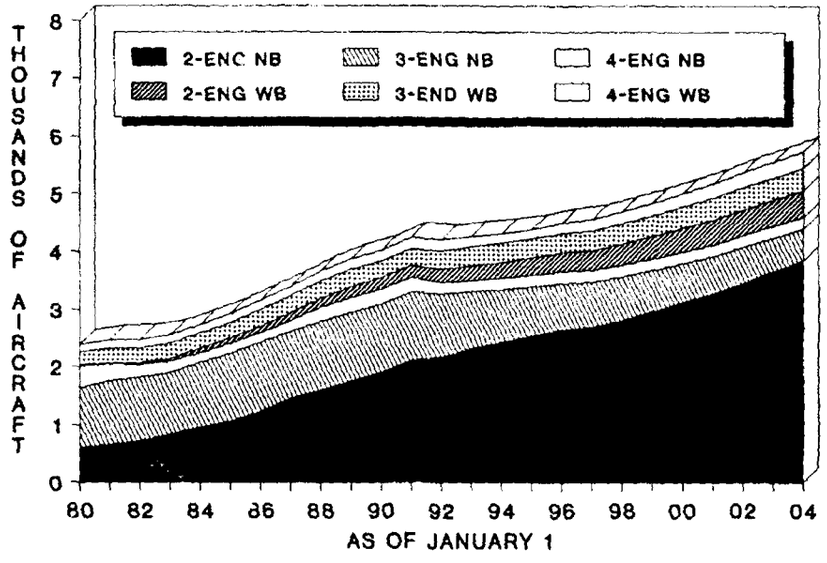
AIR CARRIER FLEET

World air carriers placed orders for an estimated 411 large jet aircraft with U.S. and foreign aircraft manufacturers during 1992, 30.9 percent fewer orders than in fiscal year 1991. Of this total, 265 (64.5 percent) were for two-engine narrowbody (B-737, B-757, MD-80, and F-100) aircraft.

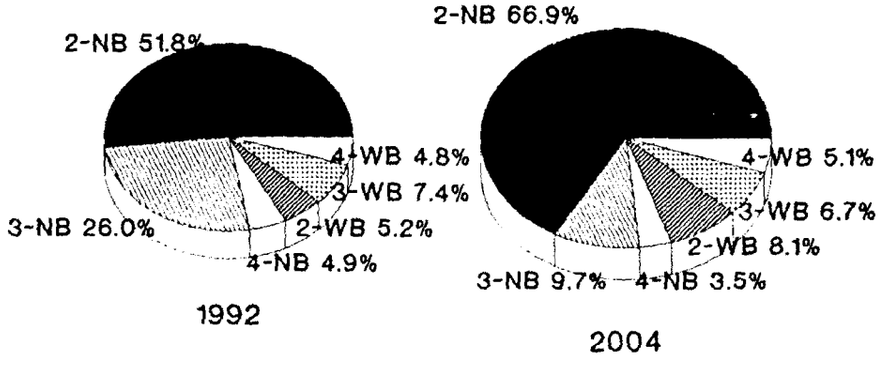
Looking at the year ending December 1992, the fleet for U.S. air carriers increased by an estimated 59 aircraft, an increase of 1.4 percent. This compares to 1991, when the fleet declined by 46 aircraft. Fleet changes in 1992 were similar to changes which occurred in 1991, namely a steep increase in stage-3 aircraft (up 292 aircraft or 14.0 percent) and a steep

U.S. COMMERCIAL AIR CARRIERS

LARGE JET AIRCRAFT



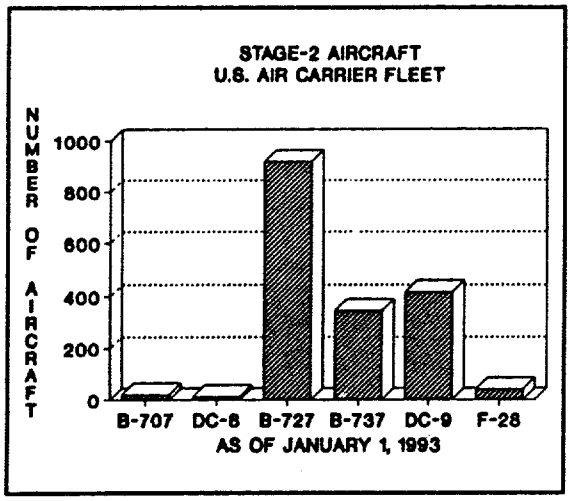
PERCENT DISTRIBUTION BY AIRCRAFT TYPE



decline in stage-2 aircraft (down 201 aircraft or 10.3 percent).

This forecast assumes a 25-year life cycle for large jet aircraft. However, the forecast also follows the guidelines of the national noise legislation. In particular, stage-2 aircraft are to be withdrawn from the U.S. fleet by the end of 1999.

At the end of 1992, there were approximately 1,756 stage-2 aircraft (41.1 percent of the total fleet) remaining in the U.S. air carrier jet fleet. The forecast reflects a decreasing number of stage-2 aircraft in the fleet in each year.



Numerous changes were made in the fleet plans of air carriers in fiscal year 1992. The major effects of these changes are to reduce the number of aircraft on order and option, and to delay delivery of aircraft on order. Additional carrier fleet plans could stretch out the life of some existing stage-2 aircraft by either re-engining or hush-kitting existing aircraft. These changes have been incorporated into our fleet forecast. (As this publication goes to press, United Airlines has announced additional fleet changes, including delivery delays. These changes are not included in the current forecast.) Of course, our forecast goes beyond the period covered by existing fleet plans, so future aircraft deliveries are assumed adequate to serve the forecast of demand.

Based on the backlog of aircraft orders and the projections of air carrier traffic, seat capacity, load factors, and fleet requirements, the U.S. commercial air carrier fleet is projected to increase from an inventory of 4,206 aircraft on January 1, 1992, to 5,747 aircraft by January 1, 2004. This involves a net addition to the fleet (after retirements of obsolete aircraft) of approximately 128 aircraft annually (2.6 percent annually).

By far the largest increase, in terms of number of aircraft, is projected to occur in the two-engine narrowbody aircraft category, which is expected to grow by an average of 139 aircraft (4.8 percent) annually. By the year 2004, two-engine narrowbody aircraft are expected to total 3,843 units and to account for 66.9 percent of the fleet, up from 51.8 percent in 1992.

Three-engine narrowbody (B-727) aircraft are expected to decline from 1,093 aircraft (26.0 percent of fleet) in 1992 to 557 (9.7 percent of fleet) in the year 2004. Four-engine narrowbody aircraft will remain virtually unchanged, from 204 aircraft in 1992 to 203 aircraft in 2004. All remaining three- and four-engine stage-2 aircraft must be modified by the end of 1999 to satisfy noise regulations.

Widebody aircraft, which accounted for 17.4 percent of the fleet in 1992, are expected to account for 19.9 percent in 2004. The two-engine widebody fleet (A-300/310/330, B-767, and B-777) aircraft are the fastest growing of the widebody group. These are expected to increase by an average of 26 aircraft per year (8.0 percent), from 221 aircraft in 1992 to 532 aircraft in 2004.

Four-engine widebody (B-747 and A-340) aircraft are forecast to increase from 201 aircraft in 1992 to 226 aircraft in

2004, an annual increase that averages 1.0 percent. This category declines until 1995, due to retirement of the oldest B-747 aircraft, but increases thereafter. The three-engine widebody fleet (MD-11, DC-10, and L-1011) is projected to grow from 309 aircraft in 1992 to 386 aircraft in 2004, an average of 1.9 percent annually.

AIRBORNE HOURS

U.S. commercial air carriers flew an estimated total of 10.6 million hours in fiscal year 1992, up from 10.5 million hours in 1991. Two aircraft categories accounted for three-fourths of total airborne hours: two-engine narrowbody aircraft (56.5 percent) and three-engine narrowbody (19.0 percent). In fiscal year 2004, the number of hours is forecast to increase to 15.7 million, an average annual increase of 3.3 percent.

Airborne hours are forecast to increase 2.6 percent in 1993 to 10.9 million, and 4.7 percent in 1994, to 11.4 million. Airborne hours generally increase at rates similar to the rate of growth of traffic, with some adjustment made for moderate increase in the average aircraft size.

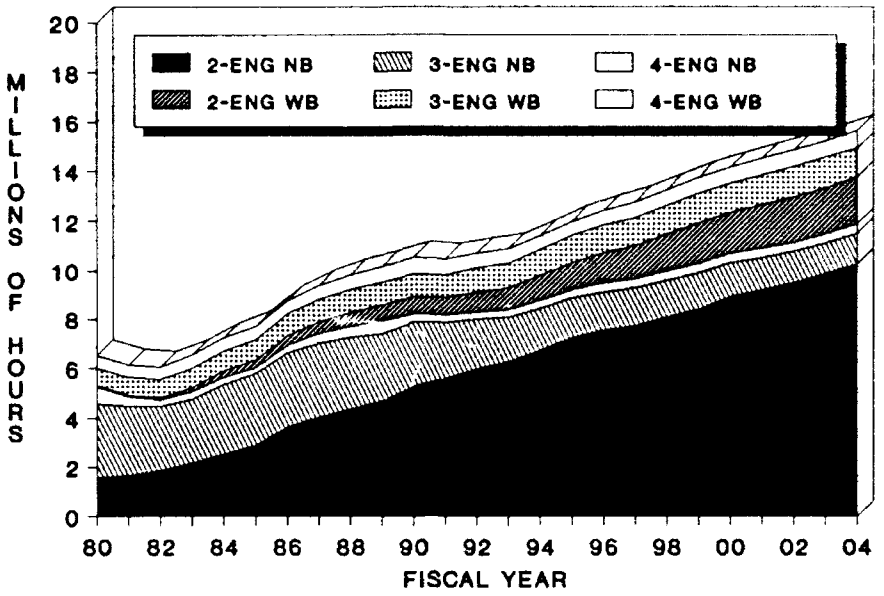
Two-engine aircraft (both narrowbody and widebody) are projected to account for 78.9 percent of all airborne hours flown in fiscal year 2004. Narrowbody two-engine aircraft make up 66.9 percent of hours in 2004, up an average of 4.8 percent per year. Widebody two-engine aircraft make up 12.0 percent of the hours in 2004, up an average of 7.2 percent per year.

The number of hours flown by three-engine widebody aircraft is forecast to increase 2.8 percent annually during the forecast period, although the share of hours will decrease from 9.0 percent in 1992 to 7.4 percent in 2004. The share for four-engine widebody aircraft will also decrease, from 5.5 percent in 1992 to 4.6 percent in 2004, although the hours increase by an average annual rate of 0.4 percent.

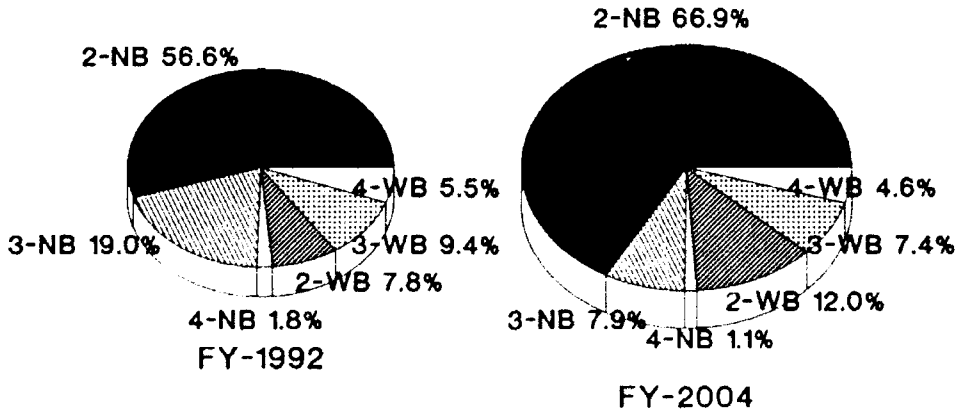
Hours flown by three-engine narrowbody aircraft will decline significantly over the forecast period. The number of aircraft decrease significantly, as do the hours. Hours for this aircraft type drop from 2.0 million in 1992 to 1.2 million in 2004, or 38.5 percent. This reflects the retirement of large numbers of B-727 aircraft during the forecast period. Hours for the four-engine narrowbody fleet, made up primarily of DC-8's, are expected to remain virtually unchanged. These aircraft have to be modified by 2000 to satisfy noise rules.

U.S. COMMERCIAL AIR CARRIERS

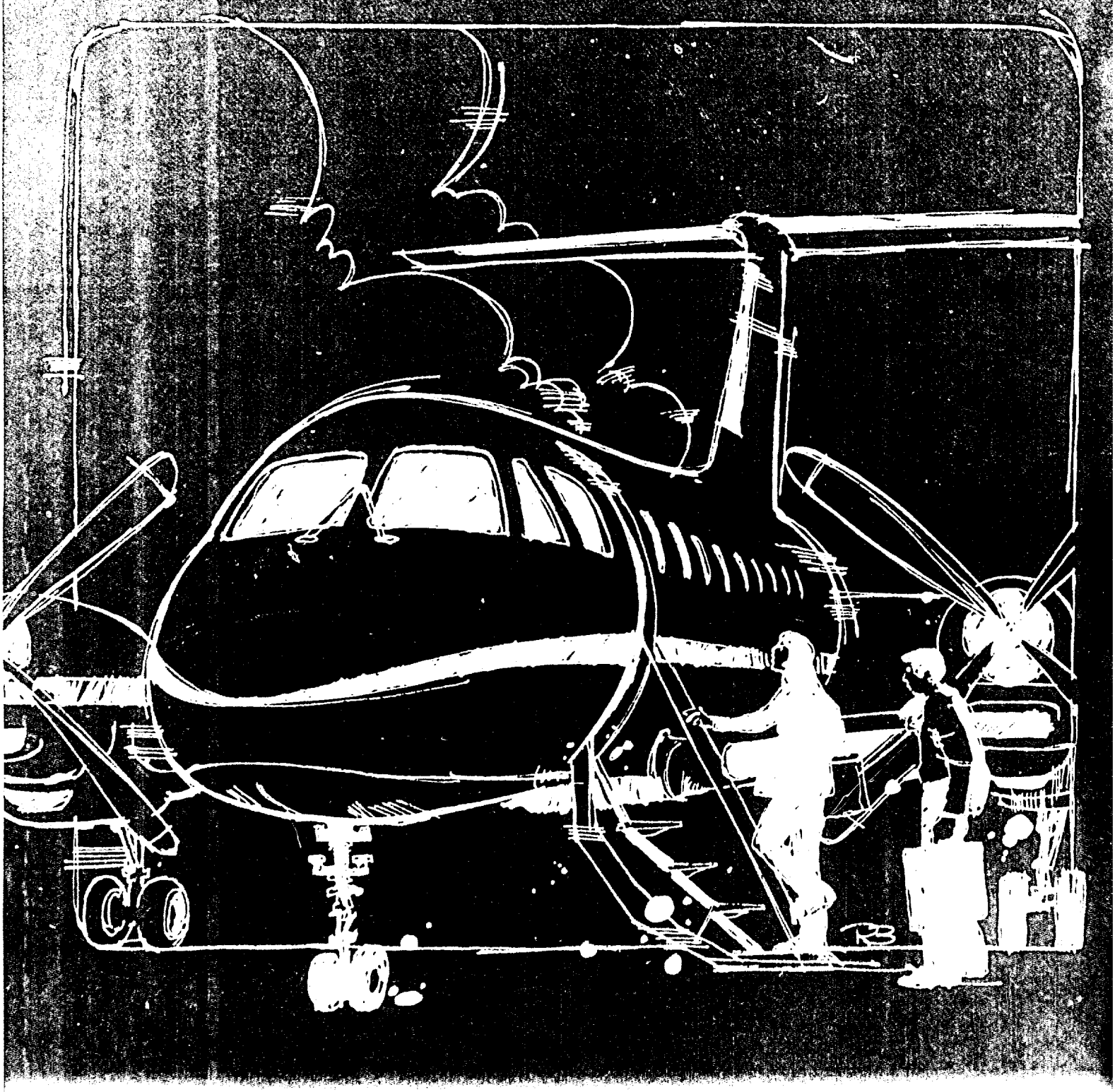
AIRBORNE HOURS



PERCENT DISTRIBUTION BY AIRCRAFT TYPE



CHAPTER IV
REGIONALS/COMMUTERS



CHAPTER IV

REGIONALS/COMMUTERS

The regional/commuter airline industry, for the purpose of this forecast, is defined as those air carriers that provide regularly scheduled passenger service and whose fleets are composed predominantly of aircraft having 60 seats or less. During 1992, 140 regional/commuter airlines reported traffic data to RSPA on Form 298-C. (A listing of these carriers is presented in Appendix E.) The FAA historical data base includes activity for all regional/commuters operating in the 48 contiguous states, Hawaii, Puerto Rico, and the U.S. Virgin Islands. Excluded from the data base is activity in Alaska, other U.S. territories, and foreign territories. Additionally, the regional/commuter traffic statistics include duplicated data for selected operators included in the commercial air carrier traffic statistics. The duplication is for those air carriers operating both large jets (over 60 seats) and commuter type aircraft (see technical notes at the beginning of Chapter IX for Table 10 and Table 19).

REVIEW OF 1992

Since 1984, the regional/commuter airline industry has been in a period of transition. In 1985, there was a dramatic growth in the number of code-sharing agreements with the major air carriers. This was followed in 1986 by a wave of large jet air carrier acquisitions of, or equity interest in, their regional/commuter code-sharing partners. These actions have resulted in a process of industry consolidation, increasing concentration, and increasing integration with the large commercial air carriers that has continued through 1992.

INDUSTRY SUMMARY

During fiscal year 1992 the number of regional/commuter airlines totaled 140, compared to 151 in 1991. While the number of reporting airlines declined, industry growth continued to out-pace the growth of the larger air carriers.

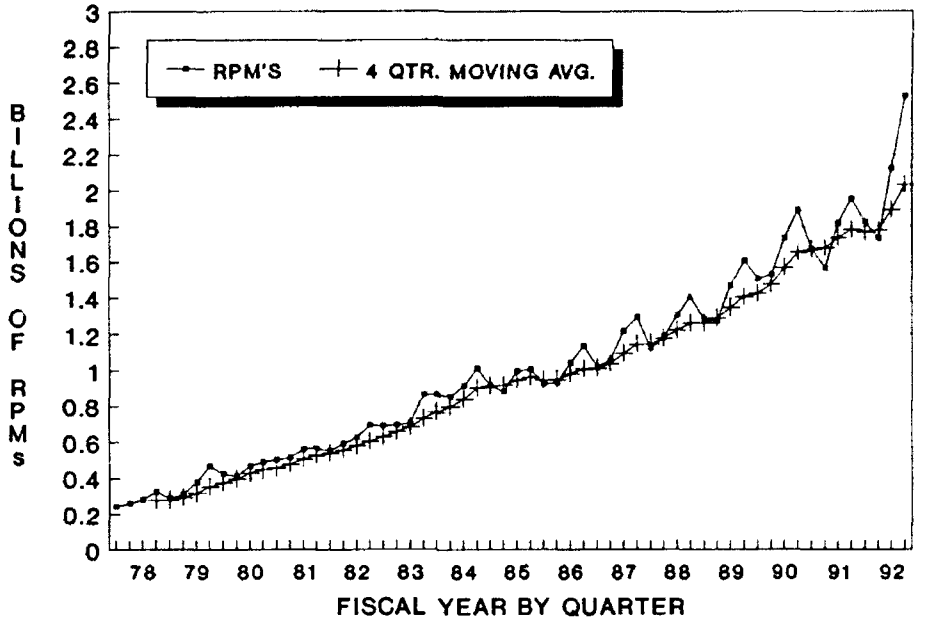
REVENUE PASSENGER ENPLANEMENTS

Total revenue passenger enplanements for the regional/commuter airlines, including Alaska and foreign territories, totaled 45.1 million, an increase of 11.9 percent compared to 1991. Excluding Alaska and foreign territories, enplanements totaled 42.8 million, up 10.6 percent over 1991.

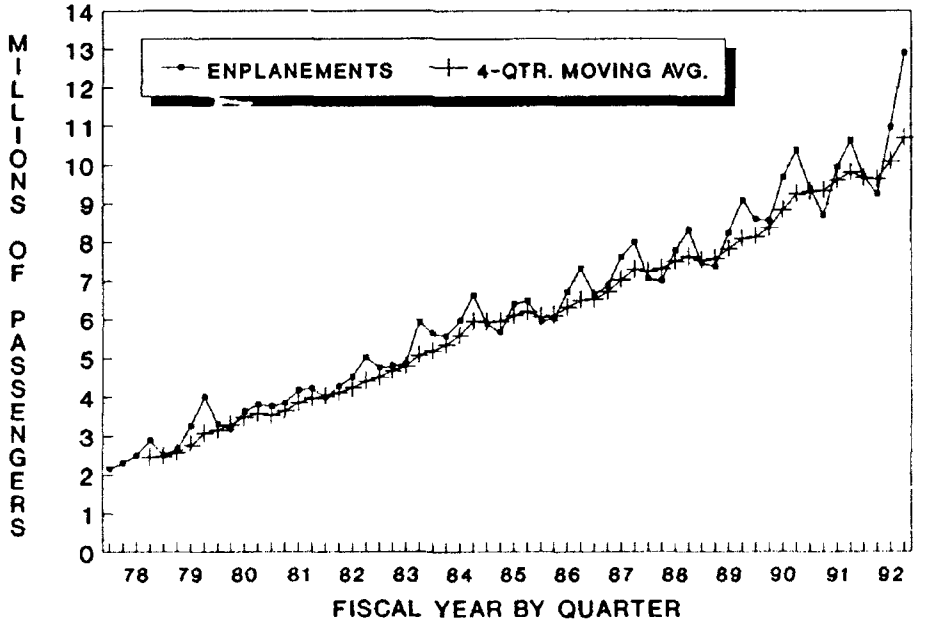
For the 48 contiguous states, enplanements increased 11.4 percent to 41.2 million. Enplanements in Hawaii,

U.S. REGIONALS/COMMUTERS TRAFFIC TRENDS

REVENUE PASSENGER MILES



PASSENGER ENPLANEMENTS



Puerto Rico, and the Virgin Islands totaled 1.6 million--down from the 1.7 million reported in 1991.

Enplanements in Hawaii were unchanged compared to 1991. In contrast to Hawaiian traffic, enplanements in Puerto Rico and the Virgin Islands posted a decline of 7.7 percent.

While not included in the forecast base, enplanements in Alaska and foreign territories totaled 2.1 million, an increase of 31.3 percent compared to 1991. Enplanements in Alaska were up 20.4 percent and all other areas increased 53.2 percent.

REVENUE PASSENGER MILES

Revenue passenger miles (RPMs) totaled just over 8.6 billion in 1992, an increase of 17.8 percent from 1991. For the 48 states, revenue passenger miles increased 17.4 percent in 1992 to just under 8.1 billion. The reason for the significantly higher growth in RPMs relative to passenger enplanements is that the average passenger trip length increased by 10.2 miles in 1992 to 195.9 miles.

Passenger miles in Hawaii, Puerto Rico, and the Virgin Islands decreased 1.8 percent to 137.0 million, while in Alaska and other areas, revenue passenger miles totaled 402 million, an increase of 31.4 percent compared to 1991.

INDUSTRY COMPOSITION

The fundamental character of the regional/commuter industry has changed dramatically since the mid-1980s. These changes range from the relative size and sophistication of airline operations, the players involved (especially the dominant industry operators), and aircraft fleets, to the industry's relationship with the large commercial air carriers in the national air transportation system. While the role of the industry, in the past and today, is to provide feeder service to the large hubs served by the large commercial air carriers, the exact scope and relationships of its role have changed dramatically.

In 1992 the composition of the regional/commuter airline industry continued to evolve. The factors contributing to this change included economic and competitive influences and marketing strategies and alliances. Two distinct but interrelated trends form the basis for the changing character and composition of the industry since the mid-1980s. They are industry consolidation and increasing integration of operations with the larger air carriers.

INDUSTRY CONSOLIDATION

From a high of about 250 carriers in 1981, the number of regional/commuter operators has declined to 140 in 1992. The 140 operators in 1992 represents a drop of 11 carriers compared to 1991 when 151 carriers reported traffic data to RSPA. Of the 151 carriers that reported traffic data in 1991, 132 were in operation at the end of the year. Of the total of 140 carriers which operated in 1991, 128 were still in operation at the end of the year. Because of the increased integration of operations with the large air carriers (through code-sharing agreements and acquisition of regionals totally or in part), the success of many regionals is tied closely to the success of their larger partners. During 1992, this was evidenced by the demise of several large regional air carriers. The most

TOP 50

REGIONAL/COMMUTER AIRLINES

RANKED BY TOTAL PASSENGER ENPLANEMENTS

FISCAL YEAR 1992

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1. Continental Express
2. Flagship Airlines
3. Atlantic Southeast
4. Horizon
5. Simmons

6. WestAir
7. Comair
8. Henson
9. Pennsylvania Airlines
10. Business Express

11. MetroFlight Airlines
12. Express Airline I
13. SkyWest Airlines
14. Trans States Airlines
15. Mesa Air Shuttle

16. Mesaba Aviation
17. Wings West Airlines
18. Executive Airlines
19. CCAir
20. Trans World Express

21. Jetstream International
22. Atlantic Coast Airlines
23. Chautauqua Airlines
24. Air Midwest
25. Commutair

26. Crown Airways
27. Aloha IslandAir
28. Great Lakes Airlines
29. StatesWest
30. Paradise Island

31. Sunaire
32. Scenic Airlines
33. Precision Airlines
34. ERA Aviation
35. Northeast Express Regional

36. MarkAir Express
37. Viequies Air Link
38. Pan Am Express*
39. Air Cape
40. Conquest Airlines

41. Peninsula Airways
42. Jet Express
43. Airways International
44. Air Nevada
45. GP Express Airlines

46. Lone Star Airlines
47. Charter One Airlines
48. Samoa Air
49. Midway Commuter*
50. Yute Air Alaska

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* These reporting entities were no longer operating at the end of FY 1992.

Source: RSPA Form 298-C and Form 41 enplanement data

TOP 30 CORPORATE STRUCTURES

Carrier/ Carrier Group	Percent of Industry Enplanements	Carrier/ Carrier Group	Percent of Industry Enplanements
1. American	17.0	16. Chautauqua	1.2
2. Delta	13.3	17. Commutair	.8
3. USAir	11.1	18. Crown Airways	.8
4. Mesa	8.6	19. Aloha IslandAir	.8
5. Texas Air	8.1	20. Great Lakes	.8
6. Alaska	5.1	21. StatesWest	.8
7. Business Express	4.3	22. Paradise Island	.8
8. Metro	3.8	23. Sunaire	.7
9. Express Airline I	3.8	24. Scenic	.7
10. Trans States	2.9	25. ERA Aviation	.6
11. Mesaba	2.6	26. Mark Air Express	.6
12. CCAir	2.0	27. Viequies Air Link	.3
13. Trans World Express	1.7	28. Pan Am Express	.3
14. Atlantic Coast	1.3	29. Air Cape	.3
15. Northeast Express	1.2	30. Conquest	.2

notable are Midway Commuter and Pan Am Express, which shut down as a result of the failure of the larger carriers which owned them. At the present time, there is no reason to assume that the trend towards greater consolidation of the regional/commuter industry will not continue.

INDUSTRY CONCENTRATION

While the number of carriers has declined, the size of the dominant industry carriers has increased dramatically. This has resulted in increased industry concentration with the top 50 carriers accounting for approximately 98.0 percent of total industry passenger enplanements in 1992, up from 96.1 percent in 1991. While total enplanements increased by 11.9 percent in 1992, the top 50 carriers grew at a slightly higher rate (12.8 percent). The top 50 carriers for 1992 are listed in the table on page IV-4. Although the relative ranking has changed for many carriers, the composition of the group is basically unchanged from 1991.

The above data are based on RSPA Form 298-C and Form 41 reporting entities. However, looking at the industry only in this manner does not reflect the true level of industry consolidation, concentration, and integration with the larger air carriers. Many of the carriers are owned, totally or in part, by their larger code-sharing partners, and still others are owned by other regionals. A better picture of the current industry composition is presented by looking at the industry from a corporate structure point of view. A

AIR CARRIER/COMMUTER AIRLINES CODE-SHARING AGREEMENTS

Air Carrier Program Name	Designated Commuter Carrier	Hubs Served
1. Alaska Airlines	Horizon*	Boise Portland Seattle Spokane
2. Aloha Airlines	Aloha IslandAir	Honolulu
3. America West Express	Mesa	Phoenix
4. American Eagle	Executive Airlines	San Juan
	Flagship Airlines	Boston Miami Nashville New York Raleigh/Durham
	Metro	Dallas/Ft. Worth
	Simmons	Chicago
	Wings West	Los Angeles San Jose
5. Continental Express	Continental Express	Cleveland Houston Newark Denver
6. Delta Connection	Atlantic Southeast	Atlanta Dallas/Ft. Worth
	Business Express	Boston New York
	Comair	Cincinnati Florida
	SkyWest	Los Angeles Salt Lake City
7. Midwest Express	Mesa	Milwaukee
8. Northwest Airlink	Express Airline I	Memphis Minneapolis/St. Paul
	Horizon*	Portland Seattle
	Mesaba	Detroit Minneapolis/St. Paul

AIR CARRIER/ COMMUTER AIRLINES
CODE-SHARING AGREEMENTS (Continued)

Air Carrier Program Name	Designated Commuter carrier	Hubs Served
8. Northwest Airlink (Continued)	Northeast Express	Boston Newark
	Precision	Boston Newark
	StatesWest	Los Angeles San Francisco
9. Trans World Express	Air Cape	Boston
	Westates	New York
	Trans States	St. Louis
	Trans World Express	New York St Louis
10. United Express	Atlantic Coast	Washington, D.C.
	Mesa	Denver Portland Seattle
	WestAir*	Los Angeles San Francisco
	Great Lakes Aviation	Chicago
11. USAir Express	Air Midwest	Kansas City
	Allegheny Commuter	Baltimore Pittsburgh Philadelphia
	CCAir	Charlotte
	Chautauqua	Orlando Pittsburgh
	Commutair	Boston New York Syracuse
	Crown	Pittsburgh
	Henson	Baltimore Charlotte Florida Philadelphia
	Jetstream	Baltimore Indianapolis
	Mesa	Tampa
	StatesWest	Los Angeles

* Carrier operates both large jet and commuter aircraft.

total of 14 regionals are owned, totally or in part, by four of the larger air carriers, and seven more are owned by three other regionals. The table at the top of page IV-5 presents the top 30 corporate structures and their percent share of 1992 industry enplanements. Viewed in this manner, it can be seen that there is a much higher level of industry concentration, and also points out the degree of integration with the large commercial airlines. In 1992, enplanements for these carriers grew by 15.0 percent and accounted for 96.6 percent of total industry enplanements.

FORECAST ASSUMPTIONS

Industry growth is expected to continue to out-pace that of the larger air carriers and be driven by increased demand. The introduction of new state-of-the-art aircraft offering amenities similar to those found on large jet aircraft is expected to contribute to greater public acceptance and stimulate higher growth. Increasing integration of service with the larger commercial air carriers, together with the introduction of new aircraft, is expected to lead to further route rationalization programs by the larger air carriers, opening new opportunities for growth for the regional/commuter industry. While there are risks, the regional airline industry is expected to benefit from continued service integration with the larger air carriers and the introduction of larger aircraft. This will create new opportunities for growth through service substitution and expansion in markets currently served with large jet aircraft.

While the average passenger trip length is expected to increase during the forecast period, the regional/commuter carriers will continue to serve primarily short-haul markets. The emphasis, however, will be on improved quality and schedule frequency in the markets best suited to their operations.

It is expected that the aircraft fleet will continue to grow during the forecast period. The average seats per aircraft is expected to increase from 22.9 in 1992 to 35.7 in 2004, an average annual growth of approximately 3.8 percent per year.

The average passenger trip length in the 48 States is projected to increase from 195.9 miles in 1992 to 230.0 miles in 2004, an average annual growth rate of 1.3 percent. The average trip length for Hawaii, Puerto Rico, and the Virgin Islands is expected to remain constant at 86.0 miles throughout the forecast period.

The average industry load factor is expected to increase only slightly from 48.3 in 1992 to 48.9 in 2004, reflecting a continuing emphasis on frequency of service.

The baseline assumptions for the average seats per aircraft, passenger trip length, and load factors are presented in Chapter IX, Table 18.

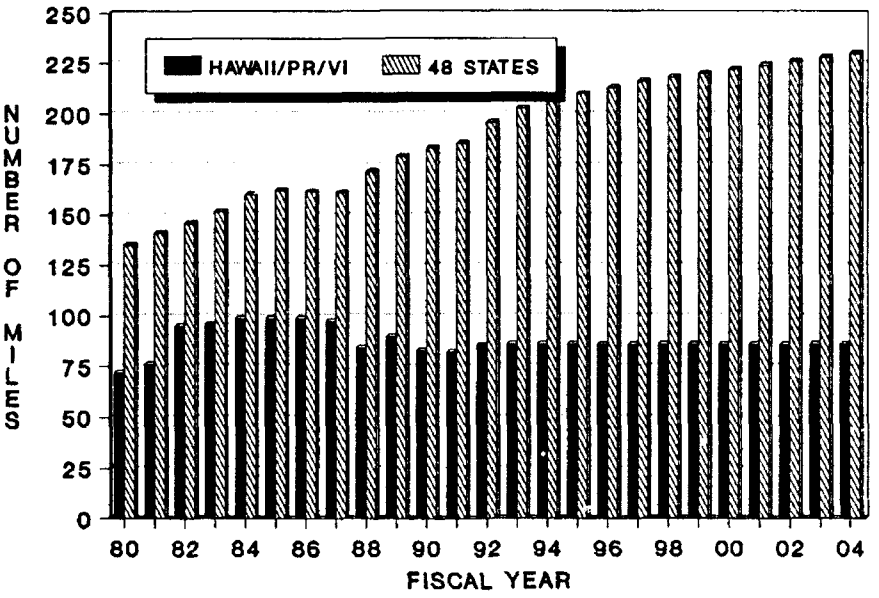
REGIONAL/COMMUTER FORECASTS

REVENUE PASSENGER MILES

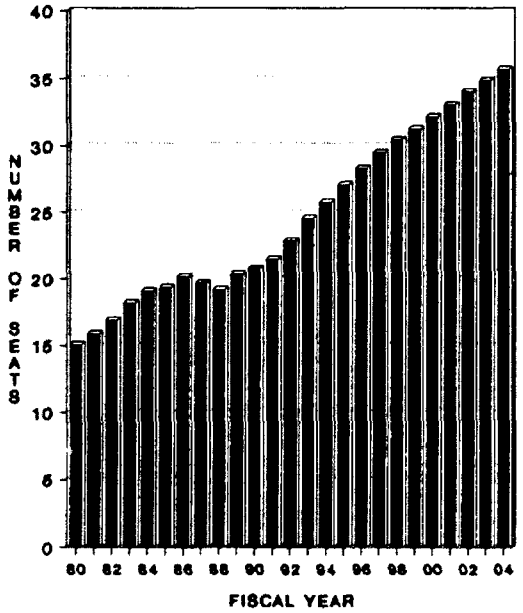
Revenue passenger miles are projected to increase to 9.2 billion (up 11.8 percent) in 1993 and to 10.0 billion (up 9.0 percent) in 1994. Passenger miles are expected to increase at an average annual rate of 7.7 percent during the 12-year forecast period, totaling 20.1 billion in 2004.

U.S. REGIONALS/COMMUTERS FORECAST ASSUMPTIONS

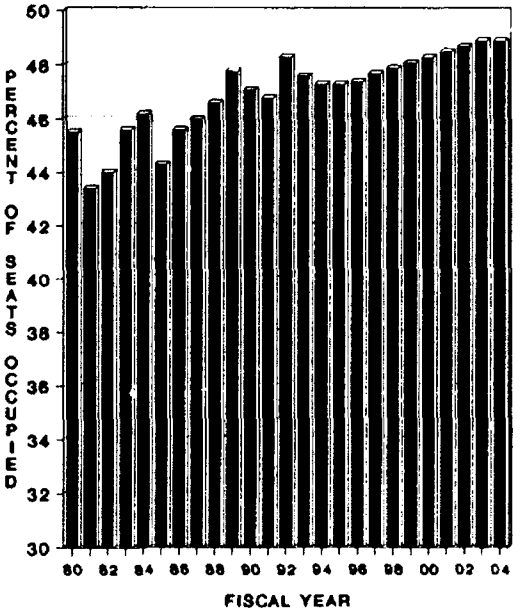
PASSENGER TRIP LENGTH



AVERAGE AIRCRAFT SIZE

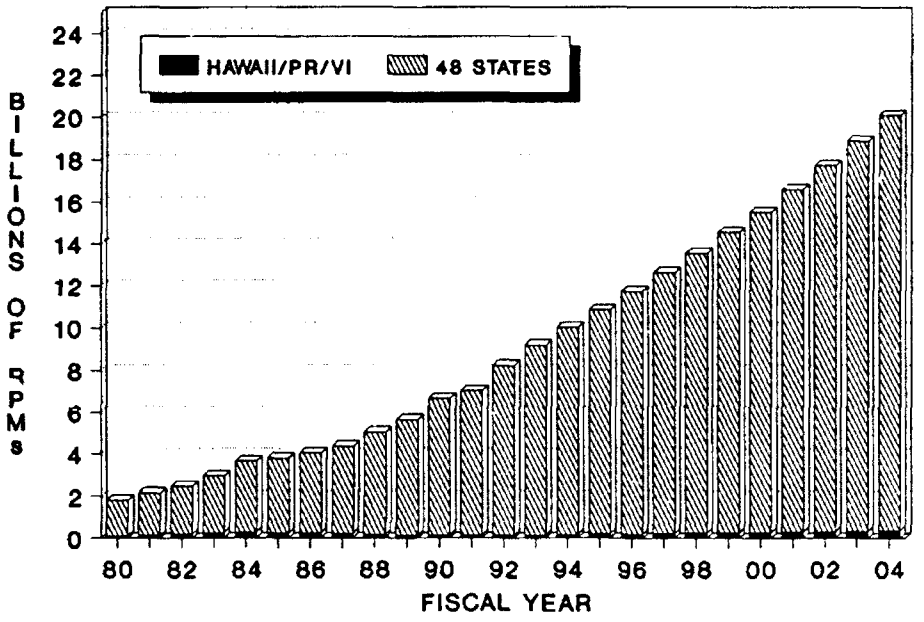


PASSENGER LOAD FACTOR

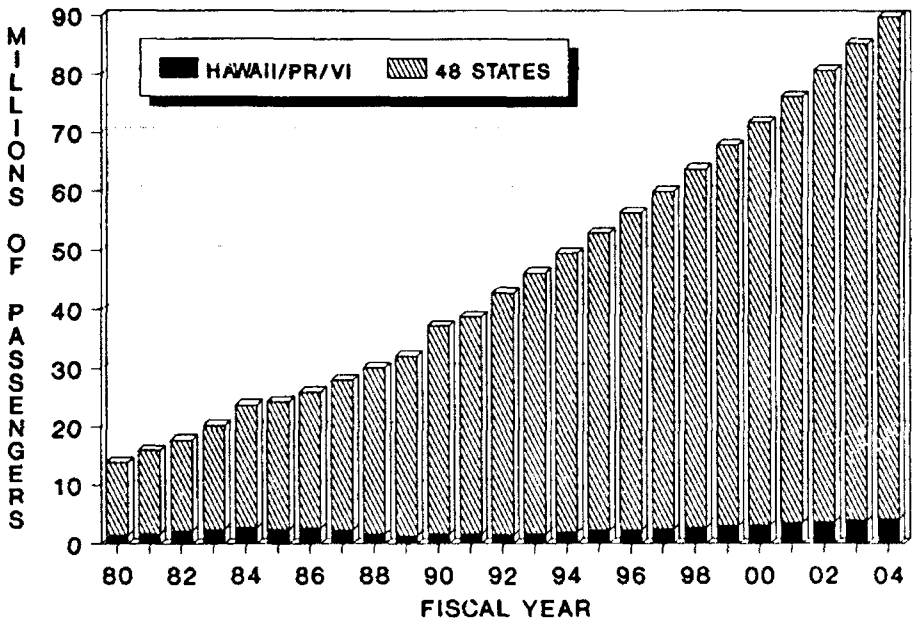


U.S. REGIONALS/COMMUTERS

SCHEDULED REVENUE PASSENGER MILES



SCHEDULED PASSENGER ENPLANEMENTS



Passenger miles in the 48 states are projected to increase to 9.0 billion (up 11.9 percent) in 1993 and to 9.8 billion (up 8.8 percent) in 1994. During the 12-year forecast period passenger miles are expected to increase at an average annual rate of 7.2 percent, totaling 19.7 billion in 2004. Passenger miles in Hawaii, Puerto Rico, and the Virgin Islands are projected to increase to 146.2 million (up 6.7 percent) in 1993 and to 172.0 million (up 17.6 percent) in 1994. During the forecast period passenger miles are expected to grow at an average annual rate of 8.4 percent, totaling 361.2 million in 2004.

REVENUE PASSENGER ENPLANEMENTS

Passenger enplanements are projected to increase to 46.2 million (up 7.9 percent) in 1993 and to 49.5 million (up 7.1 percent) in 1994. Passenger enplanements are expected to increase at an average annual rate of 6.4 percent during the 12-year forecast period, totaling 89.9 million in 2004.

Passenger enplanements in the 48 states are projected to increase to 44.5 million (up 8.0 percent) in 1993 and to 47.5 million (up 6.7 percent) in 1994. During the 12-year forecast period, passenger enplanements are expected to increase at an average annual rate of 6.3 percent, totaling 85.7 million in 2004. Passenger enplanements in Hawaii, Puerto Rico, and the Virgin Islands are projected to increase to 1.7 million (up 6.3 percent) in 1993 and to 2.0 million (up 17.6 percent) in 1994. During the forecast period, passenger enplanements are expected to increase at an average annual rate of 8.4 percent, totaling 4.2 million in 2004.

REGIONAL/COMMUTER FLEET

The current composition of the regional/commuter fleet underscores the growth of the industry and quality of service provided. From a fleet once composed predominantly of general aviation type aircraft, today's fleet is increasingly composed of new state-of-the-art aircraft offering amenities similar to those found on large jet aircraft. Today's regional/commuter airlines have a large variety of aircraft from which to choose. Consequently, they can tailor their fleet to the specific markets they serve.

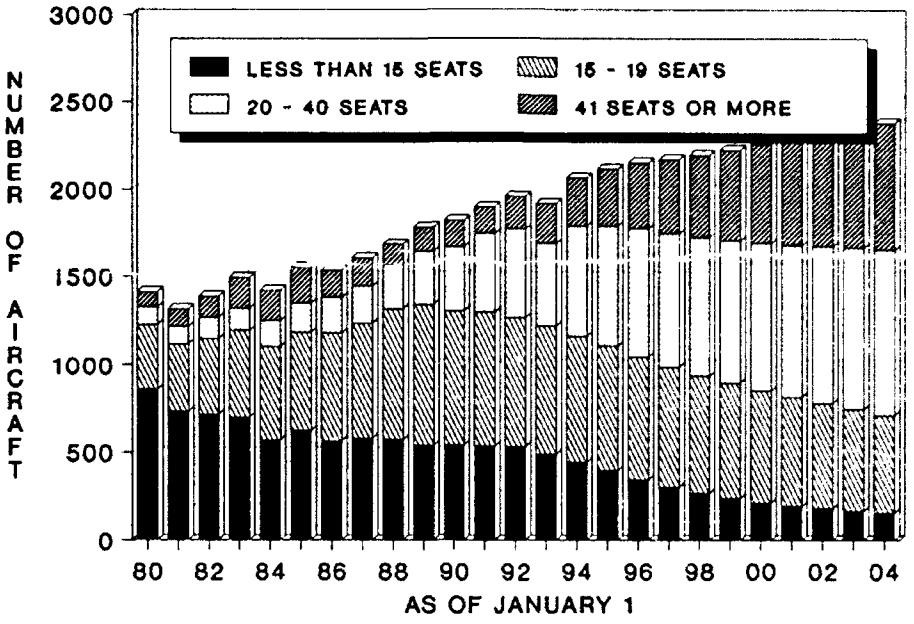
While there are numerous aircraft models to choose from in the categories presented in this forecast, the most significant are the new aircraft with larger seating capacities--primarily the "20 to 40 seats" and the "greater than 40 seats" categories. The introduction of the larger new aircraft is reflected in the growth of the average seats per aircraft from 15.1 in 1980 to 22.9 in 1992, an increase of 51.8 percent, while the regional fleet grew by only 38.7 percent during the same time period.

During the forecast period, it is projected that the average seats per aircraft will continue to grow at a rate significantly higher than the fleet. This reflects the continued introduction of larger aircraft into the fleet. The fleet is projected to grow at an average annual rate of 1.7 percent, increasing from 1,960 aircraft in 1992 to 2,391 aircraft in 2004.

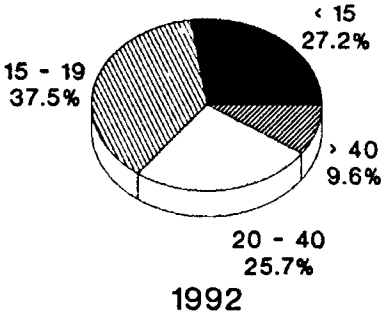
The number of aircraft having less than 15 seats--which once made up the bulk of the fleet--remained relatively unchanged in 1992, accounting for 27.2 percent of the fleet. Between 1992 and 2004, the number of aircraft in this category is expected to decline

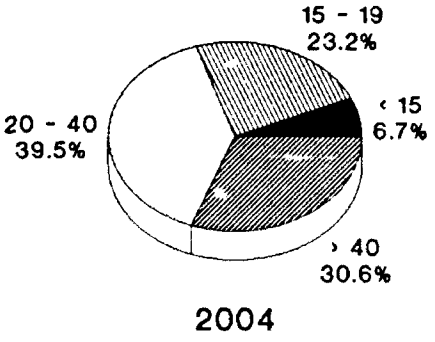
U.S. REGIONALS/COMMUTERS

PASSENGER AIRCRAFT



PERCENT BY AIRCRAFT SEAT SIZE





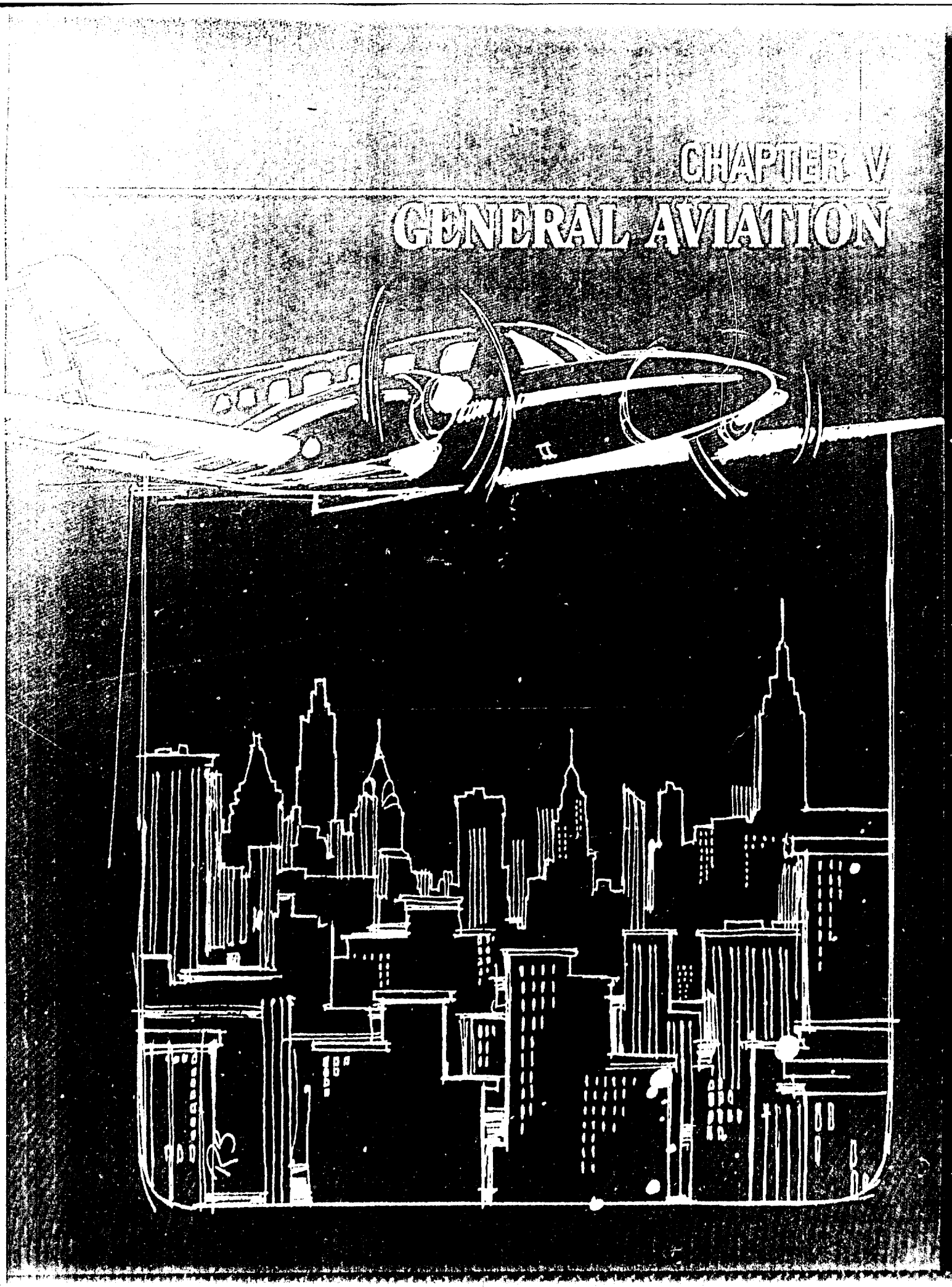
from 534 to 159, a drop of 70.2 percent. By the year 2004 it will represent only 6.7 percent of the total fleet.

In 1992, the "15 to 19 seats" category accounted for the largest portion of the fleet (37.5 percent). During the last 10 years, most of the growth of the regional/commuter fleet has occurred in this category. However, this group is expected to decline steadily throughout the forecast period. It is projected that the "15 to 19 seats" category will decline from 735 aircraft in 1992 to 553 in 2004. However, this category will still account for over 23 percent of the fleet in 2004.

The greatest growth in the fleet is expected to be in the "20 to 40 seats" and "greater than 40 seats" categories. This is due to the continued substitution of service and new route opportunities created through the use of larger, longer range aircraft. In 1992, aircraft in the "20 to 40 seats" category accounted for 25.7 percent of the regional fleet, while aircraft in the "greater than 40 seats" accounted for 9.6 percent. By the year 2004, these two categories are expected to account for a combined 70.1 percent of the total fleet, with 39.5 percent being in the "20 to 40 seats" category and the "greater than 40 seats" category accounting for 30.6 percent. During the forecast period, aircraft in the "20 to 40 seats" category are expected to increase from 503 aircraft in 1992 to 940 in 2004, an average annual increase of 5.3 percent. Aircraft in the "greater than 40 seats" category are expected to increase from 188 in 1992 to 729 in 2004, an average annual growth of 12.0 percent.

CHAPTER V

GENERAL AVIATION



CHAPTER V

GENERAL AVIATION

General aviation is the term used to describe all segments of the aviation industry except commercial air carriers and military. It describes a diverse range of aviation activities from the training of beginning pilots to the long-range jet transportation of corporate executives. It includes agricultural flying, air taxis, and pleasure flying.

General aviation is an important component of both the aviation industry and our national economy. It provides aviation services that commercial aviation cannot or will not provide. In addition, the production and sale of general aviation aircraft, avionics, and other equipment, along with the provision of support services such as flight schools, fixed base operators, finance, and insurance, make the general aviation industry an important contributor to the nation's economy.

From 1955 to 1978, the general aviation industry achieved phenomenal growth. The general aviation active fleet increased at an average annual rate of 4.7 percent, from 37,700 in 1955 to 184,300 in 1978. The number of hours flown by general aviation aircraft grew steadily (6.3 percent annually) during the same time period, increasing from 9.2 million hours in 1955 to 38.5 million hours in 1978. Since 1978, however, the industry has been buffeted by a number of external factors that have inhibited its growth and have resulted in a sharp decline in the shipments of all types of general aviation aircraft.

Major events which have contributed to the general downturn in general aviation activity since 1978 include: three economic recessions; two fuel crises; and three significant pieces of legislation --the Airline Deregulation Act of 1978, repeal of the G. I. Bill of Rights in 1979, and the repeal of the investment tax credit in 1986. Additional factors include high interest rates (during the 1970s and 1980s) and the overall high costs of purchasing and operating a general aviation aircraft.

Unfortunately, the health of the general aviation industry continues to be mixed. The continuing decline in shipments of the single engine piston aircraft is a cause for concern as the single engine piston aircraft fleet is a mainstay of the base on which general aviation activity must build. Historically, new pilots are trained in single engine piston aircraft and work their way up through retractable landing gear and multi-engine piston to turbine aircraft. When the single engine piston market declines, as it has since 1978, it signals the slowing of expansion in the general aviation fleet and, consequently, a slowing in the rate of growth of activity at FAA facilities serving general aviation.

FACTORS AFFECTING GENERAL AVIATION

This section discusses several of the factors believed to have affected the demand for general aviation activity. Chief among these factors are U.S. economic activity, the cost of owning and operating general aviation aircraft, and the deregulation of the commercial airline industry.

GENERAL ECONOMIC GROWTH

Fundamental changes have taken place within the general aviation industry. Prior to 1978, growth in the general aviation industry generally paralleled growth in business activity. If business activity was up, so was general aviation. If business conditions weakened, so did general aviation activity.

The graph at the bottom of page V-3 displays annual shipments of new general aviation aircraft relative to growth in U.S. real gross domestic product. There were surges in sales during the late 1960s and during most of the 1970s. The introduction of the turbine-powered aircraft, in combination with the investment tax credit and growth in the U.S. general economy, were sufficient to overcome the 1973 fuel crisis.

However, the long and precipitous decline in aircraft shipments that began in the late 1970s, marked a fundamental change in this relationship. As shown in the graph, past declines in aircraft sales have often been associated with downturns in the national economy--for example, recessions in 1960, 1970, and 1975--but sales usually resumed as the recession subsided. This has not been the case since 1978. Despite generally strong economic growth during much of the 1980s, general aviation aircraft shipments continued to decline.

It is no longer possible to make inferences relative to rises in general economic activity and the total general aviation fleet. Fifty-eight percent of the active general aviation fleet falls into the personal use category and sales and operation levels have not responded to general economic improvements. Sales of piston general aviation aircraft have declined from 17,032 in 1978 to 526 in 1992. During this same time period, real GDP increased at an average annual rate of 2.0 percent.

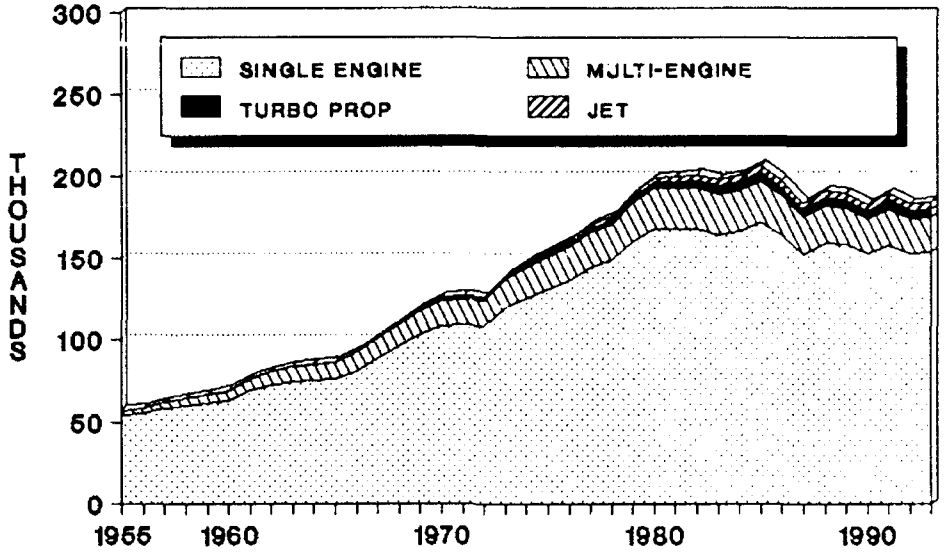
While the sales of turbine-powered aircraft have also declined, the drop has been less dramatic. Sales of turbine powered aircraft totaled 779 in 1978, declining to 346 units in 1992. However, since increases in economic activity do presage increased business activity, it is believed that increased U.S. economic activity can still be used as a predictor of future corporate and business aviation sales and activity.

OWNERSHIP COST FACTORS

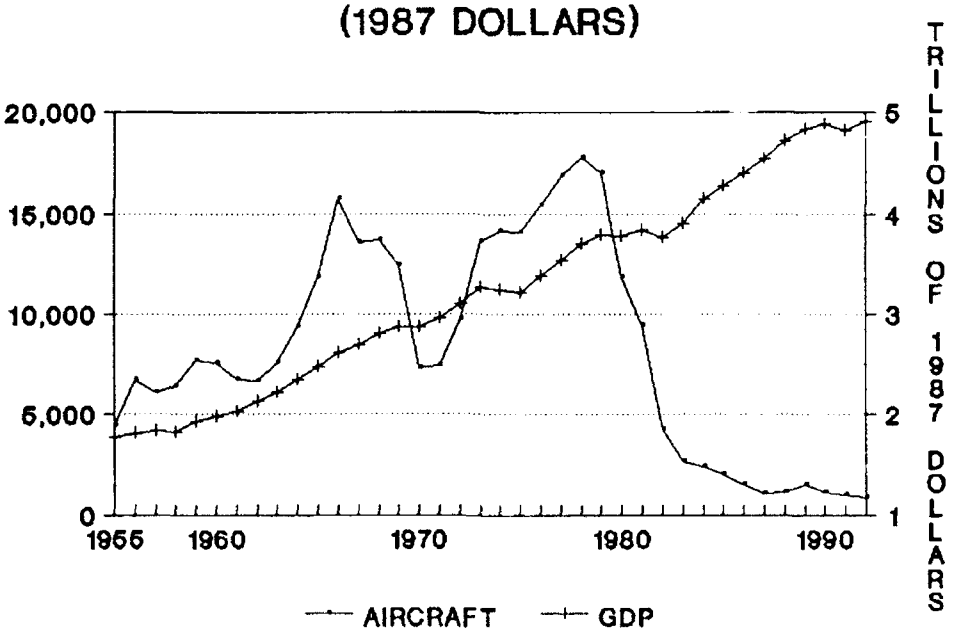
The cost of owning and operating a general aviation aircraft consists of two distinct costs: the initial cost of purchasing a new or used aircraft and the costs associated with operating and maintaining the aircraft over time. As shown by the graphics on pages V-4 to V-7 and detailed in Appendix F, both of these costs have increased steadily since 1978.

The nominal cost of operating and maintaining all classes of general aviation aircraft has increased approximately 85 to 95 percent (4.5 to

HISTORICAL TREND OF GENERAL AVIATION FIXED WING FLEET (IN THOUSANDS)

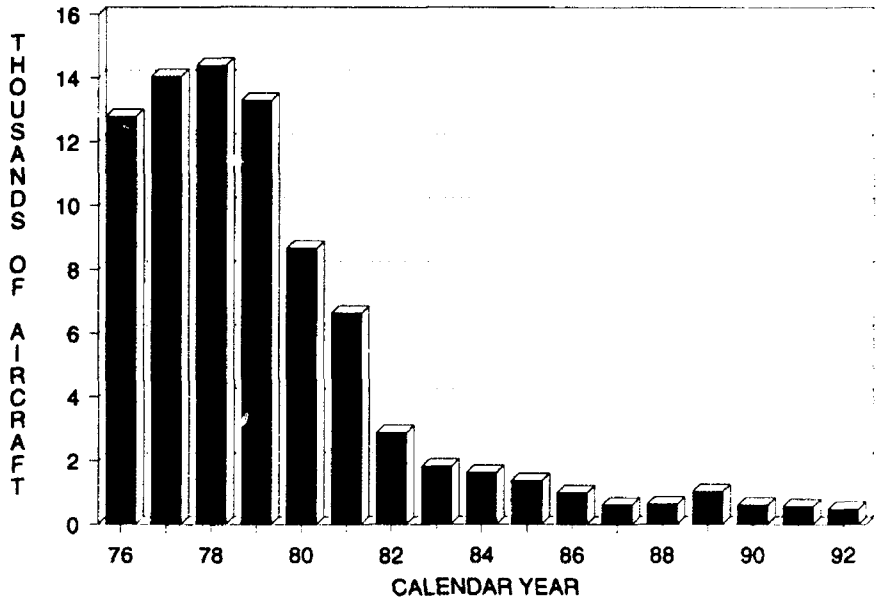


GENERAL AVIATION UNITS SHIPPED VERSUS GROSS DOMESTIC PRODUCT (1987 DOLLARS)

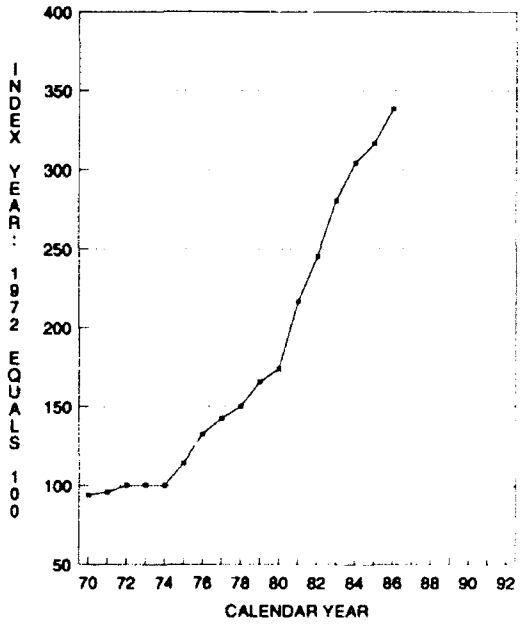


SINGLE ENGINE PISTON AIRCRAFT TRENDS

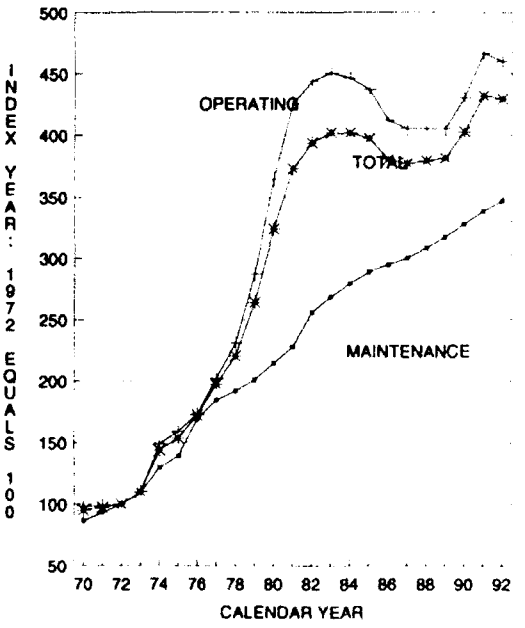
AIRCRAFT SHIPMENTS



AIRCRAFT PRICES

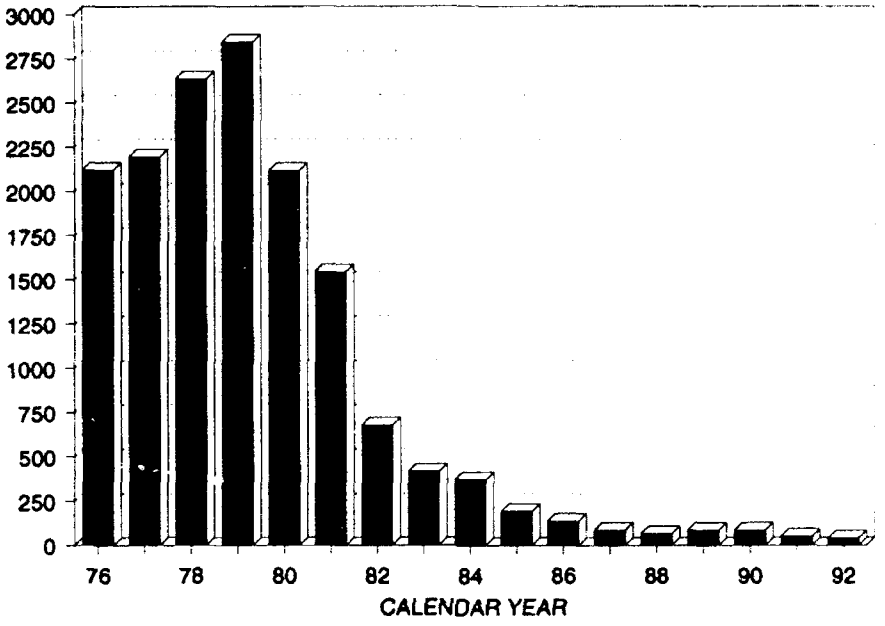


OPERATING AND MAINTENANCE COSTS



MULTI-ENGINE PISTON AIRCRAFT TRENDS

AIRCRAFT SHIPMENTS



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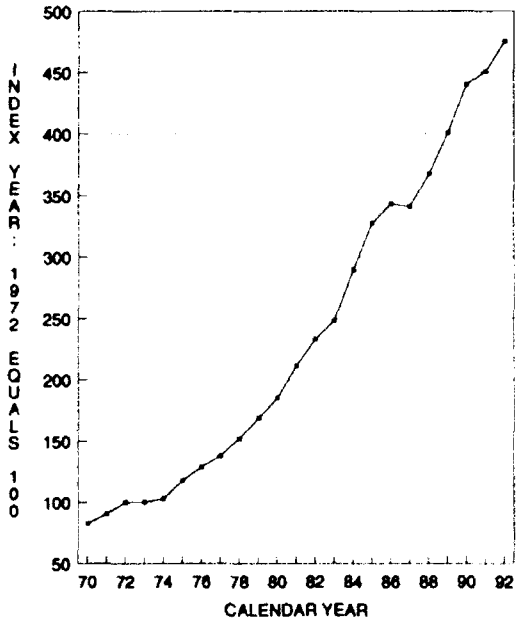
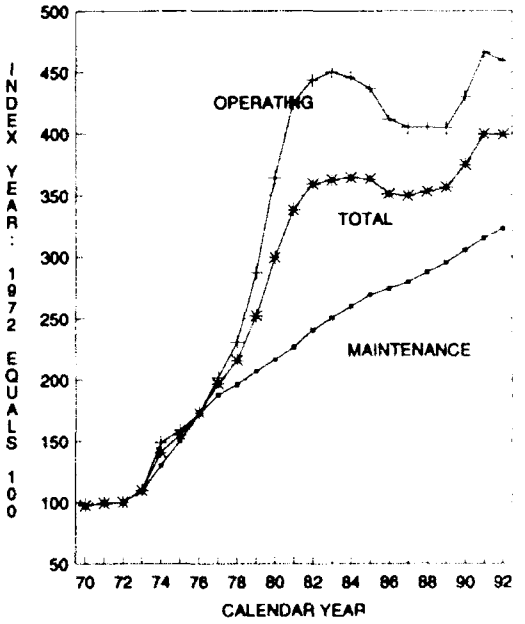
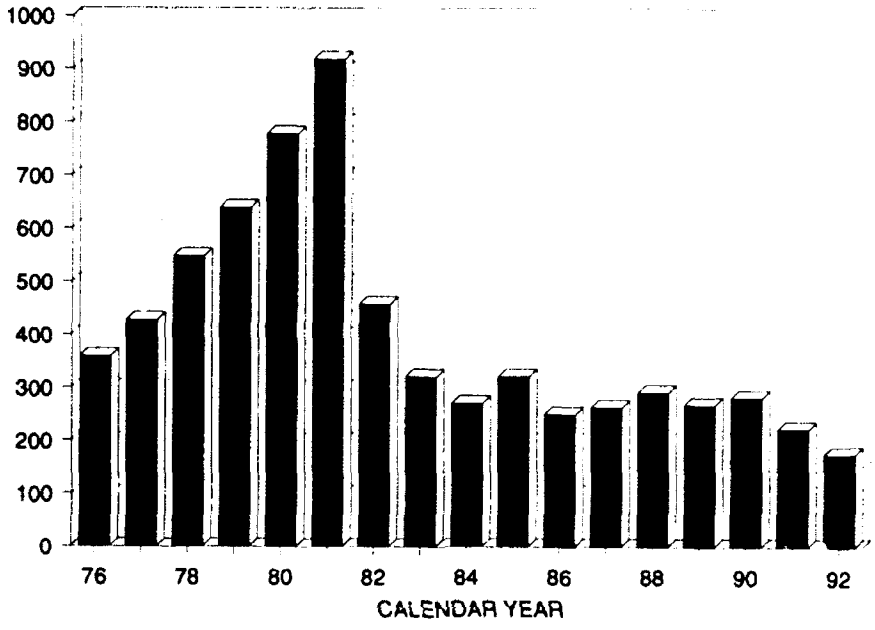


OPERATING AND MAINTENANCE COSTS



TURBOPROP AIRCRAFT TRENDS

AIRCRAFT SHIPMENTS



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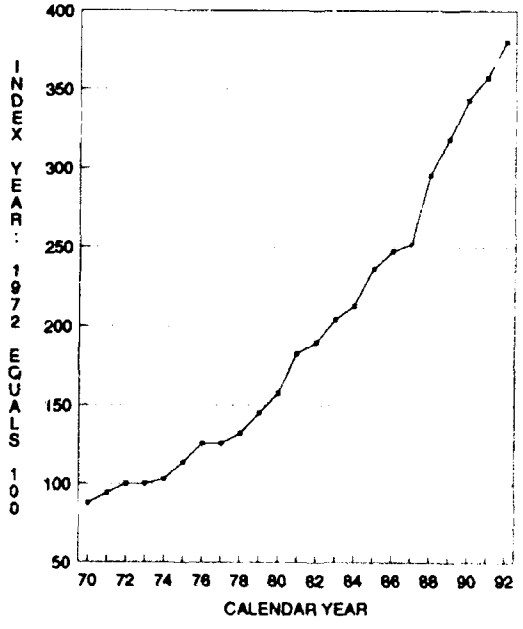
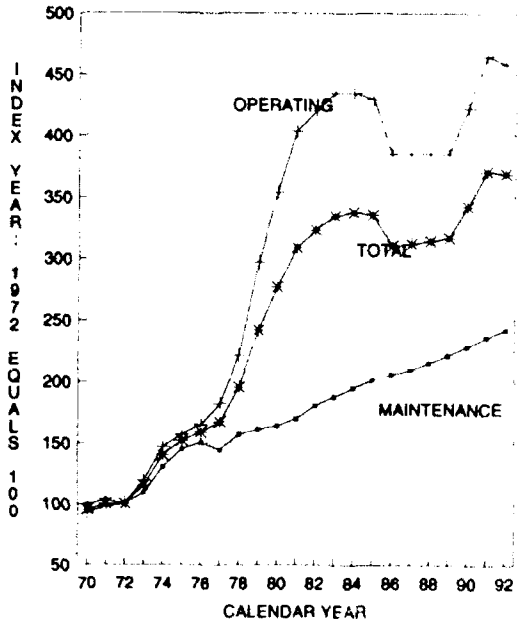
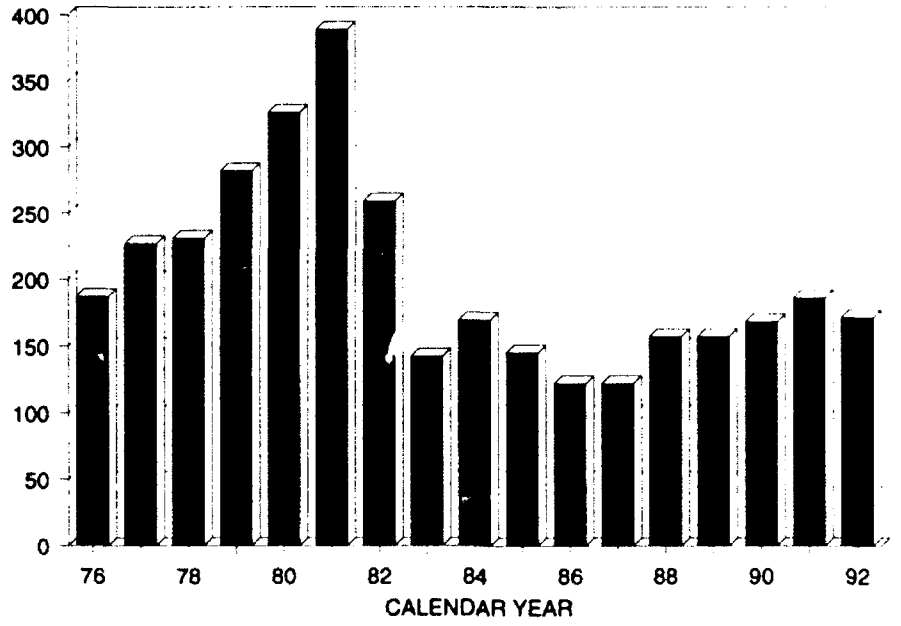


OPERATING AND MAINTENANCE COSTS



TURBOJET AIRCRAFT TRENDS

AIRCRAFT SHIPMENTS



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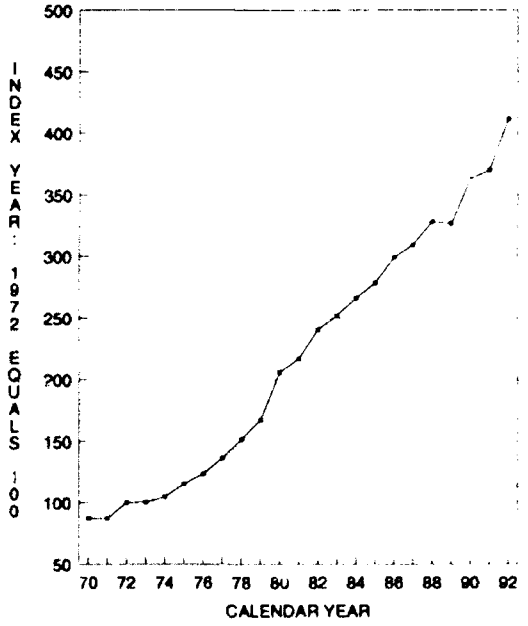
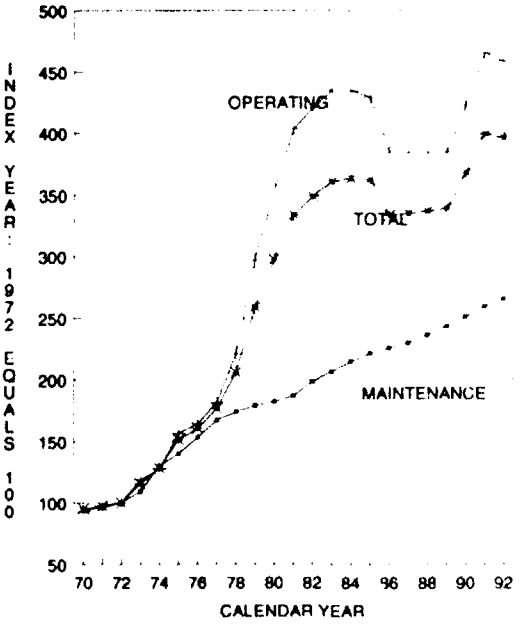


OPERATING AND MAINTENANCE COSTS



4.9 percent annually) since 1978. These increases have, for the most part, been somewhat lower than increases in the consumer price index (up 5.6 percent annually) during the same period. There was a relatively large increase in these costs in 1991 (6.9 percent), but this increase was largely due to higher fuel costs resulting from the Gulf War. In 1992, ownership costs actually declined after increasing substantially during the previous year. With generally lower fuel costs in 1992, operating and maintenance costs were lower in most cases.

In contrast to the relatively constant costs of operating and maintaining an aircraft, the nominal cost of purchasing a general aviation aircraft has risen substantially since 1978, far exceeding the rise in inflation. Between 1978 and 1986 (the last year for which data are available for this particular aircraft category), the cost of purchasing a single engine piston aircraft increased by 126 percent. Between 1978 and 1992, the cost of purchasing a multi-engine piston aircraft had risen by 213 percent; the cost of purchasing a turboprop aircraft, had risen by 188 percent; and the cost of purchasing a turbojet had risen by 172 percent. The purchase price of all general aviation aircraft continued to rise during the last 2 years--the price of multi-engine piston aircraft was up 8.1 percent, the price of turboprop aircraft was up 10.8 percent, and the price of turbojet aircraft was up 13.3 percent.

Increases in product liability costs were one of the key factors responsible for the large increases in the purchase price of a general aviation aircraft. Over the last 10 years, annual claims paid by manufacturers have increased from $24 million to over $210 million, despite an improved safety record.

Clearly, these ownership cost increases, especially those in the purchase price, have a negative impact on general aviation. These price increases are probably the main reason for the decline in aircraft shipments over the last several years.

DEREGULATION OF THE U.S. COMMERCIAL AIRLINE INDUSTRY

The deregulation of the U.S. commercial airline industry may also be having an effect on general aviation. On the one hand, the increased service, better connections, and low fares offered by air carriers and regional/commuters since deregulation have, to a large extent, reduced the desirability of using private, general aviation aircraft when planning business or pleasure trips. On the other hand, if real fares and delays on short- and medium-haul markets were to increase substantially over time, general aviation might once again become a more attractive and viable alternative to the business traveler. An analysis of the market statistics to date has not identified the ultimate relationship between general aviation activity and commercial airline deregulation. The performance of the general aviation market over the next several years may resolve this issue.

FACTORS AFFECTING PERSONAL USE

Other factors possibly affecting the personal use of general aviation include: changes in disposable, discretionary income; increases in airspace restrictions applied to VFR aircraft; reductions in leisure time; and shifts in personal preferences as to how leisure time is spent. All of these factors need to be more fully examined if we are to achieve both a

better understanding of the decline that general aviation experienced during the 1980s and more accurate predictions of future general aviation activity levels.

Still another personal use issue is related to environmental concerns and the continued availability of leaded fuel. The Clean Air Act of 1991 threatened the availability of aviation gasoline because it required the phase-out of all leaded gasoline after December 1995. Although it was initially feared that the ban would include piston aircraft, the Environmental Protection Agency subsequently ruled that the ban would not apply to general aviation. However, there still exists the possibility that market forces could lead refiners to stop the production of low lead aviation gasoline, or alternatively, lead to very high prices for leaded general aviation fuel. Higher fuel prices and/or the scarcity of aviation gasoline would have a significant negative impact personal flying.

REVIEW OF 1992

The historical general aviation active fleet and hours flown discussed in this chapter are derived from the General Aviation Activity and Avionics Survey that is conducted annually by the FAA's Statistics and Forecast Branch. The fleet data are estimated using a sample from the FAA aircraft registry and are subject to variation due to errors in the registry and statistical sampling procedures. Consequently, variations of plus or minus 5 percent in any of the above categories are not considered necessarily significant.

In 1991, the Statistics and Forecast Branch undertook an analysis of the sampling procedures to see if more accurate estimates could be provided on which to base future fleet and activity projections. This analysis raised concerns about the relatively large number of nonrespondents to the 1990 survey. To investigate this, a telephone survey of nonrespondents to the 1990 survey was conducted. The telephone survey showed that the proportion of nonrespondents that were active was considerably lower than those who responded to the 1990 survey. Based on this analysis of survey nonrespondents, the historical active general aviation aircraft fleet and hours flown for 1990 and subsequent years (back to 1985) were adjusted to account for the nonrespondent sampling error. The revised historical series are reflected in Tables 21 through 23, 25, and 26 (Chapter IX).

FLEET COMPOSITION AND AIRCRAFT SHIPMENTS

Total general aviation aircraft shipments totaled only 872 units in 1992, a 14.6 percent decline from the 1,021 aircraft shipped in 1991. These shipments included 526 piston aircraft (down 14.2 percent), 175 turboprop aircraft (down 21.2 percent), and 171 jets (down 8.1 percent). Export shipments totaled 348 (39.9 percent of total shipments), 8.9 percent less than shipped in 1991.

General aviation aircraft billings totaled $1.8 billion in 1992, 7.0 percent below billings in 1991. Export billings totaled $626.2 million (34.2 percent of total billings), a decline of 22.4 percent from 1991.

The total active general aviation fleet remained virtually constant in 1992, increasing only a nominal 0.5 percent from the 197,372 aircraft reported in 1991 to 198,386 aircraft in 1992. Single engine piston aircraft comprise the largest segment of the general aviation fleet, accounting for nearly

78 percent of the total fleet in 1992. This segment showed little change from 153,518 to 154,012 aircraft (up 0.3 percent) while the multi-engine piston fleet moved only from 21,111 to 21,246 (up 0.6 percent).

Fixed-wing turbine and rotorcraft turbine aircraft continue to be the fastest growing segments of the general aviation fleet. The turbojet fleet increased from 4,068 to 4,353 (up 7.0 percent) but the turboprop fleet decreased from 5,256 to 4,920 (down 6.4 percent). The number of active rotorcraft turbine helicopters increased from 3,700 to 3,800 (up 2.7 percent) while the number of piston helicopters declined from 3,200 to 2,500 (down 21.9 percent).

HOURS FLOWN

Total hours flown by general aviation aircraft nominally declined 2.0 percent in fiscal year 1992, from 30.5 million to 29.9 million. This decline, is however, within the range of potential sampling error.

Hours flown by all fixed wing aircraft categories declined in 1992. Single engine piston aircraft hours declined 1.4 percent while multi-engine piston aircraft hours declined 5.4 percent. Turboprop aircraft hours declined 11.8 percent and turbojet aircraft hours declined 7.7 percent. However, rotorcraft hours flown were up 7.7 percent in 1992. Hours flown by the "other" aircraft category remained basically unchanged.

PILOT POPULATION

As of January 1, 1992, the pilot population totaled 692,095. This was 10,564 fewer pilots than a year earlier, when the pilot population totaled 702,659, a decrease of 1.5 percent.

The pilot population consists of four major groupings: student, private, commercial, and airline transport. Only one of the four major pilot groups increased in 1992--the number of airline transport pilots increased from 107,732 to 112,167 (up 4.1 percent). The number of student pilots declined 6.6 percent in 1992, from 128,663 to 120,203; private pilots declined from 299,111 to 293,306 (down 1.9 percent); and commercial pilots declined from 149,666 to 148,365 (down 1.9 percent). It is interesting to note, however, that three small pilot categories (helicopter, glider, and recreational), accounted for a total of 18,054 pilots in 1992, a gain of 3.4 percent over 1991.

It is also important to note that more pilots than ever were instrument rated (43.8 percent) in 1992, up from 42.8 percent in 1991 and only 29.7 percent in 1980. This reflects the increased sophistication of both the aircraft and pilots utilizing the nation airspace system.

These changes in the various pilot categories reflect the continuing strong demand for airline transport pilots and a decline in the interest in, or ability to afford, private flying.

GENERAL AVIATION FORECASTS

FLEET COMPOSITION

The FAA general aviation forecasts include only active aircraft. (An active aircraft is defined as any aircraft flown at least one hour during

the previous year.) Table 21 (Chapter IX) and the graphs on page V-12 show that the active general aviation fleet is expected to grow slowly (up 0.6 percent annually) over the 12-year forecast period, with the increase being driven by greater business use of general aviation. Additionally, the forecast assumes, given the "hobby" characteristic of recreational aviation and the historically tight business climate, that retirement of fleet aircraft will be limited to accident attrition of aircraft.

The number of active piston aircraft is expected to increase only slightly during the 12-year forecast period. Single engine piston aircraft are projected to increase from 154,021 in 1992 to 159,300 in 2004 (up 0.3 percent), while the number of multi-engine piston aircraft is expected to increase from 21,246 aircraft to 22,100 thousand in 2004 (up 0.2 percent).

Reflecting the increasing convenience of general aviation flying to businesses and their push for technology, turbine-powered aircraft are projected to increase from 9,273 in 1992 to 13,000 in 2004, an annual growth rate of approximately 2.9 percent. The turbine rotorcraft fleet is projected to increase at an annual rate of 4.9 percent over the 12-year period, from 6,292 in 1992 to 8,600 in 2004.

HOURS FLOWN

As shown graphically on page V-13 and in tabular form in Table 23 (Chapter IX), growth in general aviation hours flown is expected to average 1.4 percent annually over the 12-year forecast period, reaching an estimated 35.3 million hours flown in 2004.

Single engine piston aircraft hours flown are forecast to increase from 20.5 million hours in 1992 to 21.3 million in 2004, an annual rate of growth of only 0.3 percent. Multi-engine piston aircraft hours are expected to increase from 3.5 million in 1992 to 3.8 million in 2004, 0.7 percent annually.

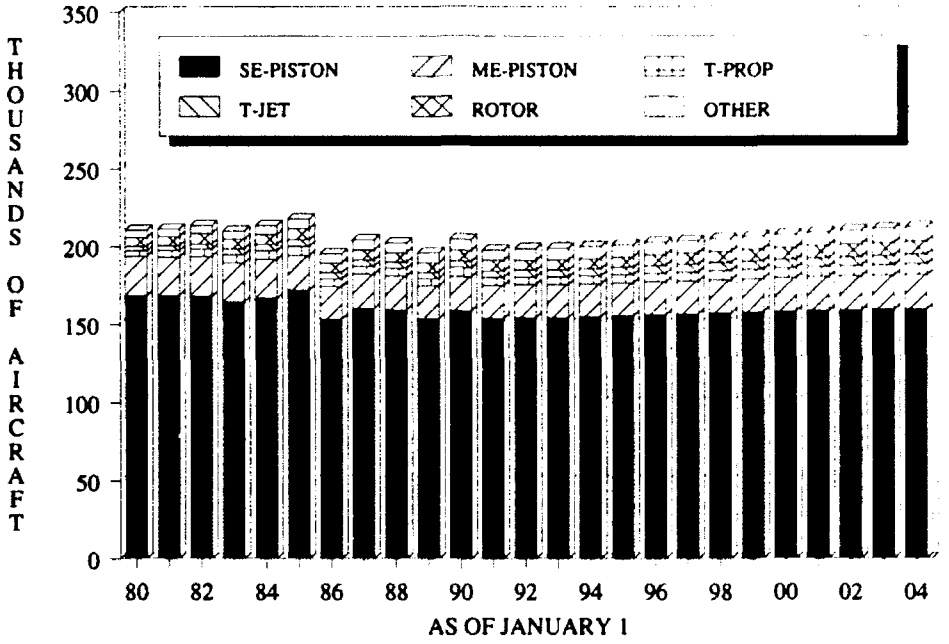
Turbine-powered aircraft hours flown are projected to increase from 2.7 million in 1992 to 3.8 million in 2004, an annual growth rate of 3.0 percent Turbine rotorcraft hours flown are expected to increase at an annual rate of 7.4 percent over the same time period, from 2.8 million to 5.8 million.

PILOT POPULATION

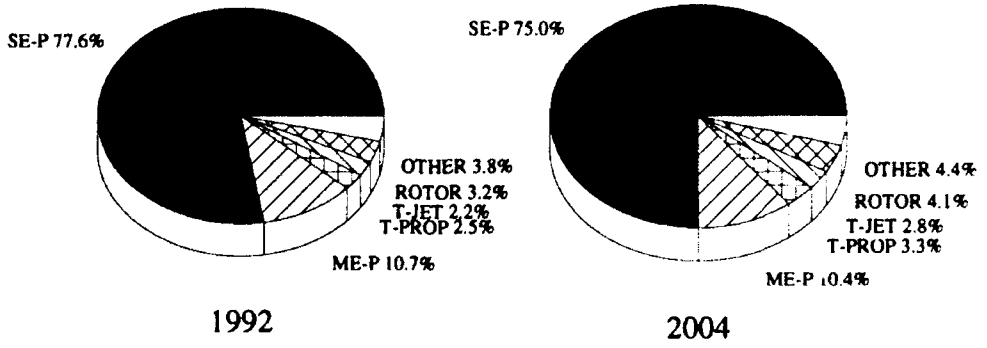
The graphic on page V-14 and Table 24 (Chapter IX) shows that the total pilot population is forecast to increase to 794,500 by 2004, a 1.2 percent annual growth rate. Airline transport pilots are projected to grow at 3 percent annually, reaching 159,800 in 2004. This reflects not only the continuing demand for airline transport pilots to meet the demands of increased traffic, but also the belief that the commercial airline industry has not yet reached maturity. If, however, the commercial airline industry fails to grow as projected, then the projected increases in total and transport pilots also run the risk of being too optimistic.

At the other end of the spectrum, the number of private pilots is projected to grow by only 0.3 percent annually during the 12-year forecast period. While the growth in the number of private pilots is relatively slow, there are a number of encouraging signs among the pilot statistics. The number of student and recreational pilots is expected to increase by 18.9 percent over the forecast period in response to a strengthening economic climate. This points to growth in general aviation pilot training and flight schools

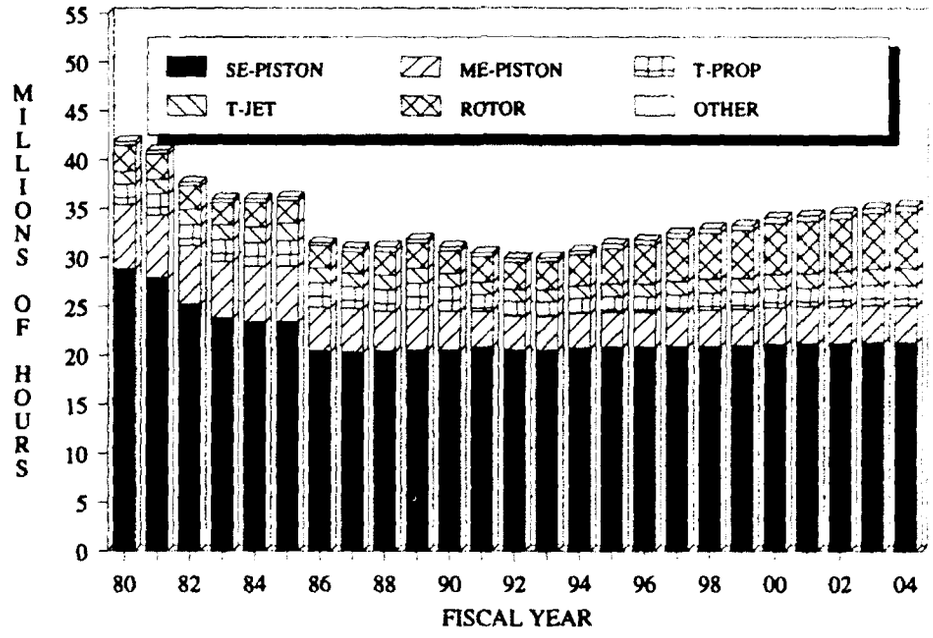
ACTIVE GENERAL AVIATION AIRCRAFT



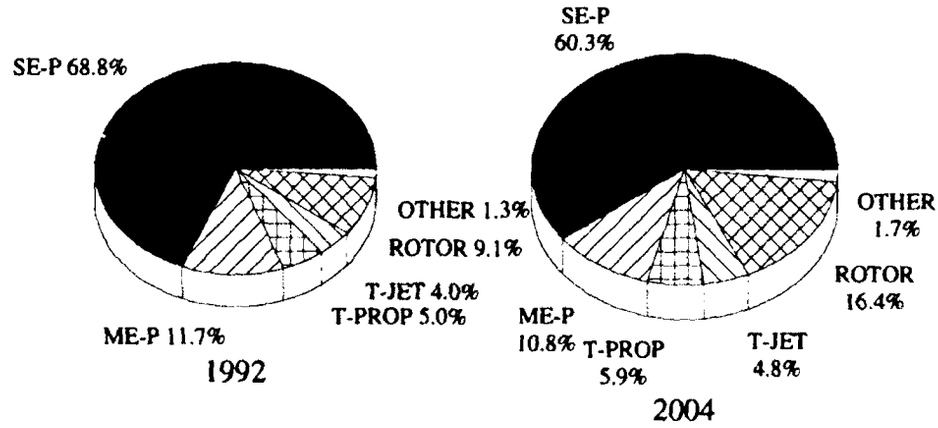
PERCENT BY AIRCRAFT TYPE



GENERAL AVIATION HOURS FLOWN

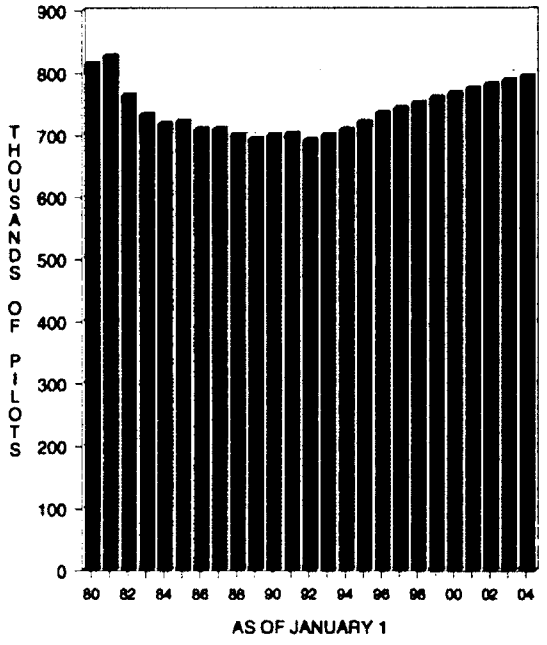


PERCENT BY AIRCRAFT TYPE

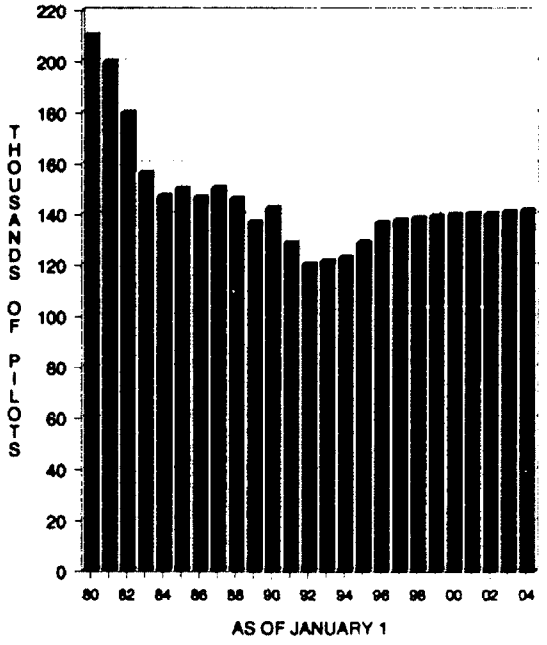


ACTIVE PILOT TRENDS AND FORECASTS

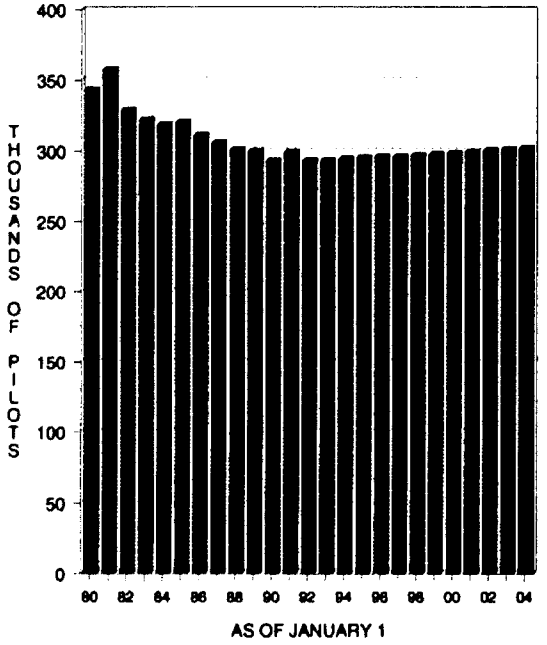
TOTAL PILOTS



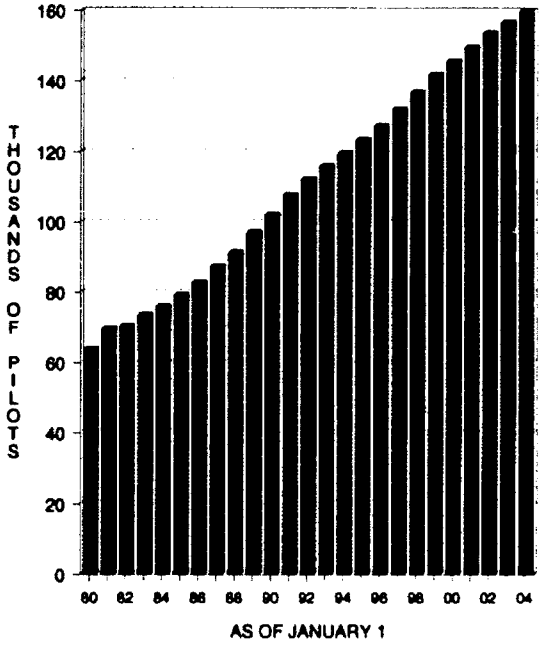
STUDENT PILOTS



PRIVATE PILOTS



AIRLINE TRANSPORT PILOTS



which, in turn, implies future growth in the industry. The number of commercial pilots is expected to increase by 13.8 percent over the same time period, driven by expected increases in corporate business flying.

CHAPTER VI
HELICOPTERS

REVIEW OF 1992

SHIPMENTS

Preliminary data for calendar year 1992 indicate that shipments of new U.S. civil helicopters will total 337 units valued at $146 million. Compared to 1991, the number of helicopters shipped decreased by 43.5 percent, while the value of the shipments decreased 23.2 percent. Decreases in the number of units shipped and in the value of these shipments indicate that the anticipated economic recovery of the industry in particular, and the nation as a whole, still did not occur in 1992.

In 1992, the value of new and used helicopters exported decreased by 8.9 percent to $156 million. Imports also decreased substantially (down 35.6 percent) to $186 million, leading to a net loss in the foreign trade balance of helicopters of approximately $30 million. This year's loss added to the previous year's loss has led to an aggregate net loss of $114 million in the trade balance over the past 2 years.

FLEET AND HOURS FLOWN

As of January 1, 1992, there were approximately 6,300 active civil rotorcraft in the United States, about 8.7 percent less than the 6,900 reported as active in 1991.

The number of active turbine helicopters increased slightly in 1992. The 3,800 active turbine helicopters made up approximately 60.3 percent of the active fleet in 1992, up from 52.7 percent in 1991. The number of active piston-powered rotorcraft decreased by 23.2 percent in 1992 to 2,500. The number of active piston-powered helicopters in 1991 was 24.2 percent lower than the previous peak of 3,300 observed in 1982.

Rotorcraft flew an estimated 2.8 million hours in 1992. Turbine-powered rotorcraft flew 2.2 million hours, 78.6 percent of the total number of hours flown. In 1992, the number of hours flown by piston-powered rotorcraft remained unchanged relative to the final estimates for 1991, while hours flown by turbine-powered rotorcraft increased 10 percent relative to 1991.

HELICOPTER FORECASTS

The forecasts of rotorcraft fleet and hours flown presented in this section are derived from the general aviation forecasts (see Chapter V) which we prepared using econometric models and time

series analyses. Forecasts of helicopter activity were generated by user category (executive, business, personal, etc.) and were combined to obtain the national forecasts. The independent variables used in the estimates include the cost of owning a helicopter, total employment, and the cost of oil and gas relative to other prices. One of the underlying assumptions in applying these models to project future fleet size and hours flown is that the cost of fuel will increase. As this occurs, increased petroleum production and exploration would be more profitable, leading to increased rotorcraft usage, particularly in off-shore drilling operations. This, together with increased use of helicopters in the general economy, will lead to an increase in the fleet and in hours flown.

FLEET AND HOURS FLOWN

The active rotorcraft fleet is expected to reach 8,600 in the year 2004, an average annual increase of 2.7 percent over the 1992 level. In 2004, the turbine-powered rotorcraft are expected to number 6,800, an annual increase of 4.9 percent. In 2004, the turbine-powered portion of the fleet will account for 79.1 percent of the rotorcraft fleet, up from 60.3 percent in 1992. The piston-powered fleet is expected to decrease to 1,800 from its current level of 2,500 helicopters, continuing the trend of piston-powered fleet decreases.

The anticipated growth in the fleet will be accompanied by growth in hours flown, which will reach 5.8 million in 2004. This represents an annual average growth rate of 6.3 percent. Hours flown by turbine-powered helicopters will increase by approximately 141.0 percent and will reach 5.3 million by 2004. In contrast, hours flown by piston-powered rotorcraft will decrease to approximately 500,000 hours during the latter years of the forecast period.

FUEL CONSUMED

In 1992, fuel consumed by rotorcraft totaled 72.3 million gallons. By 2004, fuel consumed will increase to about 161.5 million gallons, an average annual increase of 6.9 percent. More than 96.3 percent of the fuel consumed in 2004 will be used by turbine-powered rotorcraft, compared with approximately 91.4 percent in 1992.

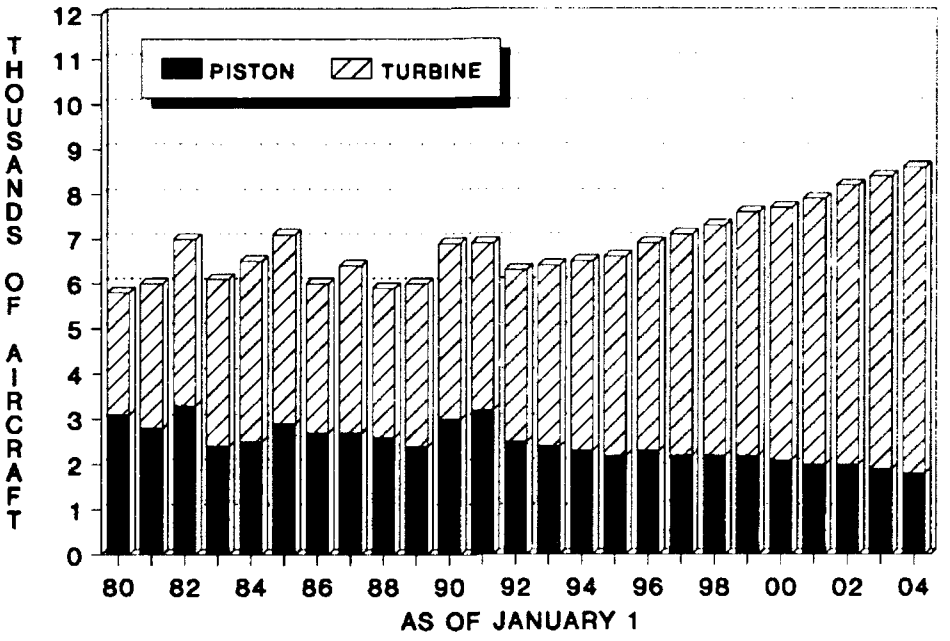
HELICOPTER OPERATOR ECONOMICS

In October 1992, the Helicopter Association International (HAI), the American Helicopter Society (AHS), and the Federal Aviation Administration (FAA) sponsored an executive-level Transportation Research Board (TRB) workshop on helicopter operator economics and improving the performance of the industry. The 2-day workshop was conducted in Miami Beach, Florida, and was attended by 50 CEO and senior management staff participants from helicopter operators, manufacturers, trade associations, and other key public and private organizations.

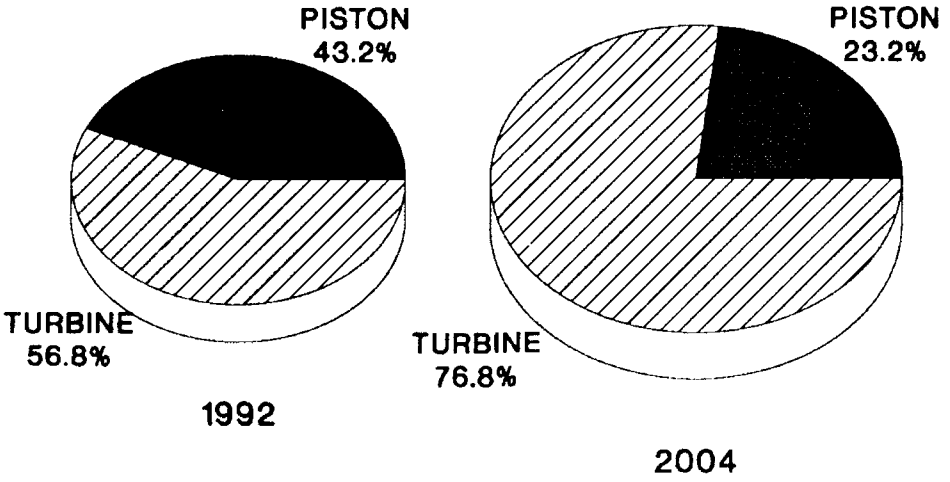
The impetus for this senior workshop was an initial Helicopter Operator Economics conference in November 1991 at which attention was drawn to the economic problems plaguing the industry. Previous meetings between FAA, HAI, and AHS officials had led to the decision to initiate a dialogue among the affected parties to "assess current conditions, analyze underlying causes, and identify remedial actions."

The key issue discussed at the workshop addressed the previously-voiced concern

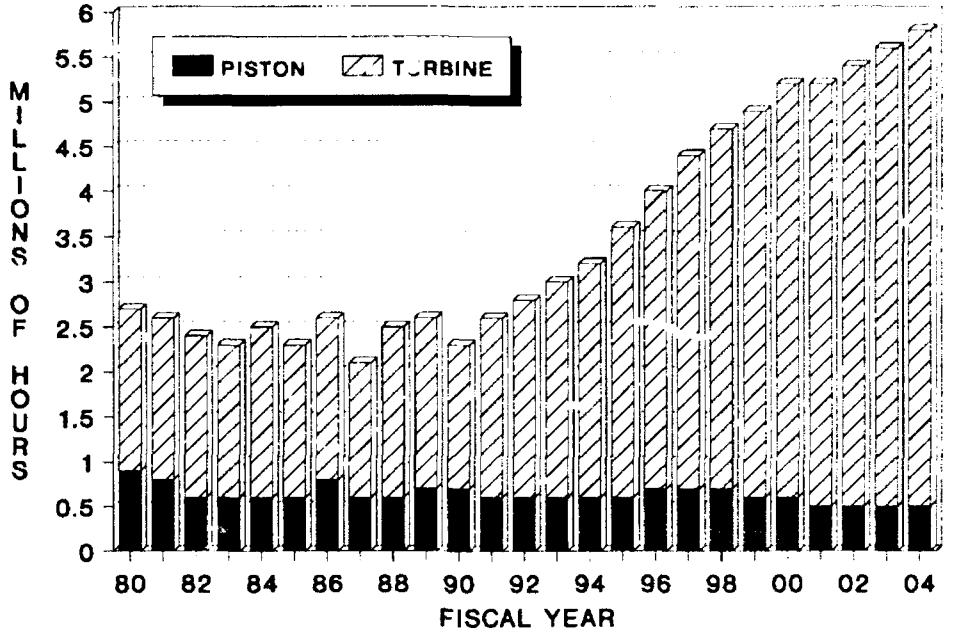
ACTIVE ROTORCRAFT



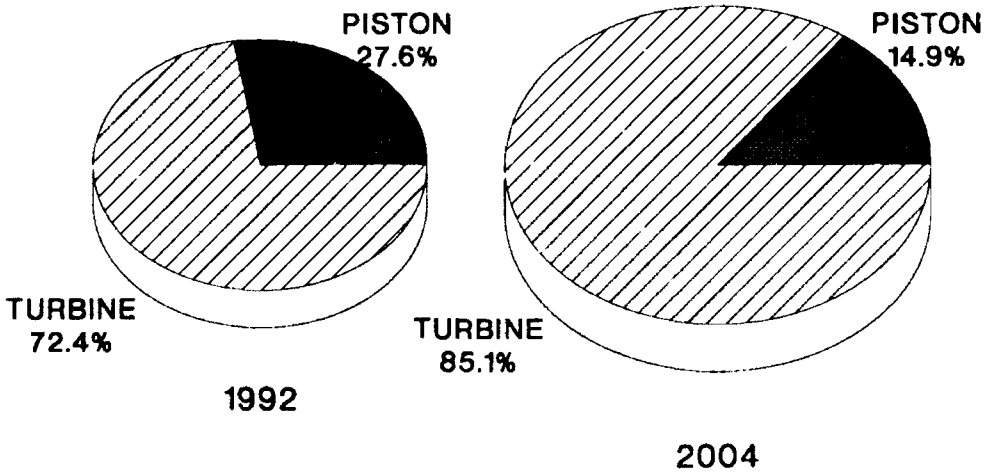
PERCENT BY AIRCRAFT TYPE



ROTORCRAFT HOURS FLOWN



PERCENT BY AIRCRAFT TYPE



that the industry has an inadequate understanding of the factors that drive both direct operating and life-cycle costs. The results of a recently-completed analysis of helicopter economic factors provided data on the cost of operation of various classes of helicopters (Direct Operating Cost per Available Seat Mile) and the cost of acquisition of same classes of helicopters (Acquisition Cost per Available Seat). The first measure focuses on the revenue generation capability of the helicopter and the second also provides insight into the additional investment required to obtain a greater capability.

The study also analyzed the increase in the cost of acquisition of various helicopter classes as a function of inflation and found that, on average, turbine helicopter prices increased 20-30 percent faster than inflation during the 1986-1992 timeframe. In contrast, prices for piston powered rotorcraft increased only 5 percent faster over the same time period.

An analysis of the increase in the price of spare parts and overhaul services compared to inflation indicated that the cost of spare parts has risen more than 150% of the increase in the Consumer Price Index (CPI) while the price increases overhaul services have actually been lower than the increase in the CPI.

A cooperative and concerted effort is now underway to collect cost information and train operators to understand their full costs. The marketing of helicopter services and an education and public awareness effort on the benefits of the industry are also priority targets for this forum.

Further details and information are available in the January 1993 TRB Report on the CEO Workshop.

CHAPTER VII

FAA WORKLOAD MEASURES

The FAA provides the aviation community with three distinct air traffic services: (1) air traffic control tower service at selected airports (401 in FY 1992); (2) traffic surveillance and aircraft separation by air route traffic control centers (22 in FY 1992); and (3) flight planning and pilot briefings at flight service stations (172 in FY 1992). All four aviation system user groups--air carriers, commuters/air taxis, general aviation, and military--use these FAA operational services to enhance the flow and safety of aviation traffic.

Because the four aviation system user groups differ in the demand they impose on the air traffic system, multiple indicators are used to describe the total FAA operational workload. No single measure typifies past trends or future demand for the services provided by the FAA. There have been, and will continue to be, different socioeconomic forces driving the growth of each of the aviation-user categories.

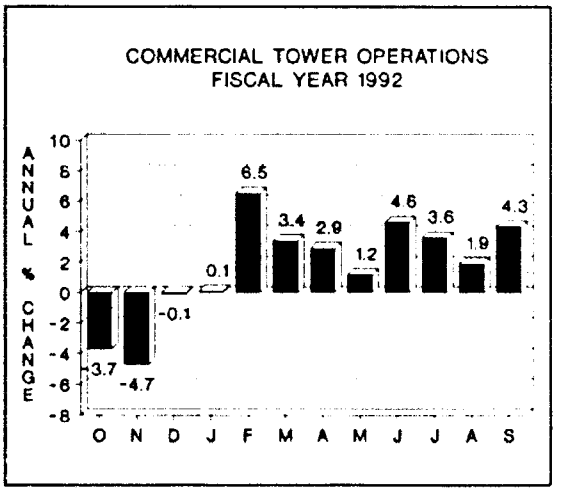
REVIEW OF 1992

FAA TOWER ACTIVITY

Aircraft activity at the 401 FAA towered airports (up from 399 in 1991) totaled 61.5 million in fiscal year 1992, basically the same operations count recorded in fiscal year 1991. During the last decade (1983 to 1992), towered airport activity has registered increases in all but the last 2 years (down 3.2 percent in 1991), a period during which aircraft activity at FAA towers increased by 21.5 percent (2.0 percent annually).

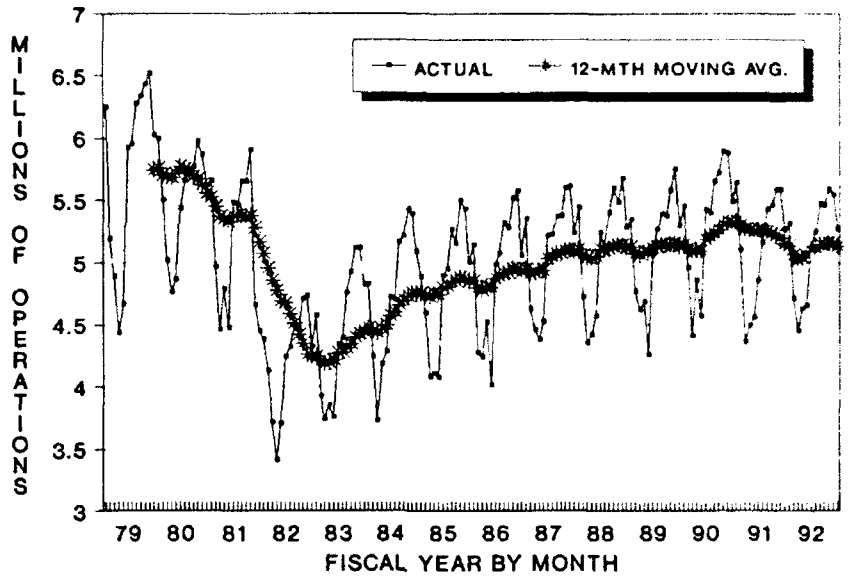
However, despite the growth that has occurred over the past 10-year period, the level of activity recorded at FAA towered airports in 1991 remains 3.9 percent below the operation counts recorded (64.0 million) during the 12-month period immediately preceding the August 1981 air traffic controllers' strike (hereafter referred to as the pre-strike period).

Since 1982, there has been strong demand for commercial aviation services.

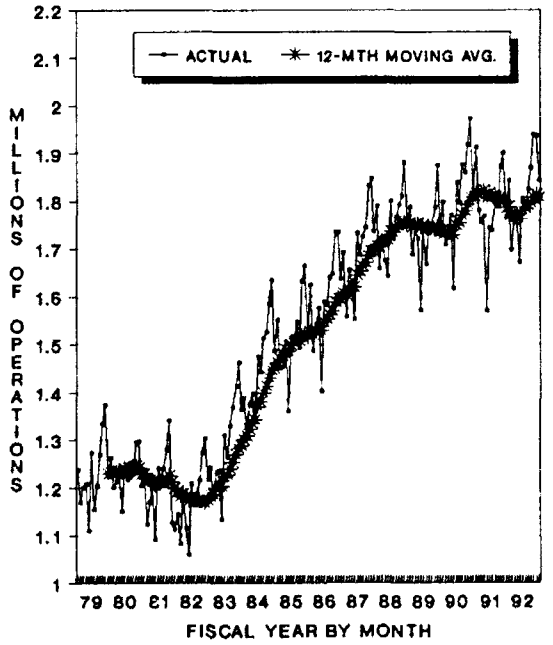


TOWERED AIRPORT OPERATIONS
ACTUAL AND 12-MONTH MOVING AVERAGE

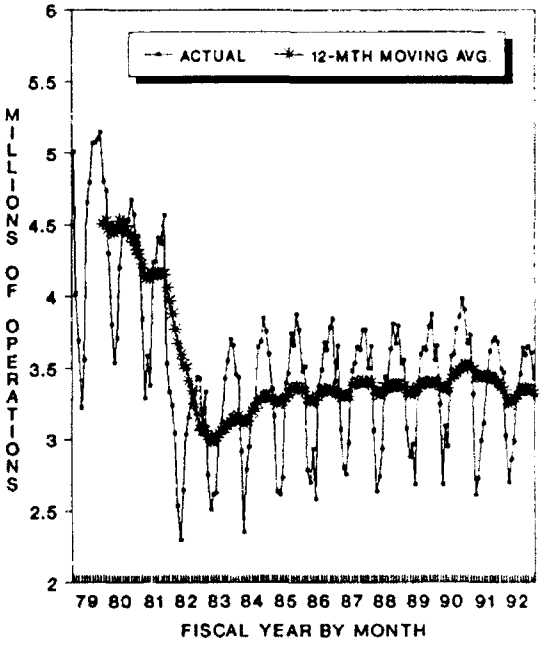
TOTAL OPERATIONS



COMMERCIAL OPERATIONS



NONCOMMERCIAL OPERATIONS

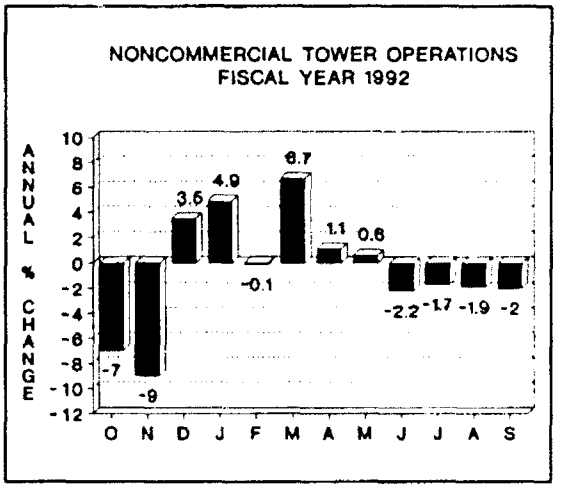


Commercial activity (the sum of air carrier and commuter/air taxi operations) is up 53.9 percent (4.4 percent annually) since 1982. Despite a 1.4 percent increase in 1992, however, commercial activity has remained virtually flat during the past 4 years.

Air carrier activity at FAA towered airports (12.4 million operations) has declined by 3.9 percent during the past 2 years and has remained virtually flat since 1986. The decline during the past 2 years is due largely to the liquidation of three commercial air carriers: Eastern Air Lines in January 1991 (4.2 percent of air carrier operations in FY-90), Pan American Airways in December 1991 (1.8 percent of air carrier operations in FY-91), and Midway Airlines, also in December 1991 (1.6 percent of air carrier operations in FY-91). This factor alone is estimated to have reduced the number of air carrier operations at FAA towered airports by approximately 385,000 operations (3.1 percent) in 1991 and 390,000 operations (3.1 percent) in 1992. Capacity cutbacks by other carriers operating under Chapter 11 bankruptcy has reduced operation counts still further.

Commuter/air taxi activity increased by 4.5 percent in fiscal year 1992 and continues to be the fastest growing of all user groups. Its activity level has increased in every year but one (down 3.3 percent in 1986) since the user category was designated in 1972. During the past decade, commuter/air taxi activity at FAA towered airports has grown at an average annual rate of 6.2 percent, from 5.1 million operations in fiscal year 1982 to 9.3 million during the current year. Much of this growth is the result of commuter code-sharing and schedule tie-in agreements with the larger commercial air carriers. The liquidation of Eastern and Pan American has also adversely affected the operations of its code-sharing partners, thus contributing to reduced commuter/air taxi activity counts in fiscal years 1991 and 1992.

Noncommercial activity (the sum of general aviation and military operations), on the other hand, has increased by



only 8.8 percent (0.9 percent annually) over the past decade. In fiscal year 1992, noncommercial activity totaled 39.7 million operations, down 1.0 percent from 1991 activity.

After recording increased activity counts in six of the nine years following the 1981 air traffic controllers strike, general aviation activity has declined for two consecutive years. General aviation activity totaled 36.9 million operations in fiscal year 1992, a 5.4 percent decline from 1990 and a 1.9 percent decline from 1991. In fact, the 1992 operations count was only 78.3 percent of general aviation's pre-strike level of 47.1 million operations.

After increasing by 7.8 percent during the 1989-90 time period, the number of local general aviation operations (15.7 million) has declined 5.4 percent over the past 2 years, down 1.9 percent in fiscal year 1992, reflecting a weak U.S. economy and the resultant decline in student training. Itinerant general aviation operations declined by 0.9 percent in fiscal year 1992 to 21.3 million, reflecting a decline in corporate business flying as a result of continued slow U.S. economic growth. Itinerant operations in 1992 were at 77.5 percent of pre-strike activity

levels (27.5 million), while local operations were at 81.4 percent of the pre-strike level (19.3 million).

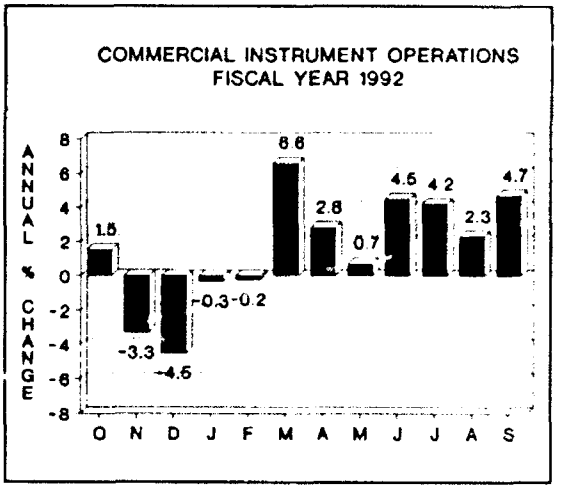
Military operations totaled 2.8 million in fiscal year 1992, a 12.0 percent increase over 1991 Gulf War depressed activity levels. Most of the growth occurred during the December-April period (up 23.1 percent), reflecting the redeployment of a large number of military aircraft and personnel from the Middle East. Local military operations increased 13.1 percent in 1992 to 1.4 million, while itinerant military operations increased by 11.3 percent to 1.4 million.

INSTRUMENT OPERATIONS

Instrument operations handled at FAA towers totaled 45.6 million in fiscal year 1992, 1.1 percent above the 1991 activity level and 17.5 percent above the level of activity recorded in the pre-strike period (38.8 million). Much of the increase in instrument operations during the past decade (up 43.9 percent) can be attributed to the increase in commercial activity (up 65.3 percent) and to commuter code-sharing and schedule tie-in agreements with the larger commercial airlines.

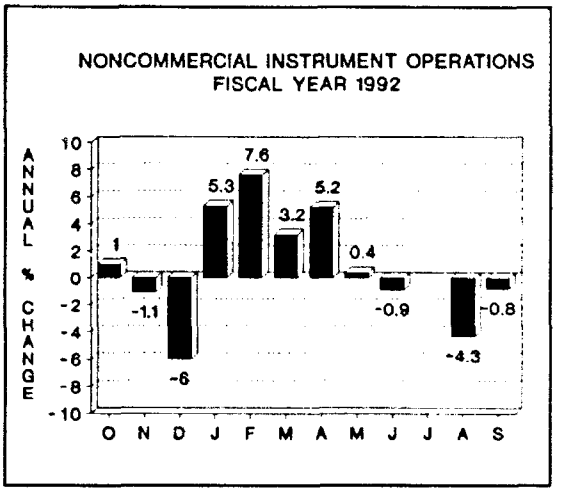
Commercial aircraft activity (23.3 million operations) increased by 1.3 percent in fiscal year 1992 but is down 0.4 percent from 1990 activity levels. Air carrier instrument operations totaled 13.4 million, down 0.7 percent in fiscal year 1991 and 4.3 percent during the last 2 years.

Air carrier instrument activity counts in both 1991 and 1992 were affected by the liquidation of Eastern, Pan American, and Midway. It is estimated that these shutdowns reduced air carrier instrument operation counts by almost 800,000 (3.0 percent) during the past 2 years.



Commuter/air taxi instrument operations at FAA towered airports totaled 9.9 million in fiscal year 1992, up 4.2 percent over 1991 activity levels.

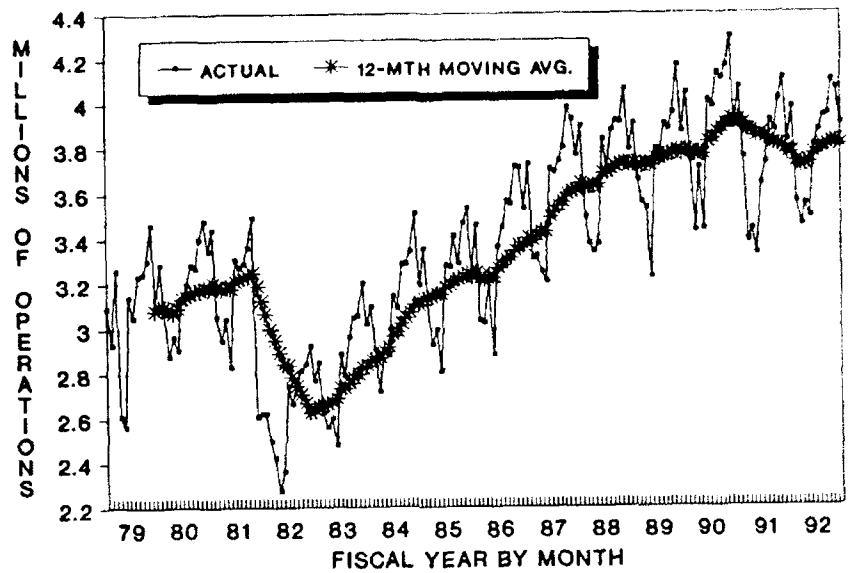
Noncommercial instrument operations (22.3 million) increased by only 0.9 percent in fiscal year 1992 but are up 27.4 percent (2.5 percent annual growth) during the past decade. General aviation activity totaled



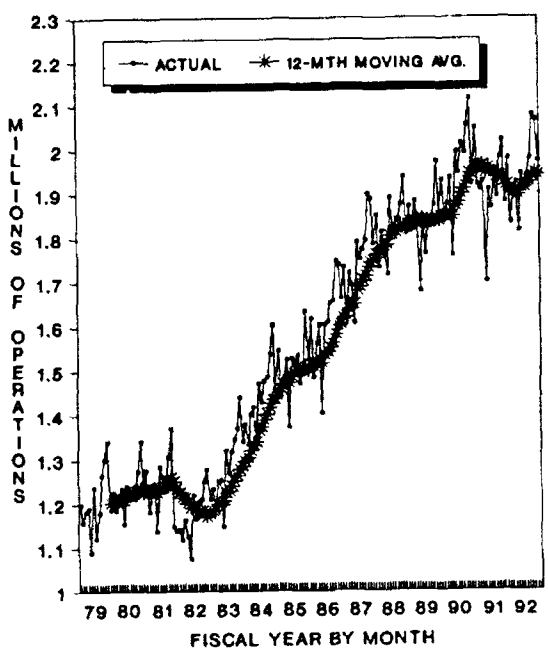
18.2 million in 1992, 0.6 percent higher than the activity level recorded in 1991. However, general aviation activity increased 30.9 percent during the past 10 years. Most of the increase in general aviation activity since 1982 can be attributed to the formation of Airport Radar Service Areas (ARSAs) at 137 locations in the United States. Under the previous

INSTRUMENT OPERATIONS
ACTUAL AND 12-MONTH MOVING AVERAGE

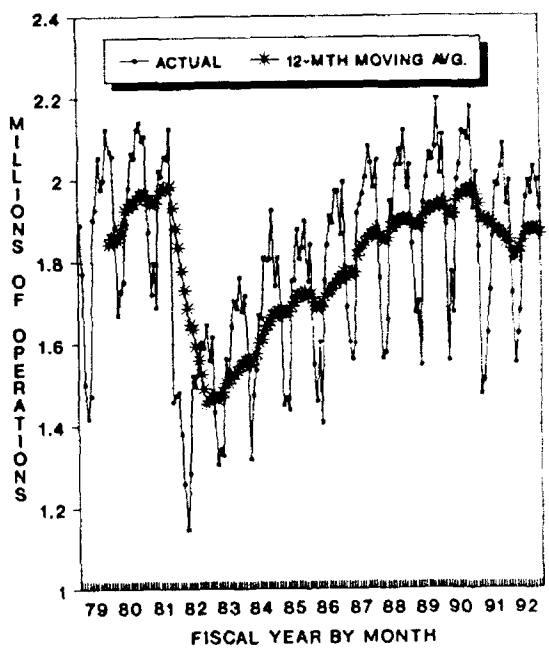
TOTAL OPERATIONS



COMMERCIAL OPERATIONS



NONCOMMERCIAL OPERATIONS

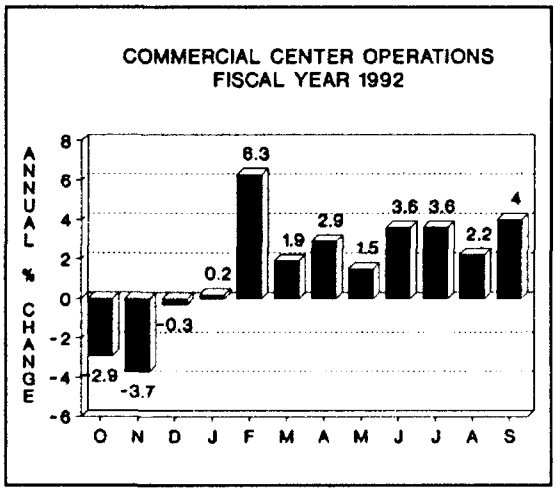


Terminal Radar Service Area (TRSA) concept, general aviation aircraft could enter the TRSA without communicating with and without being counted by air traffic control (ATC). Under the ARSA concept all aircraft must be in contact with ATC, and, hence, are now counted.

Military instrument operations totaled 4.1 million in fiscal year 1992, a 2.5 percent increase over Gulf War depressed 1990 operation counts.

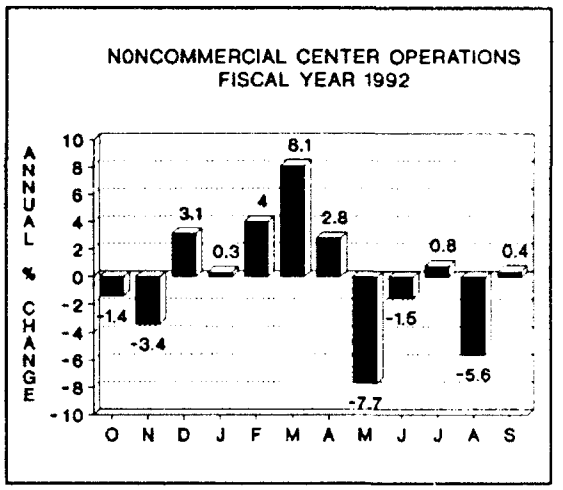
CENTER ACTIVITY

In fiscal year 1991, the number of aircraft flying under instrument rules handled by FAA air route traffic control centers totaled 36.7 million, an increase of 0.8 percent during 1990 activity counts. Most of the increase at en route centers over the last 10 years (up 31.5 percent) can be attributed to the growth in commercial aviation activity (up 50.6 percent). The number of commercial aircraft handled at the centers (24.1 million) increased 0.8 percent in fiscal year 1992. The number of air carrier aircraft handled totaled 18.3 million



while the number of commuter/air taxi aircraft handled totaled 5.9 million (up 5.4 percent). The liquidations of Eastern, Pan American, and Midway depressed both air carrier and commuter/air taxi center activity counts for much of fiscal years 1991 and 1992.

Noncommercial aircraft handled (12.5 million) remained virtually constant in fiscal year 1992. The number of general aviation aircraft handled totaled 7.4 million while military activity totaled 5.1 million. Military activity failed to recover any of the 7.3 percent decline suffered in 1991 as a result of the deployment of military aircraft to the Middle East.



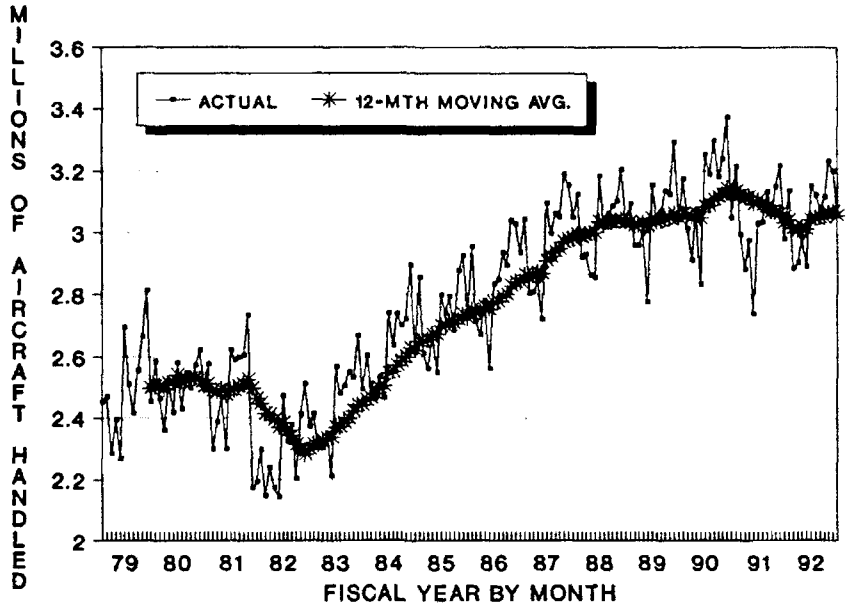
FLIGHT SERVICE STATION ACTIVITY

Pilot briefings, the filing of flight plans, and aircraft contacts by flight service stations (FSSs) totaled 40.2 million in fiscal year 1992, a decline of 2.2 percent from 1991 activity levels. Activity declined in each of these categories. The number of aircraft contacted dropped 3.5 percent to 5.6 million, the number of pilot briefings declined 1.8 percent to 10.8 million, and the number of flight plans originated decreased 1.5 percent to 6.5 million.

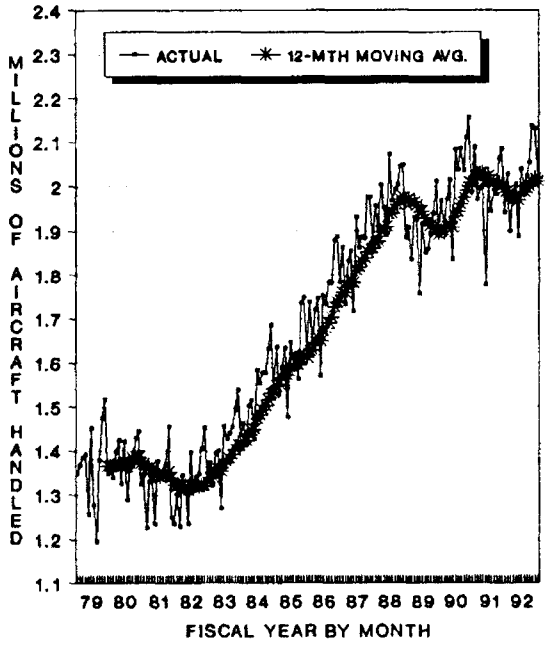
However, the FAA also provides automated flight services, which supplement

IFR AIRCRAFT HANDLED
ACTUAL AND 12-MONTH MOVING AVERAGE

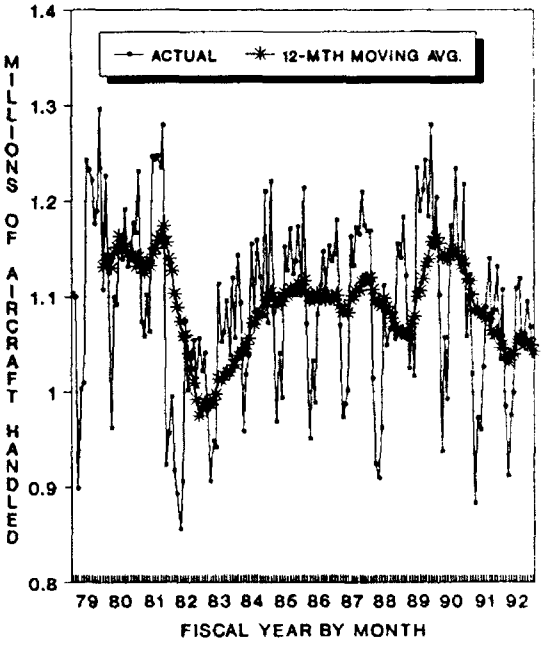
TOTAL AIRCRAFT HANDLED

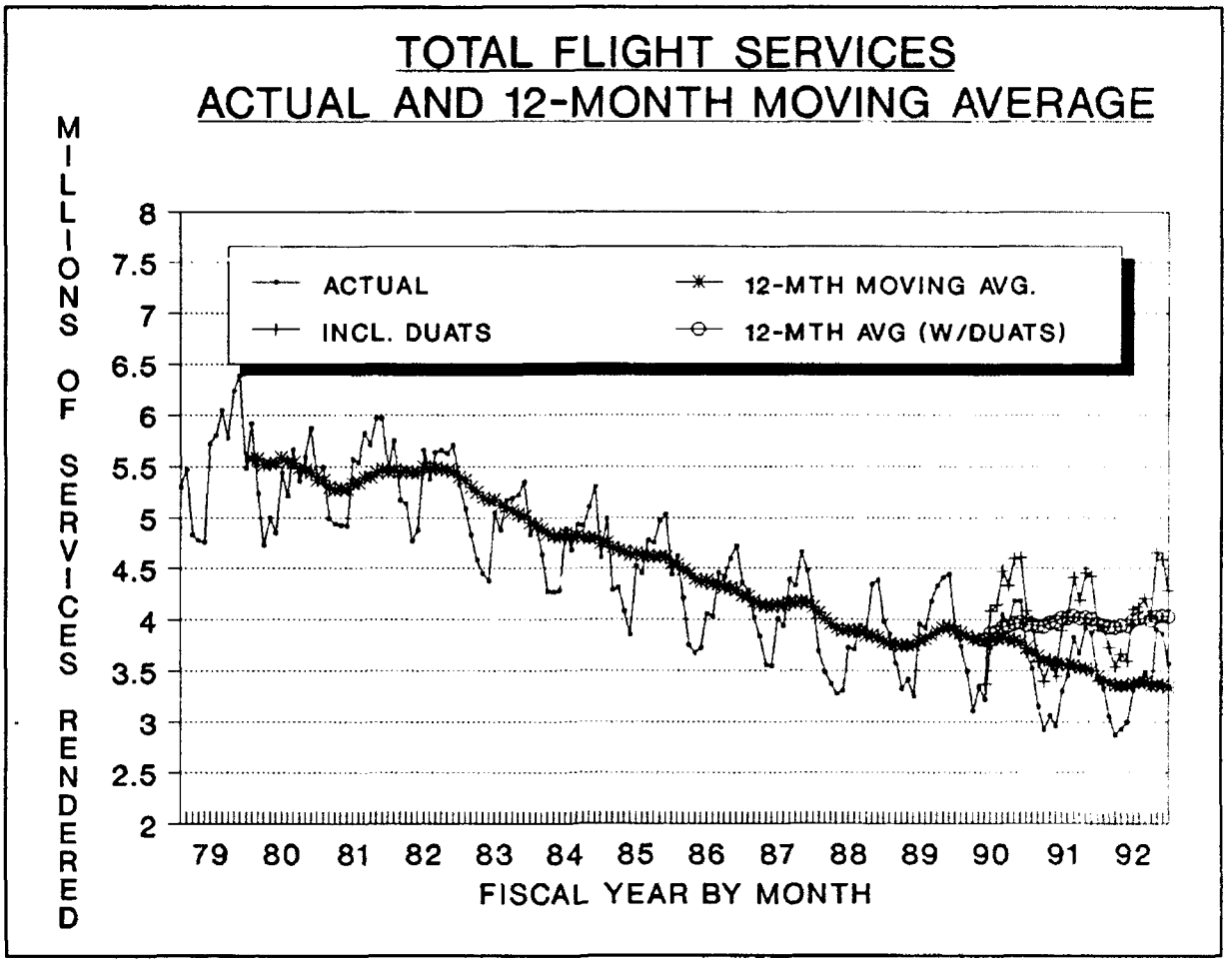


COMMERCIAL AIRCRAFT HANDLED



NONCOMMERCIAL AIRCRAFT HANDLED





FSS activity. The Direct User Access Terminal System (DUATS) provides an alternative to the FSS for obtaining pilot briefing information and filing flight plans. Use of this series, introduced in February 1990, is growing. If the services provided through DUATS are included with traditional FSS services, total flight plans filed have increased 1.2 percent and pilot briefs have increased 5.1 percent. Thus, the total flight services provided by the FAA in 1992 have increased 2.7 percent (see graphic above).

At the end of fiscal year 1992, there were a total of 59 automated flight service stations (AFSSs) and 113 flight service stations. During 1992, only one FSS was consolidated with its respective AFSS.

CONTRACT TOWERS

The FAA is currently contracting out "low activity towers," and the operation counts at these locations are not included in the FAA tower workload measures. There were 27 contract towers in operation during fiscal year 1992, two more than in 1991. The new contract towers added during 1992 were Smyrna Airport (Tennessee) and Mosinee Central Wisconsin Airport (Wisconsin).

Operations at contract towers totaled over 1.6 million in fiscal year 1991, an increase of 5.6 percent over the number of operations recorded at contract towers in 1991. General aviation accounted for the vast majority (84.5 percent) of the activity at these contract towers, up 4.5 percent to

nearly 1.4 million operations. Commuter/air taxi operations totaled 154,587 (up 7.8 percent), while military operations totaled 92,476 (up 18.0 percent). Air carrier activity at contract towers increased 47.8 percent in fiscal year 1992. However, air carrier operations totaled only 8,953 in 1992, only 0.5 percent of total contract tower activity.

A listing of the current contract towers can be found in Appendix H. Operation counts for the 401 FAA towered airports and the 25 contract towers, by user group, can be found in the publication FAA Air Traffic Activity FY 1992, compiled by the Statistics and Forecast Branch, Office of Aviation Policy, Plans, and Management Analysis (APO-110), phone (202) 267-3355.

FORECAST ASSUMPTIONS

Forecast growth in FAA workload measures includes not only the demand imposed on the existing National Airspace System, but also aviation activity at new locations not previously provided with FAA services. Aviation activity at contract towers is excluded from the workload measures.

NUMBER OF FAA FACILITIES

Two new FAA towered airports were commissioned during fiscal year 1992, bringing the total number of FAA towered airports to 401. The two new FAA towered airports are: Central Florida Regional Airport in Sanford, Florida (November 1991) and Manassas Municipal/Harry P. Davis Field (HEF), Manassas, Virginia (March 1992). The current forecast assumes that the number of FAA towered airports will remain constant at the 1992 level of 401 airports throughout the 12-year forecast period.

There are currently 29 Terminal Control Areas (TCAs) and 120 ARSAs. This forecast assumes that there will be three additional TCAs and three additional ARSAs added to the system during the next 2 years. This expansion of controlled airspace is reflected in the forecast for instrument operations at airports with FAA traffic control service.

The number of flight service stations and automated flight service stations totaled 172 at the end of fiscal year 1992: 59 AFSSs and 113 FSSs. Of the remaining FSSs, 82 will be closed and 31 will continue in operation as auxiliary flight service stations in locations of unique weather or operational conditions. This will be in addition to the 61 fully consolidated AFSSs. The current schedule calls for all 61 automated AFSSs to be commissioned and fully consolidated by 1994.

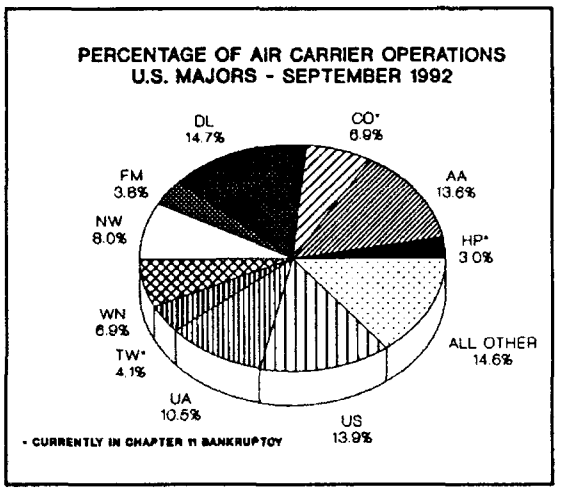
EXTERNAL FACTORS

Despite projections of moderate to strong growth in the U.S. economy and in activity levels at FAA facilities, there is uncertainty associated with these forecasts. A number of external events could significantly alter the short-term environment and cause the activity levels to be significantly lower than those forecast.

In 1991, the Gulf War and the liquidation of Eastern Air Lines combined to lower activity levels. In 1992, the dampening factors were: the failure of the U.S. economy to sustain its recovery, the liquidation of two additional air carriers (Pan American Airways and Midway Airlines), and the reduction in service levels by carriers

operating under, or very close to, Chapter 11 bankruptcy.

In 1993, the course of the U.S. economy and the financial health of the U.S. air carrier industry are still to be resolved. Three U.S. air carriers, which currently account for approximately 14 percent of air carrier



activity at FAA towered airports, are operating in Chapter 11 bankruptcy. In addition, the weak balance sheets of several other heavily leveraged carriers calls into question their continued financial viability. Should one or more of these carriers be forced into liquidation, it would significantly impact aircraft activity at FAA facilities, both in total, but more significantly, at those airports and hubs currently served by those carriers.

In addition, a number of U.S. air carriers--most notably American, Delta, Northwest, and United--have significantly reduced their capital expansion/acquisition plans, especially in the short term. This has resulted in the outright cancellation of some aircraft orders and options and in the delay of significant numbers of aircraft deliveries until the mid to late 1990s. As a result, significantly fewer aircraft are expected to enter the U.S. air carrier fleet during the early years of the forecast period, with the projected increases in passenger demand being met through increased aircraft utilization, higher load factors, and retrofitting of larger numbers of stage-2 aircraft. Changes in the mix of air carrier aircraft being flown (larger rather than smaller) result in relatively slower growth in air carrier activity levels during the early years of the forecast period and, correspondingly, relatively higher growth starting in 1997-98 when large numbers of new aircraft are forecast to be delivered to U.S. airlines.

If the air carriers' current capital acquisition plans are reduced or delayed further, this could reduce the growth in air carrier activity levels at FAA air traffic facilities. (As this publication goes to press, United Airlines has announced additional fleet reductions and delays--these cutbacks are not included in the current forecasts of air carrier activity and fleet.) Of course, should both U.S. economic growth and passenger demand exceed expectations, thereby resulting in improved air carrier finances, current capital acquisition plans could be revised upward. This, in turn, could result in relatively higher air carrier activity levels.

One additional factor to be considered is the impact of the phase-out of air carrier stage-2 aircraft on regional/commuter carriers' activity levels. As stage-2 aircraft are phased out of the air carrier fleet, it is expected that some of the larger carriers may elect to transfer the routes formerly served by these aircraft to their code-sharing partners. Should the number of route transfers greatly exceed current expectations, regional/commuter operations at FAA air traffic facilities could be higher than currently forecast. Conversely, air carrier operations would be lower.

WORKLOAD FORECASTS

FAA TOWER ACTIVITY

Activity at FAA towered airports is expected to exceed the pre-strike level of 64.0 million operations in 1994 and to exceed the 1979 all-time peak (69.0 million) in 1998.

Operations at FAA towered airports are forecast to increase by 1.6 percent (to 62.5 million) in fiscal year 1993. The growth in 1993 is in large part due to the expected recovery in the U.S. economy (GDP up 2.4 percent) from the relatively slow growth experienced during the last several years. This is expected to provide the impetus for a recovery of both commercial activity and corporate business flying. In addition, the economic recovery is expected to spur a recovery in student/pilot training.

As the U.S. economic recovery gathers momentum during 1994 and 1995, so will activity at FAA towered airports. FAA tower activity is forecast to increase to 64.1 million operations (up 2.6 percent) in 1994 and to 65.6 million operations (up 2.3 percent) in 1995. During the 12-year forecast period, operations at FAA towered airports are projected to increase by 1.9 percent annually. In absolute numbers, towered operations are projected to total 76.6 million in fiscal year 2004.

The mix of aircraft using FAA towered airports is expected to increase gradually toward larger jet aircraft. This results from the fact that the combined total of general aviation and commuter/air taxi operations (i.e., operations performed by smaller aircraft) is expected to grow at a somewhat slower pace than the number of air carrier operations (24.9 percent compared with 29.8 percent). The combined activities of general aviation and commuters/air taxis are expected to account for 75.3 percent of total tower operations in fiscal year 2004, up only slightly from a 75.1 percent share in 1992. Air carrier operations' share of towered airport activity is expected to increase at a slightly faster pace over the forecast period, from 20.2 percent in 1992 to 21.0 percent in fiscal year 2004.

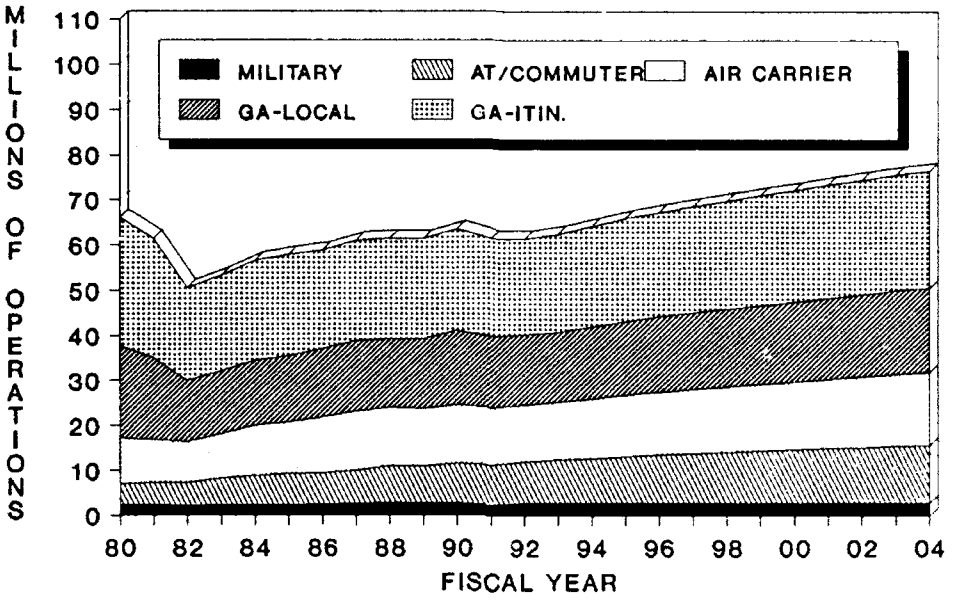
The forecasted activity levels and average annual growth rates for each aviation user group from the year 1992 to the year 2004 are: commuter/air taxi, from 9.3 to 12.9 million operations (2.8 percent annual growth); air carrier, from 12.4 to 16.1 million operations (2.2 percent); and general aviation, from 36.9 to 44.8 million operations (1.6 percent). Itinerant general aviation operations are forecast to increase from 21.3 to 25.9 million operations (1.6 percent annually) and local general aviation operations from 15.7 to 18.9 million operations (1.6 percent annually). Military operations are expected to remain at the 1992 level of activity (2.8 million) throughout the 12-year forecast period.

Commercial aircraft activity at FAA towered airports is expected to grow at an average annual rate of 2.4 percent during the 12-year forecast period, from 21.7 to 29.0 million. Noncommercial activity is forecast to increase from 39.7 million in 1992 to 47.6 million in fiscal year 2004, an average annual increase of 1.5 percent.

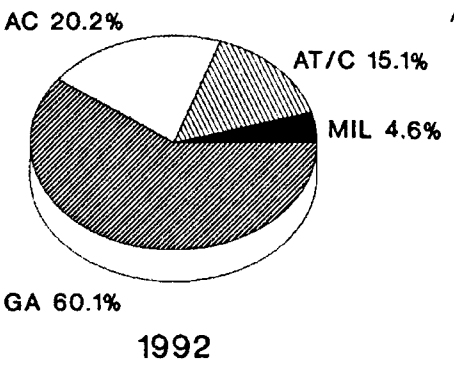
INSTRUMENT OPERATIONS

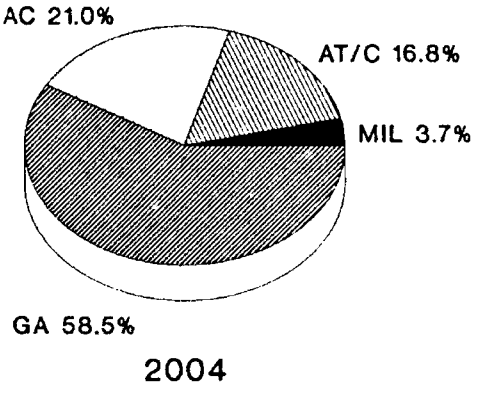
An increase in the number of TCAs and TRSAs in both 1993 and 1994 is expected to result in growth somewhat higher than that forecast at FAA towered airports. Instrument operations are forecast to grow by 1.8 percent in 1993, by 2.6 percent in 1994, and by 2.7 percent

AIRCRAFT OPERATIONS AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE



DISTRIBUTION OF WORKLOAD BY USER GROUP





in 1995. During the 12-year forecast period, instrument operations are expected to increase at an average annual rate of 2.0 percent, growing from a total of 45.6 million operations in 1992 to 58.0 million operations in fiscal year 2004.

The mix of instrument operations is not expected to change dramatically during the forecast period. The number of commuter/air taxi and general aviation operations performed by smaller aircraft will increase only slightly more slowly than the number of operations performed by the larger, more sophisticated air carrier aircraft (29.2 versus 31.3 percent). By fiscal year 2004, 62.6 percent of all instrument operations are expected to be performed by commuter/air taxi and general aviation aircraft, up from 61.6 percent in 1992.

The projected activity levels and average annual growth rate for each user group from the year 1992 to 2004 are: commuter/air taxi, from 9.9 to 13.7 million operations (2.7 percent annually); air carrier, from 13.4 to 17.6 million operations (2.3 percent annually); and general aviation, from 18.2 to 22.6 million operations (1.8 percent annually). Military activity is expected to remain at the 1992 operations level (4.1 million) throughout the forecast period.

During the 12-year forecast period, commercial activity is expected to increase at an average rate of 2.5 percent annually, from 23.3 to 31.3 million. Noncommercial activity is forecast to increase from 22.3 million in 1992 to 26.7 million in fiscal year 2004, an average annual growth rate of 1.5 percent.

CENTER ACTIVITY

The workload at FAA air route traffic control centers is expected to exhibit relatively moderate growth during the early years of the forecast period, increasing by 2.2 percent in 1993, 2.4 percent in 1994, and 2.3 percent in 1995. During the 12-year forecast period, the number of aircraft handled at en route centers is forecast to increase at an average annual rate of 2.0 percent. In absolute numbers, the center workload is forecast to increase from 36.7 million aircraft handled in 1992 to 46.6 million in fiscal 2004.

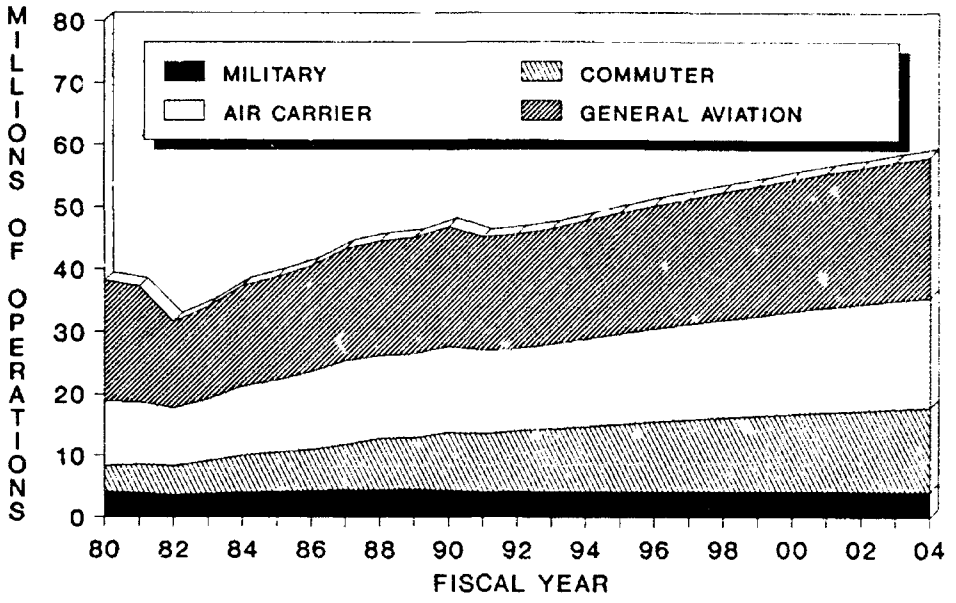
Commercial aircraft activities' share of center workload is forecast to increase from 65.9 percent in 1992 to 69.5 percent in 2004. Between 1992 and the year 2004, the air carrier share is forecast to increase from 49.9 percent to 51.1 percent. The commuter/air taxi share is expected to increase from 16.1 percent to 18.5 percent during the same time period.

The projected activity levels and average annual growth rates for each user group from 1992 to 2004 are: commuter/air taxi, from 5.9 to 8.6 million aircraft handled (3.2 percent annual growth); air carrier, from 18.3 to 23.8 million aircraft handled (2.2 percent annually); and general aviation, from 7.4 to 9.1 million aircraft handled (1.7 percent annually). The number of military operations is expected to remain at its 1992 level of activity (5.1 million) during the entire forecast period.

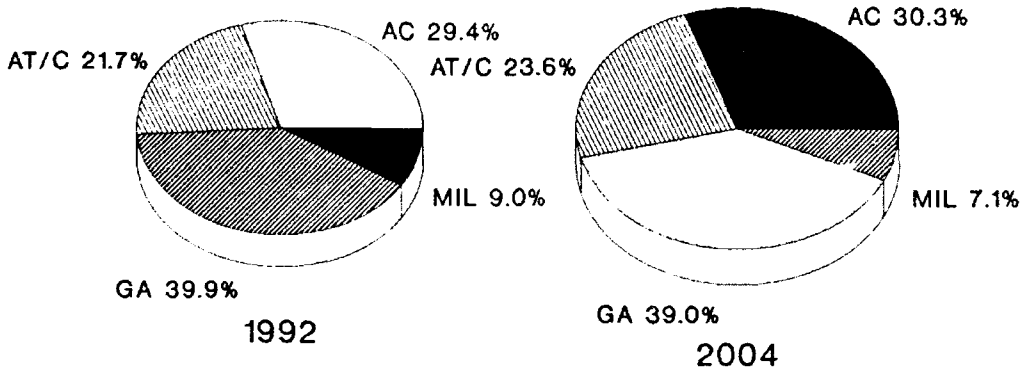
Commercial activity is expected to grow at an average annual rate of 2.5 percent during the 12-year forecast period, from 24.2 to 32.4 million. Noncommercial activity is forecast to increase by 1.1 percent annually, from 12.5 million in 1992 to 14.2 million in fiscal year 2004.

Forecasts for individual centers are available upon request from the Statistics and Forecast Branch, Office of Aviation Policy, Plans, and Management Analysis (APO-110), phone (202) 267-3355.

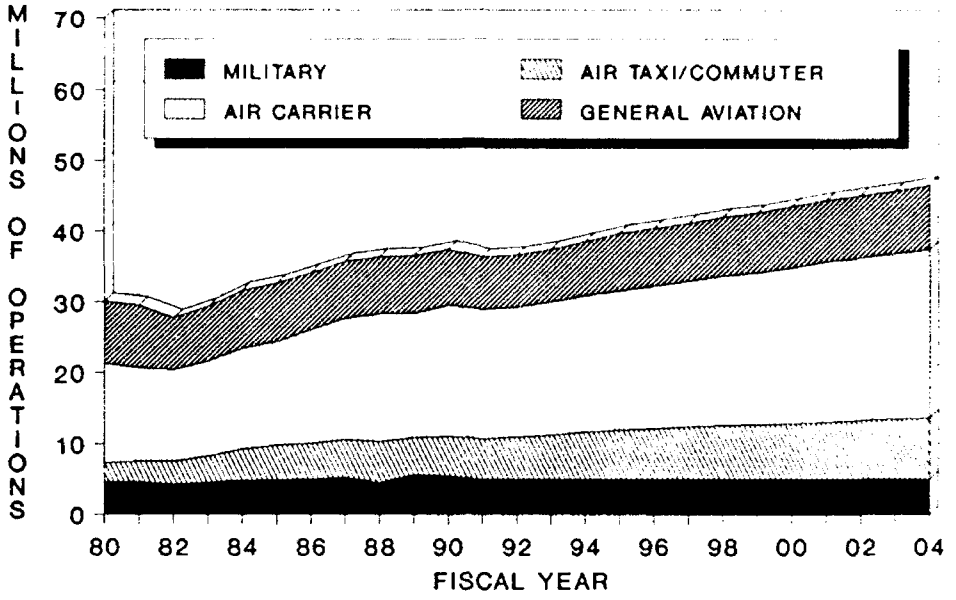
INSTRUMENT OPERATIONS AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE



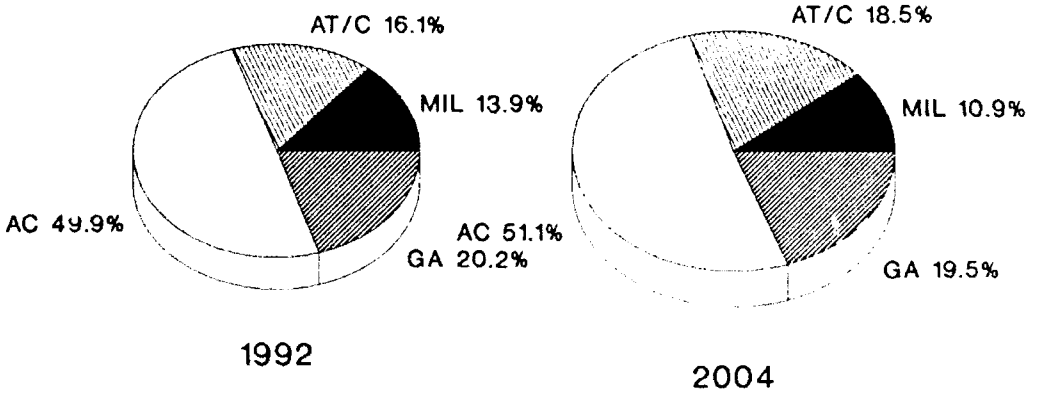
DISTRIBUTION OF WORKLOAD BY USER GROUP



IFR AIRCRAFT HANDLED AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS



DISTRIBUTION OF WORKLOAD BY USER GROUP



FLIGHT SERVICE STATION ACTIVITY

Forecast

Total traditional flight services originating at FAA flight service stations are projected to decline through fiscal year 1995 before resuming a pattern of slow growth over the remainder of the forecast period. In absolute numbers, the number of flight services is expected to decline to 38.8 million (down 3.5 percent) in 1993, to 37.5 million (down 3.4 percent) in 1994, and to 37.4 million (down 0.3 percent) in 1995. Assuming that the FSS consolidation program is completed prior to fiscal year 1995, total flight services should begin to increase gradually, growing at an average annual rate of 0.6 percent over the remaining 9 years of the forecast period. Total flight services should reach 39.4 million by the year 2004.

The number of pilot briefings is forecast to decline to 10.5 million (down 2.8 percent) in 1993, 10.1 million (down 3.8 percent) in 1994, and 10.0 million (down 1.0 percent) in 1995. Starting in 1996, the number of pilot briefings begins to increase gradually (0.4 percent annually) over the remaining 8 years of the forecast period, reaching a total of 10.3 million in the year 2004.

The number of flight plans originated is projected to decline to 6.3 million (down 3.1 percent) in 1993 and to 6.2 million (down 1.6 percent) in 1994. Over the next 10 years of the forecast period, the number of flight plans originated is forecast to increase moderately (1.1 percent annually), reaching a total of 6.9 million in the final year of the forecast period.

The number of aircraft contacted is forecast to decline to 5.2 million (down 7.1 percent) in 1993, 4.9 million (down 5.8 percent) in 1994, and 4.8 million (down 2.0 percent) in 1995. Thereafter, the number of aircraft contacted is expected to increase only marginally (0.4 percent annually), reaching a total of only 5.0 million in the year 2004.

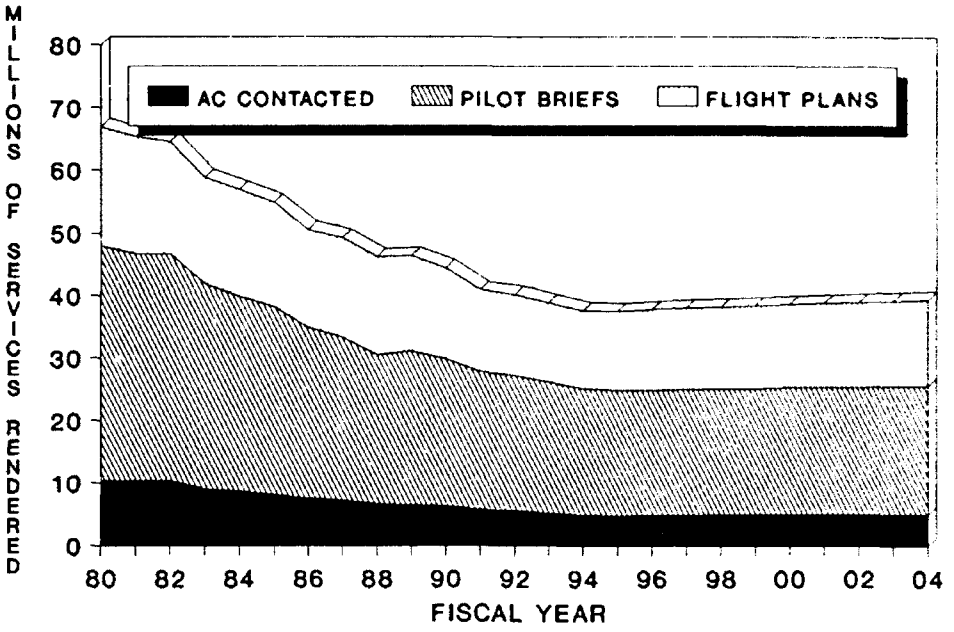
Additional Flight Service Activity Data

The introduction of new technology to flight service applications has significantly changed the operating environment of the flight service system. Viewed in the larger context of the total National Airspace System, the recent workload trends do not necessarily indicate declining demand for flight planning services. Rather, they may indicate that demand is being met through increased use of automation and new system capabilities resulting in increased system efficiencies and productivity.

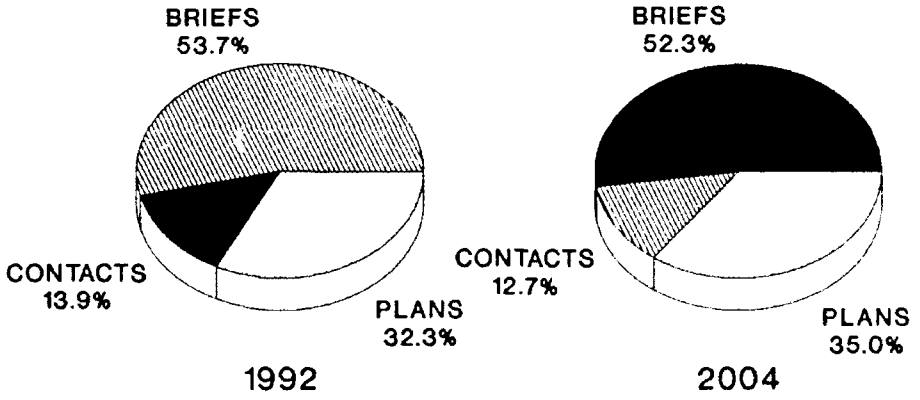
Specifically, several factors resulting from automation will tend to dampen the growth in FSS workload measures, as currently defined. First, pilots can now obtain weather briefings through the Telephone Information Briefing System (TIBS), which does not require contact with a flight service specialist, and is not, therefore, included in the FSS pilot briefings count. Second, private weather briefing vendors, participating in recently implemented memorandums of agreement, can also file flight plans for their customers without going through an FSS. Third, starting February 1990, DUATS became operational. Using DUATS, pilots with access to a computer, modem, and telephone can directly access a national weather data base for weather briefings and flight plan filing without ever going through an FSS.

This automated access may be through the pilot's own computer or through those of field-based operators offering

FLIGHT SERVICES ORIGINATED AT FAA FLIGHT SERVICE STATIONS



DISTRIBUTION BY TYPE OF SERVICE RENDERED



the service to their customers. None of the flight planning services provided through the above sources is included in the FSS workload measures.

During fiscal year 1992, there was a total of 3.6 million DUATS transactions. If each transaction involved a weather briefing, this represents 3.6 million pilot briefs. In addition, just under 613,200 flight plans were filed through the DUATS system. Using the weighted total flight services formula (two times pilot briefs plus flight plans filed), this translates into approximately 8.4 million total flight services that are not included in the FAA flight service station workload measure.

Starting in fiscal year 1994, with more than 3 years of historical DUATS data, forecasts of flight service activity will be developed for, and distributed by, source of service--DUATS versus FAA flight service stations.

Forecasts for individual flight service stations are available upon request from the Statistics and Forecast Branch, Office of Aviation Policy, Plans, and Management Analysis (APO-110), phone (202) 267-3355.

CHAPTER VIII

FORECAST ACCURACY

The Federal Aviation Administration has developed forecast models and established a forecast process that attempts to anticipate changes that may affect the future direction of the industry. Using this forecast process, the FAA provides 12-year forecasts of workload measures annually for aviation-related manpower and facility planning. The FAA frequently sponsors workshops to critique the techniques and practices currently used by the FAA and other aviation forecasters and to examine the outlook for the aviation industry and its prospects for future growth. The workshops focus on the forecast process and ways to improve the reliability and utility of forecast results.

The two tables on pages VIII-3 and VIII-4 provide some measure of the accuracy of FAA workload forecasts. The tables compare forecast data for both the short-term and the long-term periods. The short-term, 1 to 5 years, is the critical period for manpower planning; the long-term period, 10 years out, is important for facility planning. The two key FAA workload measures employed are instrument operations and aircraft handled.

For short-term trends, the forecast errors normally tend to be minimal: the 1992 forecast for instrument operations was 1.0 percent higher than the actual number recorded.

The minimal forecast error in 1992 can be attributed to two factors: The failure of the U.S. economy to rebound from the recession as quickly as expected; and the loss of Pan American and Midway Airlines. These two airlines accounted for 3.4 percent of operations in 1991.

The 10-year forecast errors are higher because of unanticipated external events that have had long-term impacts on the aviation system. These are the more than doubling of aviation fuel prices caused by OPEC actions taken in 1979-1980 and the failure of general aviation to respond to the economic recovery of the 1980s. The air traffic controller strike in the early 1980s also had a severe impact on operations. And finally, the FAA does not use cyclic economic projections in preparing its forecasts. As a result, the recessions of 1980, 1982, and 1991 were not considered in any of the forecasts prepared prior to 1990.

On the other hand, some of the FAA's past 10-year forecasts have proven to be quite accurate. The 1982 forecast of 492.2 million enplanements for 1993, for example, will be very close to the mark and consistent with FAA's projected annual growth rate of 4.6 percent.

THE FAA AVIATION FORECASTING PROCESS

INTRODUCTION

The FAA's forecasting process is a continuous and interactive one that involves the FAA Statistics and Forecast Branch, other FAA Offices and Services, other Government agencies, and aviation industry groups. In addition, the process uses various economic and aviation data bases, econometric models and equations, and other analytical techniques.

Forecasting aviation activity is an essential component of the FAA's planning process. The forecasts are used to determine staffing levels and capital expenditures that will be needed to accommodate growth of activity while maintaining a safe and efficient environment. The forecasts are also used for short-term budget preparation, cost-benefit analyses, and safety analyses. The relative importance of the forecasting function in the planning process can be gauged by examining the major changes being made to the airspace infrastructure through the Capital Investment Plan out to the year 2005. These changes are being made, in large part, to accommodate the projected growth in air traffic.

To improve the air traffic control and air navigation systems, the FAA is installing new aircraft landing systems, developing new radar and communication systems, and upgrading the weather services it provides to aircraft operators. Because of the sizeable investments being made in the National Airspace System, it is essential that the FAA develop and utilize the most accurate and reliable forecasts possible. Thus, the periodic review and evaluation of the FAA forecasting procedures, models, forecast assumptions, and forecast results constitute an essential part of the process.

SYSTEM BACKGROUND

As part of the need to ensure safe and efficient operation of the National Airspace System, FAA operates 401 airports with air traffic control towers, 22 air route traffic control centers, and 172 flight service stations (FSSs). Many of the nonautomated flight service stations will be absorbed into 59 new automated facilities (AFSSs). However, given the recent Congressional mandate to implement a system of auxiliary flight service stations in addition to the 59 AFSSs, 36 of the FSSs that were scheduled to be closed will remain open.

FAA facilities perform a large and diverse number of services for the aviation community. The FAA towers provide sequencing and separation services to pilots and aircraft arriving at or departing from individual airport facilities. These services are provided to various categories of aircraft: air carrier, commuter, air taxi, general aviation, and military. Arrivals and departures (landings and takeoffs) are generally referred to as aircraft operations. Arrivals and departures are further classified as itinerant or local, operations depending on the purpose of the flight or the distance between the airports from which the landings and takeoffs were made. These operations are measures of workload or activity at individual airports. The sum of these operations at all towered airports makes up the national count of aircraft operations.

Another important workload measure at FAA tower airports is the number of instrument operations, that is, aircraft operations performed in accordance with an instrument flight rule

FAA INSTRUMENT OPERATIONS FORECAST EVALUATION

Year Being Forecast	Actual Activity (Millions)	Forecast Activity Level (Millions) Published--Years Earlier					
		1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1986	40.5	40.6	40.9	40.8	42.6	44.8	46.2
1987	43.4	41.7	42.3	42.3	42.4	44.3	45.9
1988	44.5	45.4	43.0	43.8	43.6	44.2	49.9
1989	45.0	45.8	47.2	44.2	45.7	45.5	53.9
1990	46.8	46.4	47.7	49.1	45.4	47.3	54.2
1991	45.1	47.8	48.0	49.5	50.7	46.4	52.4
1992	45.6	46.1	48.9	49.6	51.3	51.8	51.5
1993		*46.4*	47.4	50.1	50.8	52.5	50.3
1994			*47.6*	48.8	51.4	52.2	52.0
1995				*48.9*	50.1	52.9	52.2
1996					*50.0*	51.2	51.7
1997						*51.0*	57.3
1998							56.6
2002							*56.2*

Year Being Forecast	Forecast Activity Percent Error Published -- Years Earlier					
	1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1986	0.3	1.0	0.7	5.2	10.6	14.1
1987	(3.9)	(2.5)	(2.5)	(2.3)	2.1	5.8
1988	2.0	(3.4)	(1.6)	(2.0)	(0.7)	12.1
1989	1.8	4.9	(1.8)	1.6	1.1	19.8
1990	(0.8)	1.9	4.9	(3.0)	1.1	13.6
1991	6.0	6.4	9.8	12.4	2.9	16.2
1992	1.1	7.2	8.8	12.5	13.6	12.9

Note on how to read this table: In 1989 we forecast 46.4 million operations would occur in 1990. In fact 46.8 million operations were recorded meaning the forecast was 0.8 percent lower than actual. In 1988 we forecast 47.7 million operations would occur in 1990. This forecast was 1.9 percent higher than actual. The 1992 forecast is shown in italics.

FAA ARTCC AIRCRAFT HANDLED FORECAST EVALUATION

Year Being Forecast	Actual Activity (Millions)	Forecast Activity Level (Millions) Published--Years Earlier					
		1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1986	34.2	34.0	33.9	33.1	32.8	33.6	36.3
1987	35.8	35.4	35.1	35.0	34.0	34.0	39.6
1988	36.4	37.0	36.6	36.1	36.1	35.1	42.8
1989	36.6	37.2	38.0	37.6	37.2	37.4	42.0
1990	37.4	37.8	38.2	39.2	38.7	38.4	42.2
1991	36.4	38.5	39.1	39.7	40.3	39.6	40.3
1992	36.7	37.3	39.6	40.1	40.8	41.4	39.3
1993		*37.5*	38.3	40.6	41.0	41.6	40.7
1994			*38.4*	39.4	41.5	41.9	43.6
1995				*39.3*	40.3	42.7	43.6
1996					*40.0*	41.1	44.0
1997						*40.7*	46.0
1998							45.3
2002							*45.1*

Year Being Forecast	Forecast Activity Percent Error Published -- Years Earlier					
	1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1986	(0.6)	(0.9)	(3.2)	(4.1)	(1.7)	6.1
1987	(1.1)	(2.0)	(2.2)	(5.0)	(5.0)	10.6
1988	1.6	0.5	(0.8)	(0.8)	(3.6)	17.6
1989	1.6	3.8	2.7	1.6	2.2	14.7
1990	1.1	2.1	4.8	3.5	2.7	12.8
1991	5.8	7.4	9.1	10.7	8.8	10.7
1992	1.6	7.9	9.2	11.1	12.8	7.1

Note on how to read this table: In 1989 we forecast 37.8 million aircraft would be handled in 1990. In fact 37.4 million aircraft were recorded meaning the forecast was 1.1 percent higher than actual. In 1988 we forecast 38.2 million aircraft would be handled in 1990. This forecast was 2.1 higher than actual. The 1992 forecast is shown in italics.

(IFR) flight plan or an aircraft flight where IFR separation between aircraft is provided by the facility. At times, advisory services may be offered to aircraft flying under visual flight rules (VFR). Instrument operations are further subdivided into (1) primary instrument operations (separation and sequencing services provided to aircraft landing at the airport providing the service), (2) secondary instrument operations (services provided to aircraft landing at a nearby airport), and (3) overs (services provided to aircraft that are transiting the facility's controlled airspace without landing in the area).

Each air route traffic control center (ARTCC) controls aircraft that are flying under instrument flight rules in the center's designated geographic control area. The workload measures for the centers are the numbers of IFR aircraft handled, which is 2 times departures, plus overs. The IFR counts are categorized by user groups.

Flight service stations provide a variety of services to the aviation community. They collect and disseminate meteorological and other flight information, provide briefings to pilots, and provide assistance in emergencies to lost, disoriented, or downed airmen. The workload measures at flight service stations are weighted sums of the number of flight plans filed, pilot briefings provided, and aircraft contacted.

The introduction of new technology to flight service applications has changed its operating environment. It appears that an apparent decline in demand for flight planning services may actually signify that the demand is being met through increased use of automation and new system capabilities. The result is increases in system efficiency and productivity.

The FAA must consider at least 133 variables when producing a set of national forecasts. (The number does not include derived subtotals and totals.) Of these, four economic independent variables are obtained from sources external to the FAA and the FAA has no control over these truly exogenous variables. There are 12 quantifiable air carrier forecast assumptions and 4 quantifiable regional/commuter carrier forecast assumptions. Within justifiable limits, these forecast assumptions are subject to the discretion of the FAA forecast analysts. There are 83 aviation variables (other than FAA workload measures) that influence the workload measures in one way or another. Finally, there are 30 aviation variables that are the workload measures used by the FAA for policy and planning considerations and for manpower and investment planning.

The table on page VIII-10 contains a list of the variables and the sources of the historical data and their relationship to the forecast process. Forecasts of the economic variables and the military fleet and hours flown are developed outside the FAA. All other forecasts are developed by the FAA.

Research undertaken in the early and mid-1970s indicated that some measures of economic activity (such as gross national product or total employment) and some measures of prices (for example, aircraft prices and aviation fuel prices) were useful predictors of aviation activity. Some unique events (including the air traffic controller strike in August 1981 and the prolonged depressed state of the general aviation manufacturing industry) have altered the relationships between the key aviation variables and the economic variables used previously. It has been difficult, therefore, to produce economic or econometric models that predict aviation activity with the same degree of reliability as the models developed in earlier periods. Thus, for the present, the forecasters must rely to a greater degree on subjective judgment, evaluation, and expertise than was required previously. This is not at all unusual in times of significant changes in a volatile industry.

THE FAA FORECASTING PROCESS

The FAA forecasting process is an interactive system that combines econometric and time series model results with aviation industry forecasts, expert opinions, and anticipated policy impacts to derive a set of FAA aviation forecasts that are used in the decisionmaking process. The following flow diagram shows a generalized version of the FAA aviation forecasting process.

The first step in developing the forecasts is to enter the economic and demographic variables into a set of econometric models or equations that represents a simplified version of the real world. The degree of accuracy of the forecasts of aviation activities depends on both the accuracy of the forecasts of the independent variables and the ability of the models to portray activities in the real world.

The mechanical execution of forecast models is only the first step in producing a set of forecasts. In general, these models and equations are simple portrayals of a complex system. They cannot account for a number of political, social, psychological, and economic variables and for all the interrelated actions and reactions that eventually lead to a particular set of results. It is particularly important, therefore, that the initial model results are reviewed, revised, and adjusted to reflect the analysts' best judgment of the impacts of the events occurring or expected to occur during the forecast period.

The FAA forecasting process is both continuous and iterative. As such, it is important to evaluate the forecast results and to determine the basis of the deviations of the forecast values from the actual values observed in the real world. The analysis of the errors generally identifies the causes of the deviation and helps determine the proportion due to improper model specifications, erroneous forecasts of independent variables, erroneous forecast assumptions, or incorrect analysts' judgments and opinions. If warranted, the forecast error analysis may lead to a reformulation of the model and to additions or deletions of independent variables, revisions of forecast assumptions, and/or changes in analysts' opinions and judgments about future events.

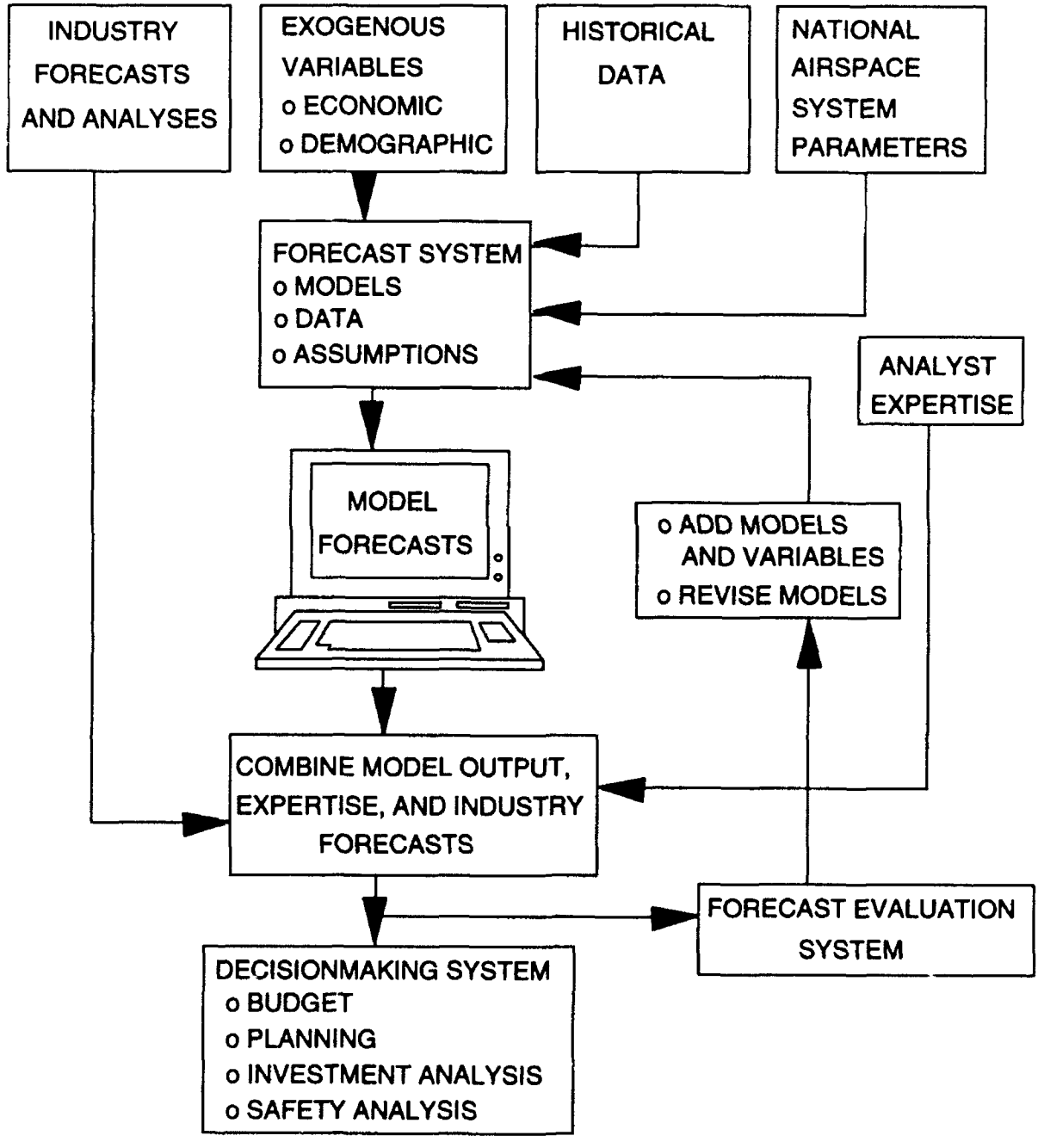
FORECAST EVALUATION

It is essential that the FAA forecasts of the demand for services at the FAA towers, air route traffic control centers, and the flight service stations be accurate. Large forecast errors can lead to inefficient allocation of resources which, in turn, could lead to capacity constraints and delays, or to excess capacity in the National Airspace System. For this reason, the FAA must continuously evaluate the forecasting process and its results.

The evaluation of the forecast process proceeds on several fronts. On a monthly basis, FAA tracks its short-term forecasts of aircraft operations, instrument operations, aircraft handled, and flight services vis-a-vis the actual counts at the facilities. This tracking system alerts FAA management to unexpected deviations from the trends suggested by the forecasts. Inquiries are then initiated to determine the cause(s) of the differences and revised short-term forecasts may be generated, if necessary.

To help the analysts make correct decisions and informed judgments when developing the forecast assumptions, FAA holds meetings with industry

FAA FORECASTING SYSTEM



representatives to discuss industry trends, recent developments, and possible future courses of events. Every two years, for example, in cooperation with the National Academy of Sciences, Transportation Research Board (TRB), the FAA sponsors a "forecast assumptions workshop." This workshop is attended by 70 to 80 industry planners and forecasters representing the airlines, aircraft manufacturers, engine manufacturers, and other industry groups.

The participants in various subgroups identify specific assumptions about the short-term and long-term future trends of the economic and aviation variables that are important to their segments of the industry, indicate why these are considered important, and show why specific trends are anticipated. After discussing the assumptions, the entire group attempts to reach a consensus about the key variables affecting the industry and the most likely future courses of these variables. Finally, the TRB prepares and publishes a workshop report. The participants benefit from the discussions and the analysts have the TRB workshop report as a benchmark for preparing forecasts or for evaluating forecasts prepared by other organizations. FAA uses this forum and the workshop report in preparing and in evaluating its aviation forecasts.

Formal and informal meetings with individuals and representatives of specific industry groups are another way the FAA promotes dialogue and discussion with the aviation community and solicits input and comments. Separate meetings are held regularly with the aircraft manufacturers, as a group, with members of the Air Transport Association, and with members of the General Aviation Manufacturers Association. In addition, FAA analysts maintain one-on-one contact with industry representatives.

Another intermediate step in the FAA aviation forecast process is the public dissemination of the forecast results, solicitation of industry comments, and critique of the forecasts. The main avenues for this purpose are the "FAA Aviation Forecast Conferences" held annually in February and March. The 300 to 400 participants at these conferences generally include airline executives, aircraft and engine manufacturers, consumer groups, and other industry representatives, and the news media. To the maximum extent possible, FAA responds to questions raised about the forecasts both during and after the conference.

An important part of these conferences is the opportunity for various segments of the aviation community to make technical presentations on a variety of topics of interest to the aviation community. The FAA aviation forecast conferences establish avenues of communication through which FAA releases its forecast to the aviation community and the public, and receives comments, criticisms, and feedback about the forecasts. The FAA also receives valuable information and insights through the papers presented at the forecast conferences.

Because of the importance of the U.S. general aviation industry and the fact that its issues and problems cannot be adequately addressed in a single conference, the FAA has scheduled a third General Aviation Conference in March 1993. The cost of the General Aviation Industry will be presented at that conference. Fuller industry discussion of the outlook for this segment of aviation will be initiated.

FAA also seeks to improve forecast accuracy and credibility by inviting FAA regional and state participation in the forecast process. For example, facility level terminal area forecasts and flight service station forecasts are circulated to FAA Regions for review and comments. The comments and suggested changes are incorporated in the final facility level reports. In the case of the terminal area fore-

casts, the FAA Regions have the capability to make changes by computer. The final facility level forecasts derived by this procedure must be consistent with the national forecasts.

Periodically, FAA prepares a technical report that compares the accuracy of the forecasts of key workload measures with the accuracy of forecasts of economic variables prepared by major forecasting services. Based on the results of these studies, the FAA forecasts compare quite favorably with those produced by major forecasting services.

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES

TYPES OF VARIABLES AND VARIABLE NAMES	DATA SOURCES
ECONOMIC:	
Gross Domestic Product (GDP)	OMB, DRI, Evans, WEFA
Consumer Price Index (CPI)	OMB, DRI, Evans, WEFA
Oil and Gas Deflator	OMB, DRI, Evans, WEFA
AIR CARRIER:	
FORECAST ASSUMPTIONS	
Domestic Operations:	
Average seats per aircraft	RSPA/computed
Average passenger trip length	RSPA/computed
Revenue per passenger mile (current $)	RSPA/computed
Revenue per passenger mile (1992 $)	Computed
Average jet fuel prices (current $)	RSPA/computed
Average jet fuel prices (1992 $)	Computed
International Operations (For 3 World Travel Regions):	
(Same as Domestic)	(Same)
SCHEDULED PASSENGER TRAFFIC	
Domestic:	
Revenue passenger miles (RPMs)	RSPA
Revenue passenger enplanements	RSPA
Available seat miles (ASMs)	RSPA
Load factors	RSPA/computed
International (For 3 World Travel Regions):	
(Same as Domestic)	(Same)
FLEET	
2-Engine narrowbody	FAA/AFS-620
3-Engine narrowbody	FAA/AFS-620
4-Engine narrowbody	FAA/AFS-620
2-Engine widebody	FAA/AFS-620
3-Engine widebody	FAA/AFS-620
4-Engine widebody	FAA/AFS-620
HOURS FLOWN BY EQUIPMENT	
(Same as Fleet)	RSPA

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (Continued)

TYPES OF VARIABLES AND VARIABLE NAMES	DATA SOURCES
FUEL CONSUMED	
Jet:	
Domestic air carriers	RSPA
International air carriers	RSPA
General aviation	FAA/APO-110
Aviation Gasoline:	
Air carriers	FAA/APO-110
General aviation	FAA/APO-110
REGIONAL/COMMUTER:	
FORECAST ASSUMPTIONS	
Average seats per aircraft	RSPA/computed
Average passenger trip length (48 states and Hawaii, Puerto Rico, Virgin Islands)	RSPA/computed
Average load factor	RSPA/computed
PASSENGER TRAFFIC	
Revenue passenger enplanements (48 states and Hawaii, Puerto Rico, Virgin Islands)	RSPA
Revenue passenger miles (48 states and Hawaii, Puerto Rico, Virgin Islands)	RSPA
FLEET	
Less than 15 seats	FAA/AFS-620
15 to 19 seats	FAA/AFS-620
20 to 40 seats	FAA/AFS-620
More than 40 seats	FAA/AFS-620
GENERAL AVIATION:	
FLEET	
Single engine piston aircraft	FAA/APO-110
Multi-engine piston aircraft	FAA/APO-110
Turboprop aircraft	FAA/APO-110
Turbojet aircraft	FAA/APO-110
Piston-powered rotorcraft	FAA/APO-110
Turbine-powered rotorcraft	FAA/APO-110
Other general aviation aircraft	FAA/APO-110
NUMBER OF AIRCRAFT BY REGION	
Total aircraft in each of nine FAA Regions	FAA/APO-110

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (Continued)

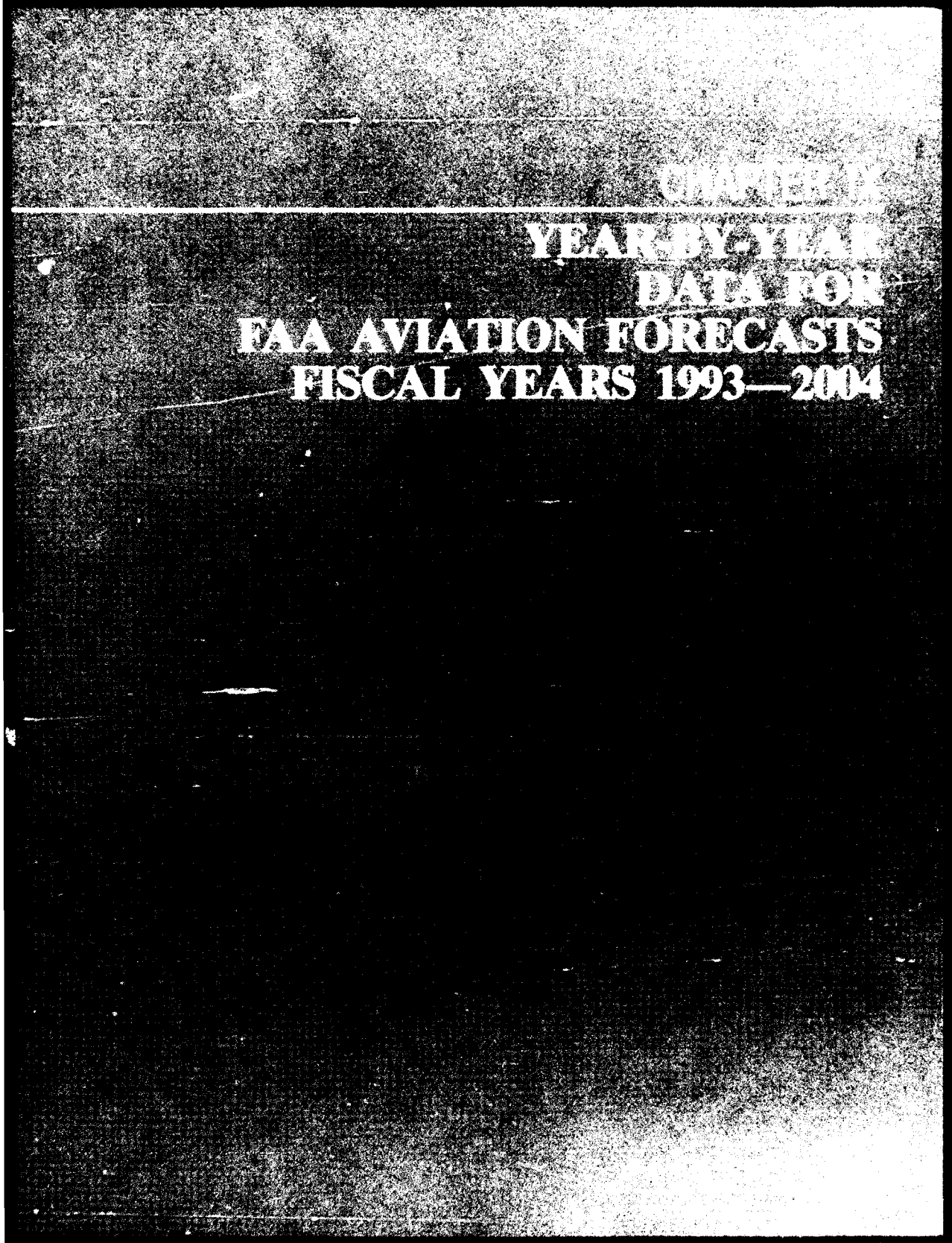
TYPES OF VARIABLES AND VARIABLE NAMES	DATA SOURCES
HOURS FLOWN	
Hours flown by equipment type (See general aviation fleet)	FAA/APO-110
FUEL CONSUMED	
Fuel consumed by equipment type (See general aviation fleet)	FAA/APO-110
ACTIVE PILOTS:	
Students	FAA/APO-110
Private pilots	FAA/APO-110
Commercial	FAA/APO-110
Airline transport	FAA/APO-110
Helicopter	FAA/APO-110
Glider	FAA/APO-110
Other	FAA/APO-110
Instrument rated	FAA/APO-110
FAA WORKLOAD MEASURES:	
FAA TOWERS	
Number of FAA Towers	FAA/APO-110
Aircraft Operations:	
Air carrier itinerant operations	FAA/APO-110
Air taxi/commuter itinerant operations	FAA/APO-110
General aviation itinerant operations	FAA/APO-110
Military itinerant operations	FAA/APO-110
General aviation local operations	FAA/APO-110
Military local operations	FAA/APO-110
Instrument Operations:	
Air carrier	FAA/APO-110
Air taxi/commuter	FAA/APO-110
General aviation	FAA/APO-110
Military	FAA/APO-110

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (Continued)

TYPES OF VARIABLES AND VARIABLE NAMES	DATA SOURCES
Non-IFR Instrument Operations:	
Terminal control areas	FAA/APO-110
Expanded radar service areas	FAA/APO-110
AIR ROUTE TRAFFIC CONTROL CENTERS	
IFR Departures:	
Air carrier	FAA/APO-110
Air taxi/commuter	FAA/APO-110
General aviation	FAA/APO-110
Military	FAA/APO-110
IFR Overs:	
(Same as IFR departures)	FAA/APO-110
FLIGHT SERVICE STATIONS	
IFR-DVFR flight plans originated	FAA/APO-110
VFR flight plans originated	FAA/APO-110
Pilot briefings	FAA/APO-110
Air carrier aircraft contacted	FAA/APO-110
Air taxi/commuter aircraft contacted	FAA/APO-110
General aviation aircraft contacted	FAA/APO-110
Military aircraft contacted	FAA/APO-110
IFR-DVFR aircraft contacted	FAA/APO-110
VFR aircraft contacted	FAA/APO-110
MILITARY:	
FLEET	
Jet	DOD
Turboprop	DOD
Piston	DOD
Helicopter	DOD
HOURS	
Hours flown by equipment (See Fleet)	DOD

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (Continued)

TYPES OF VARIABLES AND VARIABLE NAMES	DATA SOURCES
TERMINAL AREA FORECASTS (2000 Towered and Nontowered Airports):	
ENPLANEMENTS	
U.S. Air Carrier	RSPA
Foreign Flag Carrier	INS
Commuter	RSPA
Air Taxi	FAA/TSC
OPERATIONS (Towered Airports)	
Air Carrier	FAA/APO-110
Commuter/Air Taxi	FAA/APO-110
General Aviation	FAA/APO-110
Military	FAA/APO-110
OPERATIONS (Nontowered Airports)	FAA/NFDC


QUARTERLY
YEAR-BY-YEAR
DATA FOR
FAA AVIATION FORECASTS
FISCAL YEARS 1993—2004

CHAPTER IX

YEAR-BY-YEAR DATA FOR FAA AVIATION FORECASTS FISCAL YEARS 1993 - 2004

Chapter IX provides the detailed data for the National Aviation and FAA workload series forecasted by the FAA Office of Aviation Policy, Plans, and Management Analysis. The following should be noted:

- o Table 10 - Contains the unduplicated passenger traffic reported by U.S. scheduled air carriers reporting on RSPA Form 41 and commuter carriers reporting on RSPA Form 298-C.

- o Table 11 - Those carriers contained in the Air Carrier forecast data base are listed in Appendix A.

  - Includes the following traffic which is also reported as commuters/regionals traffic in Table 19.

	ENPLANEMENTS (Millions)	RPMs (Millions)		ENPLANEMENTS (Millions)	RPMs (Millions)
1987	4.100	683.6	1990	4.674	984.9
1988	3.117	583.3	1991	6.559	1,315.3
1989	4.072	861.2	1992E	10.391	2,001.8

- o Table 19 - Includes the duplicated traffic listed above for those air carriers and commuters/regionals reporting on both RSPA Forms 41 and 298-C.

  - Forecasts and historical data exclude Alaska and foreign territory traffic.

  - The forecasts exclude the following carriers because of the predominance of jet aircraft in their fleets : Altair (beginning in 1982), Empire (1985), and Air Wisconsin (1987).

- Table 20 - Includes only aircraft with 60 seats or less. Aircraft also included with general aviation fleet shown in Tables 21 and 22.

- Table 26 - Includes the rotorcraft fleet and hours flown shown in Tables 21 and 23.

TABLE 1

U.S. SHORT-TERM ECONOMIC FORECASTS

ECONOMIC VARIABLE	FISCAL YEAR 1993				FISCAL YEAR 1994			
	1ST. QTR.	2ND. QTR.	3RD QTR.	4TH QTR.	1ST QTR.	2ND QTR.	3RD QTR.	4TH QTR.
REAL GDP (1987 $)								
DRI/McGRAW-HILL	4,965.5	4,994.5	5,026.0	5,054.0	5,100.6	5,140.8	5,180.8	5,217.9
EVANS ECONOMETRICS	4,953.5	5,002.2	5,050.0	5,088.2	5,119.4	5,155.2	5,203.1	5,249.1
THE WEFA GROUP	4,950.7	4,986.1	5,024.9	5,070.6	5,115.5	5,157.1	5,197.3	5,233.9
OMB	4,947.7	4,980.8	5,017.7	5,056.2	5,093.7	5,132.7	5,172.0	5,209.1
OIL AND GAS DEFLATOR (1987 EQUALS 100)								
DRI/McGRAW-HILL	124.4	125.7	125.9	126.9	131.6	134.6	137.0	139.6
EVANS ECONOMETRICS	124.1	123.6	123.0	122.6	122.4	122.9	123.6	124.4
THE WEFA GROUP	125.8	127.3	129.1	130.7	132.5	134.3	136.3	138.7
OMB	122.2	123.5	124.8	126.0	127.3	128.6	129.3	130.5
CONSUMER PRICE INDEX (1982-84 EQUALS 100)								
DRI/McGRAW-HILL	142.1	143.0	144.0	145.0	146.2	147.4	148.5	149.8
EVANS ECONOMETRICS	142.3	143.7	145.0	146.3	147.8	149.3	150.7	152.1
THE WEFA GROUP	141.8	143.0	144.2	145.5	146.9	148.2	149.6	151.0
OMB	139.8	140.9	142.0	143.1	144.3	145.6	146.9	148.2

Source: DRI/McGraw-Hill, Inc., December 1992; Evans Econometrics, November 1992; The WEFA Group, November 1992; and OMB, November 1992

TABLE 2

U.S. LONG-TERM ECONOMIC FORECASTS

OMB (1993-1998) AND CONSENSUS (1999-2004)

FISCAL YEAR	GROSS DOMESTIC PRODUCT (Billions 1987$)	CONSUMER PRICE INDEX (1982-84 = 100)	OIL AND GAS DEFLATOR (1987 = 100)
Historical			
1987	4,506.1	112.5	99.1
1988	4,680.0	117.1	101.3
1989	4,818.8	122.7	108.4
1990	4,883.2	128.7	116.2
1991	4,819.9	133.4	129.9
1992E	4,882.3	137.2	122.6
Forecast			
1993	5,000.6	141.4	124.1
1994	5,151.9	146.3	128.9
1995	5,291.9	151.6	133.4
1996	5,423.8	157.1	138.7
1997	5,559.5	162.8	142.8
1998	5,698.4	168.5	147.9
1999	5,856.0	176.1	156.3
2000	6,009.4	184.0	165.3
2001	6,159.4	192.2	175.9
2002	6,314.1	200.9	186.3
2003	6,477.6	210.0	197.0
2004	6,644.8	219.7	210.3

Source: 1993-1998; Office of Management and Budget, November 1992
1999-2004; Consensus forecast based on average growth rates of DRI/McGraw-Hill, Evans, and WEFA forecasts (See Table 3), adjusted to fiscal year basis

TABLE 3

ALTERNATIVE U.S. LONG-TERM ECONOMIC FORECASTS

CALENDAR YEAR	GROSS DOMESTIC PRODUCT (Billions 1987$)			CONSUMER PRICE INDEX (1982-84 = 100)			FUEL PRICE INDEX (1987 = 100)		
	DRI	EVANS	WEFA	DRI	EVANS	WEFA	DRI	EVANS	WEFA
Historical									
1987	4,540.0	4,540.0	4,540.0	113.6	113.6	113.6	100.0	100.0	100.0
1988	4,718.6	4,718.6	4,718.6	118.4	118.4	118.3	100.9	100.9	100.9
1989	4,838.1	4,838.1	4,838.1	124.0	124.0	124.0	110.3	110.3	110.3
1990	4,877.5	4,877.5	4,877.5	130.7	130.7	130.7	125.7	125.7	125.7
1991	4,821.0	4,821.0	4,821.0	136.3	136.3	136.3	123.8	123.8	123.9
1992E	4,907.0	4,894.2	4,909.0	140.5	140.5	140.4	123.6	124.7	125.0
Forecast									
1993	5,045.0	4,983.2	5,052.0	145.1	145.9	145.1	127.8	131.7	131.9
1994	5,193.0	5,086.1	5,201.8	149.8	151.6	150.8	132.5	135.6	140.5
1995	5,324.0	5,237.4	5,353.4	154.7	158.3	157.0	140.1	141.8	148.6
1996	5,459.0	5,382.8	5,517.7	159.7	166.4	164.1	152.3	147.9	156.4
1997	5,591.0	5,513.0	5,684.8	165.4	175.2	171.2	161.8	154.0	166.3
1998	5,741.0	5,661.6	5,854.9	172.1	184.2	178.4	172.8	160.2	176.2
1999	5,886.0	5,822.0	6,025.2	179.4	193.4	185.8	184.4	167.6	186.2
2000	6,008.0	5,987.2	6,194.5	187.4	202.9	193.5	196.7	176.2	196.6
2001	6,133.0	6,146.6	6,359.5	195.9	212.6	201.5	214.0	185.2	207.5
2002	6,274.0	6,309.5	6,526.0	204.8	223.0	209.8	227.8	194.6	219.0
2003	6,435.0	6,479.9*	6,694.0	214.3	233.9*	218.3	242.8	204.5*	231.1
2004	6,600.4*	6,654.8*	6,857.4	224.2*	245.4*	227.7	258.6*	215.0*	252.8

Source: DRI/McGraw-Hill, November, 1992; Evans Economics, Inc., November 1992; and The WEFA Group, November 1992

* Extrapolated to 2004 for forecast purposes

TABLE 4

INTERNATIONAL GDP FORECASTS

CALENDAR YEAR	GROSS DOMESTIC PRODUCT (In Billions of 1985 U.S. Dollars) EUROPE/ AFRICA/ MIDDLE EAST	LATIN AMERICA	JAPAN/ PACIFIC BASIN/ AUSTRALIA/N. ZEALAND	WORLD
Historical				
1987	4,298.6	919.1	2,093.2	14,717.2
1988	4,388.8	926.5	2,242.9	15,232.4
1989	4,529.0	936.4	2,359.5	15,662.8
1990	4,805.5	943.0	2,463.3	16,011.5
1991	4,839.5	975.7	2,566.6	15,867.6
1992E	4,937.6	995.5	2,643.6	15,952.5
Forecast				
1993	5,066.3	1,030.1	2,750.3	16,382.6
1994	5,253.8	1,068.1	2,885.8	16,995.8
1995	5,450.3	1,114.9	3,033.8	17,655.6
1996	5,637.6	1,161.1	3,177.9	18,340.4
1997	5,824.2	1,214.7	3,323.9	19,054.1
1998	6,015.7	1,273.0	3,471.4	19,801.0
1999	6,215.2	1,339.2	3,630.3	20,595.0
2000	6,407.6	1,406.1	3,806.6	21,424.6
2001	6,600.4	1,475.0	3,986.6	22,270.0
2002	6,801.2	1,544.3	4,169.9	23,135.5
2003	7,010.2	1,615.4	4,356.2	24,023.9
2004	7,224.7	1,689.7	4,541.2	24,928.7

Source: The WEFA Group, World Economic Outlook, (Preliminary, December 1992)

TABLE 5

INTERNATIONAL EXCHANGE RATE FORECASTS

CALENDAR YEAR	FOREIGN EXCHANGE RATES (US$/Local Currency, End of Year) UNITED KINGDOM	WEST*/UNITED GERMANY	JAPAN 1/	UNITED STATES EFFECTIVE EXCHANGE RATE (1985 EQUALS 100)
Historical*				
1987	1.871	.632*	8.097	72.0
1988	1.809	.562*	7.946	67.8
1989	1.605	.589*	6.971	70.8
1990	1.928	.669	7.440	66.1
1991	1.871	.660	7.987	65.8
1992E	1.525	.625	7.937	64.5
Forecast				
1993	1.573	.637	7.937	67.8
1994	1.687	.686	8.197	65.4
1995	1.762	.719	8.475	63.1
1996	1.812	.743	8.772	61.4
1997	1.875	.767	9.047	60.0
1998	1.894	.778	9.138	59.0
1999	1.913	.782	9.231	58.5
2000	1.932	.790	9.324	57.9
2001	1.953	.799	9.394	57.4
2002	1.972	.807	9.461	56.9
2003	1.991	.814	9.535	56.4
2004	2.012	.823	9.623	55.9

Source: The WEFA Group, World Economic Outlook, (Preliminary, December 1992)

1/ US $/1000 Local Currency

TABLE 6

BASELINE AIR CARRIER FORECAST ASSUMPTIONS

TOTAL SYSTEM OPERATIONS

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT (Seats)	AVERAGE PASSENGER TRIP LENGTH (Miles)	REVENUE PER PASSENGER MILE CURRENT $ (Cents)	REVENUE PER PASSENGER MILE FY 1992 $ (Cents)	AVERAGE JET FUEL PRICE CURRENT $ (Cents)	AVERAGE JET FUEL PRICE FY 1992 $ (Cents)
Historical*						
1987	166.6	895.0	10.93	13.53	52.0	64.4
1988	168.4	927.8	11.82	14.06	56.2	66.8
1989	168.8	948.4	12.43	14.11	56.4	64.0
1990	169.0	976.0	12.61	13.65	67.6	73.2
1991	167.9	986.8	12.87	13.25	79.4	81.8
1992E	168.8	1,007.0	12.60	12.60	64.5	64.5
Forecast						
1993	171	1,024	13.19	12.79	65.3	62.9
1994	173	1,033	13.61	12.77	67.8	63.1
1995	175	1,041	14.08	12.74	70.2	63.1
1996	177	1,050	14.61	12.76	73.0	63.3
1997	179	1,059	15.16	12.78	75.1	62.9
1998	182	1,068	15.72	12.80	77.8	62.9
1999	184	1,076	16.41	12.82	82.0	63.6
2000	186	1,085	17.13	12.84	86.6	64.4
2001	188	1,093	17.87	12.85	92.2	65.8
2002	190	1,101	18.66	12.87	97.5	66.8
2003	193	1,109	19.48	12.89	102.9	67.6
2004	195	1,117	20.35	12.90	109.6	69.0

* Source: RSPA, Form 41

TABLE 7

BASELINE AIR CARRIER FORECAST ASSUMPTIONS

DOMESTIC OPERATIONS

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT (Seats)	AVERAGE PASSENGER TRIP LENGTH (Miles)	REVENUE PER PASSENGER MILE CURRENT $ (Cents)	REVENUE PER PASSENGER MILE FY 1992 $ (Cents)	AVERAGE JET FUEL PRICE CURRENT $ (Cents)	AVERAGE JET FUEL PRICE FY 1992 $ (Cents)
Historical*						
1987	152.5	775.4	11.20	13.46	50.9	63.0
1988	153.0	785.9	12.23	14.12	55.1	65.5
1989	152.0	790.2	13.07	14.40	55.4	62.9
1990	151.7	799.7	13.26	13.93	66.8	72.3
1991	151.1	807.0	13.35	13.35	76.6	78.8
1992E	151.1	807.7	12.94	12.94	62.7	62.7
Forecast						
1993	153	814	13.66	13.25	63.5	61.1
1994	155	818	14.13	13.25	65.9	61.4
1995	157	821	14.64	13.25	68.2	61.3
1996	159	824	15.25	13.32	71.0	61.5
1997	161	827	15.87	13.38	73.1	61.2
1998	163	830	16.52	13.45	75.7	61.2
1999	165	833	17.30	13.52	79.8	61.9
2000	167	836	18.13	13.58	84.2	62.6
2001	169	839	18.98	13.65	89.6	64.0
2002	171	842	19.90	13.72	94.8	64.9
2003	173	845	20.85	13.79	100.1	65.7
2004	175	848	21.86	13.86	106.6	67.1

* Source: RSPA, Form 41

TABLE 8

BASELINE AIR CARRIER FORECAST ASSUMPTIONS

INTERNATIONAL OPERATIONS (PART 1)

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT (Seats)	AVERAGE PASSENGER TRIP LENGTH (Miles)	REVENUE PER PASSENGER MILE CURRENT $ (Cents)	REVENUE PER PASSENGER MILE FY 1992 $ (Cents)	AVERAGE JET FUEL PRICE CURRENT $ (Cents)	AVERAGE JET FUEL PRICE FY 1992 $ (Cents)
Historical*						
1987	283.0	2,586.7	9.77	12.10	56.9	70.5
1988	278.9	2,644.2	10.35	12.31	60.2	71.6
1989	275.8	2,734.5	10.36	11.76	59.9	68.0
1990	273.3	2,786.2	10.68	11.56	70.5	76.3
1991	262.8	2,856.4	11.45	11.78	87.7	90.3
1992E	255.2	3,015.2	11.70	11.70	69.6	69.6
Forecast						
1993	254	2,994	11.98	11.62	70.4	67.8
1994	252	3,000	12.32	11.56	73.2	68.1
1995	252	3,004	12.70	11.50	75.7	68.0
1996	250	3,004	13.10	11.45	78.7	68.3
1997	251	3,008	13.51	11.39	81.0	67.8
1998	251	3,017	13.92	11.34	83.9	67.8
1999	252	3,017	14.44	11.28	88.5	68.6
2000	253	3,018	14.98	11.22	93.4	69.5
2001	255	3,020	15.53	11.17	99.4	71.0
2002	257	3,023	16.11	11.11	105.2	72.0
2003	258	3,028	16.72	11.06	111.1	72.9
2004	259	3,025	17.36	11.00	118.3	74.5

* Source: RSPA, Form 41

TABLE 9

BASELINE AIR CARRIER FORECAST ASSUMPTIONS

INTERNATIONAL OPERATIONS (PART 2)

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT			REVENUE PER PASSENGER MILE					
				ATLANTIC		LATIN AMERICA		PACIFIC	
	ATLANTIC (Seats)	LATIN AMERICA (Seats)	PACIFIC (Seats)	CURRENT $ (Cents)	FY 1992 $ (Cents)	CURRENT $ (Cents)	FY 1992 $ (Cents)	CURRENT $ (Cents)	FY 1992 $ (Cents)
Historical*									
1987	319.0	217.4	282.6	8.99	11.13	11.23	13.91	10.24	12.68
1988	301.9	210.3	293.1	9.31	11.08	11.35	13.50	11.47	13.64
1989	290.3	203.6	302.9	8.97	10.18	11.59	13.16	11.74	13.33
1990	278.6	194.0	318.6	9.56	10.35	12.01	13.00	11.55	12.50
1991	257.7	187.0	321.9	9.98	10.28	12.45	12.82	12.50	12.87
1992E	245.2	182.8	318.1	10.02	10.02	14.01	14.01	12.77	12.77
Forecast									
1993	244	180	318	10.27	9.96	14.23	13.80	13.09	12.69
1994	243	176	317	10.55	9.90	14.49	13.59	13.45	12.62
1995	243	174	316	10.87	9.84	14.87	13.46	13.86	12.54
1996	242	172	315	11.20	9.78	15.33	13.39	14.27	12.47
1997	242	172	315	11.53	9.72	15.80	13.32	14.70	12.39
1998	242	172	316	11.87	9.66	16.28	13.26	15.13	12.32
1999	242	173	317	12.30	9.61	16.88	13.19	15.67	12.24
2000	243	173	319	12.74	9.55	17.51	13.12	16.24	12.17
2001	245	174	321	13.20	9.49	18.16	13.06	16.82	12.10
2002	246	175	323	13.68	9.43	18.84	12.99	17.44	12.02
2003	247	176	324	14.18	9.38	19.55	12.93	18.07	11.95
2004	248	177	325	14.70	9.32	20.29	12.86	18.74	11.88

* Source: RSPA, Form 41

TABLE 10

UNITED STATES COMMERCIAL AIR CARRIERS AND REGIONALS/COMMUTERS

TOTAL SCHEDULED PASSENGER TRAFFIC [1/]

	REVENUE PASSENGER ENPLANEMENTS (Millions)			REVENUE PASSENGER MILES (Billions)		
FISCAL YEAR	DOMESTIC	INTERNATIONAL	TOTAL	DOMESTIC	INTERNATIONAL	TOTAL
Historical*						
1987	441.2	29.4	470.6	325.8	76.0	401.8
1988	441.2	34.3	475.5	329.9	90.5	420.4
1989	443.6	36.8	480.4	333.2	100.6	433.8
1990	456.6	41.3	497.9	344.9	115.1	460.0
1991	447.3	39.7	487.0	339.3	113.5	452.8
1992E	461.0	42.6	503.6	352.5	128.3	480.8
Forecast						
1993	472.0	46.5	518.5	362.5	139.2	501.7
1994	496.5	50.1	546.6	382.8	150.3	533.1
1995	520.2	53.8	574.0	402.2	161.6	563.8
1996	542.6	57.7	600.3	420.6	173.3	593.9
1997	563.6	61.7	625.3	437.9	185.3	623.2
1998	584.7	65.5	650.2	455.3	197.6	652.9
1999	606.4	69.6	676.0	473.1	209.7	682.8
2000	627.9	73.6	701.5	491.0	222.1	713.1
2001	649.9	77.9	727.8	509.1	235.0	744.1
2002	672.1	82.1	754.2	527.3	248.2	775.5
2003	694.5	86.7	781.2	545.9	262.2	808.1
2004	716.6	91.3	807.9	564.5	276.2	840.7

* Source: RSPA, Forms 41 and 298-C

1/ Sum of Tables 11 and 19 less duplicated traffic. See note on page IX-1.

TABLE 11

UNITED STATES COMMERCIAL AIR CARRIERS

SCHEDULED PASSENGER TRAFFIC

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS (Millions) DOMESTIC	INTERNATIONAL	TOTAL	REVENUE PASSENGER MILES (Billions) DOMESTIC	INTERNATIONAL	TOTAL
Historical*						
1987	415.5	29.4	444.9	322.1	76.0	398.1
1988	414.2	34.3	448.5	325.5	90.5	416.0
1989	415.6	36.8	452.4	328.4	100.6	429.0
1990	424.1	41.3	465.4	339.2	115.1	454.3
1991	413.3	39.7	453.1	333.6	113.5	447.1
1992E	428.8	42.6	471.3	346.3	128.3	474.6
Forecast						
1993	436.7	46.5	483.2	355.5	139.2	494.7
1994	458.6	50.1	508.7	375.1	150.3	525.4
1995	479.8	53.8	533.6	393.9	161.6	555.5
1996	499.5	57.7	557.2	411.6	173.3	584.9
1997	517.7	61.7	579.4	428.1	185.3	613.4
1998	535.9	65.5	601.4	444.8	197.6	642.4
1999	554.3	69.6	623.9	461.7	209.7	671.4
2000	572.7	73.6	646.3	478.8	222.1	700.9
2001	591.2	77.9	669.1	496.0	235.0	731.0
2002	609.7	82.1	691.8	513.4	248.2	761.6
2003	628.3	86.7	715.0	530.9	262.2	793.1
2004	646.7	91.3	738.0	548.4	276.2	824.6

* Source: RSPA, Form 41

TABLE 12

UNITED STATES COMMERCIAL AIR CARRIERS

SCHEDULED INTERNATIONAL PASSENGER TRAFFIC

	REVENUE PASSENGER ENPLANEMENTS (MIL)				REVENUE PASSENGER MILES (BIL)			
FISCAL YEAR	ATLANTIC	LATIN AMERICA	PACIFIC	TOTAL	ATLANTIC	LATIN AMERICA	PACIFIC	TOTAL
Historical*								
1987	12.4	10.4	6.6	29.4	38.5	13.0	24.5	76.0
1988	14.6	11.5	8.2	34.3	46.1	14.2	30.2	90.5
1989	15.0	11.8	10.0	36.8	49.1	14.7	36.8	100.6
1990	16.1	13.0	12.2	41.3	53.7	16.0	45.4	115.1
1991	12.2	14.7	12.8	39.7	47.1	18.3	48.1	113.5
1992E	14.8	13.6	14.2	42.6	57.8	17.1	53.4	128.3
Forecast								
1993	16.0	15.3	15.2	46.5	62.3	19.5	57.4	139.2
1994	16.9	16.5	16.7	50.1	66.1	21.1	63.1	150.3
1995	17.9	17.7	18.2	53.8	70.1	22.7	68.8	161.6
1996	19.0	19.0	19.7	57.7	74.3	24.4	74.6	173.3
1997	20.1	20.3	21.3	61.7	78.6	26.1	80.6	185.3
1998	21.1	21.6	22.8	65.5	83.0	27.9	86.7	197.6
1999	22.2	23.0	24.4	69.6	87.3	29.7	92.7	209.7
2000	23.3	24.4	25.9	73.6	91.8	31.6	98.7	222.1
2001	24.5	25.8	27.6	77.9	96.4	33.5	105.1	235.0
2002	25.6	27.2	29.3	82.1	100.8	35.5	111.9	248.2
2003	26.7	28.8	31.2	86.7	105.4	37.6	119.2	262.2
2004	27.8	30.5	33.0	91.3	109.9	39.9	126.4	276.2

* Source: RSPA, Form 41

TABLE 13

UNITED STATES COMMERCIAL AIR CARRIERS

SCHEDULED PASSENGER CAPACITY, TRAFFIC AND LOAD FACTORS

	DOMESTIC			INTERNATIONAL		
FISCAL YEAR	ASM'S (BIL)	RPM'S (BIL)	% LOAD FACTOR	ASM'S (BIL)	RPM'S (BIL)	% LOAD FACTOR
Historical*						
1987	521.9	322.1	61.7	117.5	76.0	64.7
1988	533.3	325.5	61.0	135.4	90.5	66.9
1989	529.5	328.4	62.0	151.1	100.6	66.6
1990	557.6	339.2	60.8	166.2	115.1	69.2
1991	548.4	333.6	60.8	169.3	113.5	67.0
1992E	553.2	346.3	62.6	191.5	128.3	67.1
Forecast						
1993	568.8	355.5	62.5	206.0	139.2	67.6
1994	594.3	375.1	63.1	220.0	150.3	68.3
1995	617.6	393.9	63.8	234.2	161.6	69.0
1996	638.5	411.6	64.5	249.0	173.3	69.6
1997	664.0	428.1	64.5	266.1	185.3	69.6
1998	696.6	444.8	63.9	285.6	197.6	69.2
1999	730.3	461.7	63.2	305.0	209.7	68.8
2000	766.1	478.8	62.5	325.0	222.1	68.3
2001	793.6	496.0	62.5	343.6	235.0	68.4
2002	821.4	513.4	62.5	362.7	248.2	68.4
2003	849.4	530.9	62.5	382.9	262.2	68.5
2004	877.4	548.4	62.5	403.1	276.2	68.5

* Source: RSPA, Form 41

TABLE 14

UNITED STATES COMMERCIAL AIR CARRIERS

SCHEDULED PASSENGER CAPACITY, TRAFFIC AND LOAD FACTORS BY INTERNATIONAL TRAVEL REGIONS

	ATLANTIC			LATIN AMERICA			PACIFIC		
FISCAL YEAR	ASM'S (BIL)	RPM'S (BIL)	% LOAD FACTOR	ASM'S (BIL)	RPM'S (BIL)	% LOAD FACTOR	ASM'S (BIL)	RPM'S (BIL)	% LOAD FACTOR
Historical*									
1987	59.0	38.5	65.3	21.9	13.0	59.3	36.6	24.5	67.0
1988	70.1	46.1	65.8	22.7	14.2	62.5	42.5	30.2	71.0
1989	74.8	49.1	65.7	23.7	14.7	61.9	52.6	36.8	70.1
1990	77.0	53.7	69.8	25.7	16.0	62.3	63.6	45.4	71.4
1991	67.8	47.1	69.5	29.4	18.3	62.3	72.1	48.1	66.7
1992E	83.8	57.8	68.9	29.4	17.1	58.3	77.9	53.4	68.6
Forecast									
1993	90.3	62.3	69.0	32.5	19.5	60.0	83.2	57.4	69.0
1994	95.0	66.1	69.6	34.6	21.1	61.0	90.4	63.1	69.8
1995	100.0	70.1	70.1	36.7	22.7	61.9	97.5	68.8	70.6
1996	105.3	74.3	70.6	38.9	24.4	62.7	104.8	74.6	71.2
1997	111.5	78.6	70.5	41.5	26.1	62.9	113.1	80.6	71.3
1998	118.7	83.0	69.9	44.6	27.9	62.6	122.3	86.7	70.9
1999	125.7	87.3	69.5	47.7	29.7	62.3	131.6	92.7	70.4
2000	133.0	91.8	69.0	51.0	31.6	62.0	141.0	98.7	70.0
2001	139.7	96.4	69.0	53.8	33.5	62.3	150.1	105.1	70.0
2002	146.1	100.8	69.0	56.7	35.5	62.6	159.9	119.2	70.0
2003	152.8	105.4	69.0	59.8	37.6	62.9	170.3	119.2	70.0
2004	159.3	109.9	69.0	63.2	39.9	63.1	180.6	126.4	70.0

* Source: RSPA, Form 41

TABLE 15

UNITED STATES COMMERCIAL AIR CARRIERS

LARGE JET AIRCRAFT

AS OF JANUARY 1	NARROWBODY			WIDEBODY			TOTAL
	2 ENGINE	3 ENGINE	4 ENGINE	2 ENGINE	3 ENGINE	4 ENGINE	
Historical*							
1987	1,460	1,160	193	130	298	160	3,401
1988	1,606	1,197	246	152	303	167	3,671
1989	1,764	1,191	257	187	300	171	3,870
1990	1,911	1,185	257	197	283	184	4,017
1991	2,113	1,194	249	210	290	196	4,252
1992E	2,178	1,093	204	221	309	201	4,206
Forecast							
1993	2,333	992	192	241	334	173	4,265
1994	2,438	909	195	274	335	160	4,311
1995	2,550	849	197	293	338	160	4,387
1996	2,655	808	197	327	340	169	4,496
1997	2,704	773	199	359	339	179	4,553
1998	2,824	746	201	392	346	181	4,690
1999	2,978	696	199	427	357	186	4,843
2000	3,141	657	201	455	370	192	5,016
2001	3,281	634	201	483	382	199	5,180
2002	3,459	619	202	507	386	208	5,381
2003	3,673	567	202	520	386	218	5,566
2004	3,843	557	203	532	386	226	5,747

* Source: FAA Aircraft Utilization and Propulsion Reliability Report

TABLE 16

UNITED STATES COMMERCIAL AIR CARRIERS

TOTAL AIRBORNE HOURS

(In Thousands)

	NARROWBODY			WIDEBODY			
FISCAL YEAR	2 ENGINE	3 ENGINE	4 ENGINE	2 ENGINE	3 ENGINE	4 ENGINE	TOTAL
Historical*							
1987	4,051	2,968	412	458	943	565	9,397
1988	4,392	2,884	439	557	957	613	9,842
1989	4,691	2,704	546	655	939	641	10,176
1990	5,272	2,605	408	701	951	671	10,608
1991	5,598	2,274	337	745	919	659	10,531
1992E	5,990	2,011	186	827	1,000	581	10,596
Forecast							
1993	6,382	1,806	180	901	1,019	592	10,880
1994	6,855	1,722	180	1,040	1,050	549	11,396
1995	7,407	1,618	180	1,107	1,103	549	11,964
1996	7,729	1,561	180	1,237	1,114	578	12,399
1997	7,949	1,535	180	1,362	1,114	615	12,755
1998	8,316	1,509	180	1,489	1,141	620	13,255
1999	8,629	1,495	180	1,623	1,185	630	13,742
2000	9,120	1,398	180	1,629	1,185	642	14,154
2001	9,423	1,331	180	1,724	1,208	656	14,522
2002	9,693	1,302	180	1,802	1,224	676	14,877
2003	10,087	1,230	180	1,838	1,224	700	15,259
2004	10,480	1,237	180	1,881	1,154	725	15,657

* Source: RSPA, Form 41

TABLE 17

TOTAL JET FUEL AND AVIATION GASOLINE FUEL CONSUMPTION

UNITED STATES CIVIL AVIATION AIRCRAFT

(In Millions of Gallons)

FISCAL YEAR	JET FUEL					AVIATION GASOLINE			TOTAL FUEL CONSUMED
	U.S. AIR CARRIERS			GENERAL		AIR	GENERAL		
	DOMESTIC	INT'L.	TOTAL	AVIATION	TOTAL	CARRIER	AVIATION	TOTAL	
Historical*									
1987	11,487	2,765	14,252	623	14,875	4	338	342	15,216
1988	11,902	3,192	15,094	654	15,748	4	323	327	16,075
1989	12,087	3,537	15,624	709	16,333	3	329	332	16,665
1990	12,439	3,812	16,251	648	16,899	3	331	334	17,233
1991	11,657	3,998	15,655	553	16,208	2	312	314	16,522
1992E	11,704	4,065	15,769	519	16,288	2	303	305	16,593
Forecast									
1993	11,850	4,292	16,142	532	16,674	2	303	305	16,979
1994	12,339	4,564	16,903	550	17,453	2	307	309	17,762
1995	12,789	4,825	17,614	575	18,189	2	308	310	18,499
1996	13,192	5,113	18,305	602	18,907	2	310	312	19,219
1997	13,547	5,431	18,978	632	19,610	2	311	313	19,923
1998	13,900	5,793	19,693	654	20,347	2	314	316	20,663
1999	14,339	6,162	20,500	675	21,175	2	314	316	21,492
2000	14,732	6,526	21,258	705	21,963	2	318	320	22,283
2001	15,168	6,872	22,040	725	22,765	2	318	320	23,085
2002	15,558	7,211	22,768	743	23,511	2	319	321	23,831
2003	15,991	7,582	23,573	770	24,343	2	319	321	24,664
2004	16,370	7,935	24,305	789	25,094	2	320	322	25,416

* Source: Air carrier jet fuel, RSPA Form 41; All others, FAA APO estimates

TABLE 18

BASELINE REGIONALS/COMMUTERS FORECAST ASSUMPTIONS

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT (Seats)	AVERAGE PASSENGER TRIP LENGTH 48 STATES (Miles)	AVERAGE PASSENGER TRIP LENGTH HA/P.R./V.I. (Miles)	AVERAGE PASSENGER LOAD FACTOR (Percent)
Historical*				
1987	19.7	161.2	97.6	46.0
1988	19.2	171.6	84.3	46.6
1989	20.4	179.3	89.8	47.8
1990	20.8	183.5	82.8	47.1
1991	21.5	185.7	82.0	46.8
1992E	22.9	195.9	85.6	48.3
Forecast				
1993	24.6	203.0	86.0	47.6
1994	25.8	207.0	86.0	47.3
1995	27.1	210.0	86.0	47.3
1996	28.3	213.0	86.0	47.4
1997	29.5	216.0	86.0	47.7
1998	30.5	218.0	86.0	47.9
1999	31.3	220.0	86.0	48.1
2000	32.2	222.0	86.0	48.3
2001	33.1	224.0	86.0	48.5
2002	34.1	226.0	86.0	48.7
2003	34.9	228.0	86.0	48.9
2004	35.7	230.0	86.0	48.9

* Source: RSPA, Form's 298-C and 41

TABLE 19

UNITED STATES REGIONALS/COMMUTERS

SCHEDULED PASSENGER TRAFFIC

(In Millions)

	REVENUE PASSENGER ENPLANEMENTS			REVENUE PASSENGER MILES		
FISCAL YEAR	48 STATES	HAWAII/ PUERTO RICO/ VIRGIN ISLANDS	TOTAL	48 STATES	HAWAII/ PUERTO RICO/ VIRGIN ISLANDS	TOTAL
Historical*						
1987	25.6	2.4	28.0	4,127.2	234.2	4,361.4
1988	28.4	1.7	30.1	4,875.3	152.6	5,027.9
1989	30.7	1.4	32.1	5,504.8	125.3	5,630.1
1990	35.5	1.7	37.2	6,513.1	140.7	6,653.8
1991	37.0	1.7	38.7	6,870.1	139.4	7,009.5
1992E	41.2	1.6	42.8	8,071.3	137.0	8,208.3
Forecast						
1993	44.5	1.7	46.2	9,033.5	146.2	9,179.7
1994	47.5	2.0	49.5	9,832.5	172.0	10,004.5
1995	50.7	2.2	52.9	10,647.0	189.2	10,836.2
1996	54.0	2.4	56.4	11,502.0	206.4	11,708.4
1997	57.4	2.6	60.0	12,398.4	223.6	12,622.0
1998	61.0	2.8	63.8	13,298.0	240.8	13,538.8
1999	64.8	3.1	67.9	14,256.0	266.6	14,522.6
2000	68.6	3.2	71.8	15,229.2	275.2	15,504.4
2001	72.7	3.5	76.2	16,284.8	301.0	16,585.8
2002	77.0	3.7	80.7	17,402.0	318.2	17,720.2
2003	81.3	4.0	85.3	18,536.4	344.0	18,880.4
2004	85.7	4.2	89.9	19,711.0	361.2	20,072.2

* Source: RSPA, Form's 298-C and 41

TABLE 20

UNITED STATES REGIONALS/COMMUTERS

PASSENGER AIRCRAFT

AS OF JANUARY 1	LESS THAN 15 SEATS	15 TO 19 SEATS	20 TO 40 SEATS	MORE THAN 40 SEATS	TOTAL
Historical*					
1987	581	652	213	158	1,604
1988	573	740	251	120	1,684
1989	538	802	303	139	1,782
1990	541	762	366	150	1,819
1991	535	762	445	154	1,896
1992E	534	735	503	188	1,960
Forecast					
1993	493	727	568	230	2,018
1994	444	719	626	277	2,066
1995	399	709	680	328	2,116
1996	347	698	728	379	2,152
1997	304	684	756	427	2,171
1998	269	668	784	474	2,195
1999	240	655	810	520	2,225
2000	217	637	836	565	2,255
2001	198	617	863	609	2,287
2002	183	597	891	652	2,323
2003	170	576	917	696	2,359
2004	159	553	940	729	2,381

* Source: FAA Aircraft Utilization and Propulsion Reliability Report

TABLE 21

ACTIVE GENERAL AVIATION AIRCRAFT

(In Thousands)

AS OF JANUARY 1	FIXED WING				ROTORCRAFT			
	PISTON							
	SINGLE ENGINE	MULTI-ENGINE	TURBOPROP	TURBOJET	PISTON	TURBINE	OTHER	TOTAL
Historical*								
1987	159.8	22.2	5.6	4.2	2.7	3.7	6.5	204.7
1988	159.0	21.8	4.9	4.1	2.6	3.3	6.3	202.0
1989	153.2	21.2	4.9	3.9	2.4	3.6	6.4	195.5
1990	158.4	21.8	5.9	4.1	3.0	3.9	7.2	204.4
1991	153.5	21.1	5.3	4.1	3.2	3.7	6.5	197.4
1992E	154.0	21.2	4.9	4.4	2.5	3.8	7.6	198.4
Forecast								
1993	154.0	21.2	5.0	4.5	2.4	4.C	7.6	198.7
1994	154.5	21.3	5.1	4.6	2.3	4.2	7.7	199.7
1995	155.1	21.3	5.3	4.7	2.2	4.4	7.8	200.8
1996	155.7	21.4	5.5	4.9	2.3	4.6	8.0	202.4
1997	156.3	21.4	5.7	5.0	2.2	4.9	8.1	203.6
1998	156.9	21.5	5.9	5.1	2.2	5.1	8.3	205.0
1999	157.4	21.6	6.1	5.2	2.2	5.4	8.5	206.4
2000	157.9	21.7	6.3	5.4	2.1	5.6	8.6	207.6
2001	158.4	21.8	6.5	5.5	2.0	5.9	8.8	208.9
2002	158.7	21.9	6.7	5.6	2.0	6.2	9.0	210.1
2003	159.0	22.0	6.9	5.8	1.9	6.5	9.1	211.2
2004	159.3	22.1	7.1	5.9	1.8	6.8	9.3	212.3

Source: FAA Statistical Handbook of Aviation.

* Adjusted to reflect nonrespondent sampling error.

Notes: Detail may not add to total because of independent rounding. An active aircraft must have a current registration and it must have been flown at least one hour during the previous calendar year.

TABLE 22

ACTIVE GENERAL AVIATION AIRCRAFT

BY FAA REGION

(In Thousands)

AS OF JANUARY 1	FAA REGION									TOTAL
	ANE	AEA	ASO	AGL	ACE	ASW	AWP	ANM	AAL	
Historical*										
1987	8.3	23.7	31.2	35.2	12.2	30.4	36.1	20.5	7.1	204.7
1988	8.5	22.4	32.4	35.9	12.3	28.4	35.3	19.7	7.1	202.0
1989	8.9	22.3	32.2	34.8	11.3	27.4	34.2	18.5	5.9	195.5
1990	8.7	23.5	34.3	36.6	11.1	28.8	35.1	20.1	6.1	204.4
1991	8.1	23.0	32.7	34.7	11.0	26.4	34.7	20.3	6.5	197.4
1992E	8.3	22.5	32.4	34.8	11.4	26.5	36.5	19.4	6.6	198.4
Forecast										
1993	8.2	22.3	32.8	34.5	11.4	26.3	36.8	19.6	6.8	198.7
1994	8.3	22.5	33.1	34.3	11.3	26.4	37.1	19.8	6.9	199.7
1995	8.3	22.6	33.4	34.3	11.3	26.6	37.3	20.0	7.0	200.8
1996	8.4	22.8	33.7	34.4	11.4	27.0	37.4	20.2	7.1	202.4
1997	8.5	23.0	34.0	34.5	11.4	27.3	37.5	20.3	7.1	203.6
1998	8.5	23.0	34.3	34.7	11.4	27.7	37.7	20.5	7.2	205.0
1999	8.6	23.2	34.6	34.8	11.5	27.9	37.9	20.7	7.2	206.4
2000	8.7	23.4	34.9	34.9	11.6	28.0	38.0	20.8	7.3	207.6
2001	8.8	23.6	35.2	35.1	11.7	28.1	38.1	20.9	7.4	208.9
2002	8.9	23.8	35.5	35.3	11.8	28.2	38.2	21.0	7.4	210.1
2003	9.0	23.9	35.7	35.5	11.9	28.4	38.3	21.1	7.4	211.2
2004	9.1	24.0	35.9	35.7	12.0	28.6	38.4	21.2	7.4	212.3

Source: FAA Statistical Handbook of Aviation.

* Adjusted to reflect nonrespondent sampling error.

Notes: Detail may not add to total because of independent rounding. An active aircraft must have a current registration and it must have been flown at least one hour during the previous calendar year.

TABLE 23

GENERAL AVIATION HOURS FLOWN
(In Millions)

FISCAL YEAR	FIXED WING				ROTORCRAFT			
	PISTON							
	SINGLE ENGINE	MULTI-ENGINE	TURBOPROP	TURBOJET	PISTON	TURBINE	OTHER	TOTAL
Historical*								
1987	20.3	4.5	2.2	1.4	0.6	1.5	0.4	31.0
1988	20.4	4.1	2.2	1.5	0.6	1.9	0.5	31.1
1989	20.5	4.2	2.7	1.5	0.7	1.9	0.4	32.0
1990	21.5	4.0	2.5	1.4	0.7	1.6	0.4	32.0
1991	20.8	3.7	1.7	1.3	0.6	2.0	0.4	30.5
1992E	20.5	3.5	1.5	1.2	0.6	2.2	0.4	29.9
Forecast								
1993	20.5	3.5	1.5	1.2	0.6	2.4	0.4	30.1
1994	20.7	3.6	1.5	1.3	0.6	2.6	0.4	30.6
1995	20.8	3.6	1.6	1.3	0.6	3.0	0.5	31.3
1996	20.8	3.6	1.6	1.3	0.7	3.3	0.5	31.9
1997	20.9	3.6	1.7	1.4	0 7	3.7	0.5	32.5
1998	20.9	3.7	1.8	1.4	0.7	4.0	0.5	33.0
1999	21.0	3.7	1.8	1.4	0.6	4.3	0.5	33.4
2000	21.1	3.8	1.9	1.5	0.6	4.6	0.6	34.0
2001	21.2	3.8	1.9	1.5	0.5	4.7	0.6	34.3
2002	21.2	3.8	2.0	1.6	0.5	4.9	0.6	34.6
2003	21.3	3.8	2.1	1.6	0.5	5.1	0.6	35.0
2004	21.3	3.8	2.1	1.7	0.5	5.3	0.6	35.3

Source: FAA Statistical Handbook of Aviation.
* Adjusted to reflect nonrespondent sampling error.

Notes: Detail may not add to total because of independent rounding.

TABLE 24

ACTIVE PILOTS BY TYPE OF CERTIFICATE
(In Thousands)

AS OF JANUARY 1	STUDENTS	RECREATIONAL[2] LIGHTER-THAN-AIR[3]	PRIVATE	COMMERCIAL	AIRLINE TRANSPORT	HELICOPTER	GLIDER	TOTAL	INSTRUMENT RATED[1]
Historical*									
1987	150.3	1.1	305.7	147.8	87.2	8.6	8.4	709.1	262.4
1988	146.0	1.2	300.9	143.6	91.3	8.7	7.9	699.7	266.1
1989	136.9	1.1	299.8	143.0	97.0	8.6	7.6	694.0	273.8
1990	142.5	1.1	293.2	144.5	102.1	8.9	7.7	700.0	282.8
1991	128.7	0.1	299.1	149.7	107.7	9.6	7.8	702.7	297.1
1992E	120.2	0.2	293.3	148.4	112.2	9.9	8.0	692.1	303.2
Forecast									
1993	121.5	0.2	293.3	150.6	115.8	10.1	8.3	699.8	306.8
1994	122.9	0.4	294.5	152.8	119.5	10.3	8.4	708.7	310.5
1995	128.9	0.5	295.4	154.4	123.3	10.4	8.5	721.3	315.2
1996	136.6	0.7	296.0	155.9	127.2	10.5	8.6	735.5	319.9
1997	137.7	0.8	296.0	157.6	131.9	10.7	8.6	743.3	324.1
1998	138.5	1.1	296.8	159.1	136.7	10.8	8.7	751.8	327.9
1999	139.2	1.2	297.7	160.7	141.8	10.9	8.7	760.2	332.5
2000	139.7	1.3	298.6	162.3	145.6	11.1	8.8	767.3	337.5
2001	140.2	1.4	299.5	163.9	149.5	11.2	8.8	774.6	342.2
2002	140.2	1.5	300.4	165.5	153.6	11.3	8.9	781.4	347.0
2003	141.1	1.6	301.3	167.2	156.6	11.4	8.9	788.2	351.6
2004	141.6	1.6	302.2	168.9	159.8	11.5	9.0	794.5	356.1

* Source: FAA Statistical Handbook of Aviation.

1/ Instrument rated pilots should not be added to other categories in deriving total.
2/ Recreational rating not available until 1991.
3/ Lighter-than-air type rating is no longer issued after 1990.
Notes: Detail may not add to total because of independent rounding.

TABLE 25

GENERAL AVIATION AIRCRAFT FUEL CONSUMPTION

(In Millions of Gallons)

FISCAL YEAR	FIXED WING				ROTORCRAFT			
	PISTON							
	SINGLE ENGINE	MULTI-ENGINE	TURBOPROP	TURBOJET	PISTON	TURBINE	OTHER	TOTAL
Historical*								
1987	172.7	158.0	196.6	380.5	6.8	45.6	0.1	960.2
1988	173.4	144.0	195.6	403.5	5.9	54.9	0.1	977.4
1989	174.2	147.6	246.3	406.1	7.0	56.9	0.1	1,038.1
1990	182.6	140.9	223.4	377.5	7.6	47.0	0.1	979.0
1991	177.2	128.0	155.7	338.1	6.6	59.0	0.1	864.7
1992E	174.5	122.1	132.2	320.9	6.2	66.1	0.1	822.1
Forecast								
1993	174.5	122.1	134.3	327.9	6.2	69.8	0.1	834.9
1994	175.9	124.5	137.2	336.1	6.2	76.9	0.1	857.0
1995	177.0	124.5	143.1	343.8	6.2	88.4	0.1	883.2
1996	177.0	127.0	148.7	355.9	6.2	97.2	0.1	912.2
1997	177.7	127.0	154.2	367.6	6.2	109.9	0.1	942.8
1998	177.7	129.6	159.8	375.7	6.2	118.3	0.1	967.4
1999	178.4	129.6	165.5	382.8	6.2	126.7	0.1	989.4
2000	179.1	132.2	171.1	398.5	6.2	135.2	0.1	1,022.6
2001	179.8	132.2	176.6	408.5	5.9	139.4	0.1	1,042.6
2002	180.4	132.2	182.3	416.7	5.9	143.6	0.1	1,061.1
2003	180.9	132.2	188.1	430.0	5.9	151.6	0.1	1,088.8
2004	181.5	132.2	193.8	439.5	5.9	155.6	0.2	1,108.4

Source: FAA APO Estimates

* Adjusted to reflect nonrespondent sampling error.

Notes: Detail may not add to total because of independent rounding.

TABLE 26

ACTIVE ROTORCRAFT FLEET AND HOURS FLOWN

AS OF JANUARY 1	ACTIVE FLEET (Thousands) PISTON	TURBINE	TOTAL	HOURS FLOWN (1) (Millions) PISTON	TURBINE	TOTAL
Historical*						
1987	2.7	3.7	6.4	0.6	1.5	2.1
1988	2.6	3.3	5.9	0.6	1.9	2.5
1989	2.4	3.6	6.0	0.7	1.9	2.6
1990	3.0	3.9	6.9	0.7	1.6	2.3
1991	3.2	3.7	6.9	0.6	2.0	2.6
1992E	2.5	3.8	6.3	0.6	2.2	2.8
Forecast						
1993	2.4	4.0	6.4	0.6	2.4	3.0
1994	2.3	4.2	6.5	0.6	2.6	3.2
1995	2.2	4.4	6.6	0.6	3.0	3.6
1996	2.3	4.6	6.9	0.7	3.3	4.0
1997	2.2	4.9	7.1	0.7	3.7	4.2
1998	2.2	5.1	7.3	0.7	4.0	4.7
1999	2.2	5.4	7.6	0.6	4.3	4.9
2000	2.1	5.6	7.7	0.6	4.6	5.2
2001	2.0	5.9	7.9	0.5	4.7	5.2
2002	2.0	6.2	8.2	0.5	4.9	5.4
2003	1.9	6.5	8.4	0.5	5.1	5.6
2004	1.8	6.8	8.6	0.5	5.3	5.8

Source: FAA Statistical Handbook of Aviation

* Adjusted to reflect nonrespondent sampling error.

(1) Helicopter hours flown are on a fiscal year basis.

TABLE 27

TOTAL AIRCRAFT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Millions)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL	NUMBER OF FAA TOWERS
Historical*						
1987	13.1	7.3	37.8	2.7	61.0	399
1988	12.8	8.3	37.5	2.8	61.3	39[0]
1989	12.5	8.3	37.8	2.8	61.4	399
1990	12.9	8.8	39.0	2.8	63.5	403
1991	12.5	8.9	37.6	2.5	61.5	399
1992E	12.4	9.3	36.9	2.8	61.5	401
Forecast						
1993	12.7	9.6	37.4	2.8	62.5	401
1994	13.0	10.0	38.3	2.8	64.1	401
1995	13.2	10.4	39.2	2.8	65.6	401
1996	13.5	10.8	39.9	2.8	67.0	401
1997	13.8	11.1	40.6	2.8	68.3	401
1998	14.2	11.4	41.2	2.8	69.6	401
1999	14.6	11.6	41.9	2.8	70.9	401
2000	15.0	11.9	42.5	2.8	72.2	401
2001	15.3	12.2	43.2	2.8	73.5	401
2002	15.6	12.4	43.7	2.8	74.5	401
2003	15.9	12.7	44.3	2.8	75.7	401
2004	16.1	12.9	44.8	2.8	76.6	401

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

TABLE 28

ITINERANT AIRCRAFT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Millions)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1987	13.1	7.3	22.1	1.4	43.9
1988	12.8	8.3	22.1	1.4	44.5
1989	12.5	8.3	22.1	1.4	44.3
1990	12.9	8.8	22.4	1.4	45.5
1991	12.5	8.9	21.5	1.3	44.2
1992E	12.4	9.3	21.3	1.4	44.4
Forecast					
1993	12.7	9.6	21.6	1.4	45.3
1994	13.0	10.0	22.1	1.4	46.5
1995	13.2	10.4	22.6	1.4	47.6
1996	13.5	10.8	23.0	1.4	48.7
1997	13.8	11.1	23.4	1.4	49.7
1998	14.2	11.4	23.8	1.4	50.8
1999	14.6	11.6	24.2	1.4	51.8
2000	15.0	11.9	24.6	1.4	52.9
2001	15.3	12.2	25.0	1.4	53.9
2002	15.6	12.4	25.3	1.4	54.7
2003	15.9	12.7	25.6	1.4	55.6
2004	16.1	12.9	25.9	1.4	56.3

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

TABLE 29

LOCAL AIRCRAFT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Millions)

FISCAL YEAR	GENERAL AVIATION	MILITARY	TOTAL
Historical*			
1987	15.8	1.3	17.1
1988	15.4	1.4	16.8
1989	15.7	1.4	17.1
1990	16.6	1.4	18.0
1991	16.0	1.2	17.2
1992E	15.7	1.4	17.1
Forecast			
1993	15.8	1.4	17.2
1994	16.2	1.4	17.6
1995	16.6	1.4	18.0
1996	16.9	1.4	18.3
1997	17.2	1.4	18.6
1998	17.4	1.4	18.8
1999	17.7	1.4	19.1
2000	17.9	1.4	19.3
2001	18.2	1.4	19.6
2002	18.4	1.4	19.8
2003	18.7	1.4	20.1
2004	18.9	1.4	20.3

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

TABLE 30

INSTRUMENT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Millions)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL	
Historical*						
1987	13.7	7.3	17.9	4.4	43.4	(9.2)
1988	13.4	8.4	18.3	4.4	44.5	(9.5)
1989	13.6	8.4	18.6	4.5	45.0	(9.4)
1990	14.0	9.4	19.1	4.4	46.8	(10.0)
1991	13.5	9.5	18.1	4.0	45.1	(9.5)
1992E	13.4	9.9	18.2	4.1	45.6	(9.4)
Forecast						
1993	13.7	10.2	18.4	4.1	46.4	(9.7)
1994	14.0	10.6	18.9	4.1	47.6	(10.0)
1995	14.4	11.0	19.4	4.1	48.9	(10.0)
1996	14.7	11.4	19.8	4.1	50.0	(10.0)
1997	15.1	11.7	20.1	4.1	51.0	(10.0)
1998	15.5	12.1	20.5	4.1	52.2	(10.0)
1999	15.9	12.4	20.8	4.1	53.2	(10.0)
2000	16.4	12.7	21.2	4.1	54.4	(10.0)
2001	16.7	13.0	21.6	4.1	55.4	(10.0)
2002	17.0	13.2	21.9	4.1	56.2	(10.0)
2003	17.3	13.5	22.3	4.1	57.2	(10.0)
2004	17.6	13.7	22.6	4.1	58.0	(10.0)

* Source: FAA Air Traffic Activity.

Notes: Non-IFR instrument counts at Terminal Control Area (TCA) facilities and expanded area radar service are included in the totals and are shown in parenthesis (See Table 31). The data include instrument operations at FAA operated military radar approach control facilities. Detail may not add because of rounding.

TABLE 31

NON-IFR INSTRUMENT OPERATIONS
(In Millions)

FISCAL YEAR	TERMINAL CONTROL AREAS	AIRPORT RADAR SERVICE AREAS	TOTAL
Historical*			
1987	1.7	7.5	9.2
1988	1.7	7.8	9.5
1989	1.6	7.8	9.4
1990	1.9	8.1	10.0
1991	2.5	7.0	9.5
1992E	2.5	6.9	9.4
Forecast			
1993	2.6	7.1	9.7
1994	2.7	7.3	10.0
1995	2.7	7.3	10.0
1996	2.7	7.3	10.0
1997	2.7	7.3	10.0
1998	2.7	7.3	10.0
1999	2.7	7.3	10.0
2000	2.7	7.3	10.0
2001	2.7	7.3	10.0
2002	2.7	7.3	10.0
2003	2.7	7.3	10.0
2004	2.7	7.3	10.0

* Source: FAA Air Traffic Activity

TABLE 32

IFR AIRCRAFT HANDLED

AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS

(In Millions)

FISCAL YEAR	IFR AIRCRAFT HANDLED				
	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1987	17.1	5.3	8.1	5.3	35.8
1988	17.9	5.8	8.1	4.6	36.4
1989	17.5	5.2	8.2	5.7	36.6
1990	18.5	5.6	7.9	5.5	37.4
1991	18.3	5.6	7.4	5.1	36.4
1992E	18.3	5.9	7.4	5.1	36.7
Forecast					
1993	18.7	6.2	7.5	5.1	37.5
1994	19.0	6.6	7.7	5.1	38.4
1995	19.3	6.9	8.0	5.1	39.3
1996	19.6	7.1	8.2	5.1	40.0
1997	20.1	7.3	8.2	5.1	40.7
1998	20.7	7.5	8.4	5.1	41.7
1999	21.4	7.6	8.5	5.1	42.6
2000	22.0	7.8	8.7	5.1	43.6
2001	22.5	8.0	8.7	5.1	44.3
2002	22.9	8.2	8.9	5.1	45.1
2003	23.4	8.4	8.9	5.1	45.8
2004	23.8	8.6	9.1	5.1	46.6

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

IFR DEPARTURES AND OVERS

AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS

(In Millions)

FISCAL YEAR	AIR CARRIER IFR DEPARTURES	AIR CARRIER OVERS	AIR TAXI/COMMUTER IFR DEPARTURES	AIR TAXI/COMMUTER OVERS	GENERAL AVIATION IFR DEPARTURES	GENERAL AVIATION OVERS	MILITARY IFR DEPARTURES	MILITARY OVERS	TOTAL DEPARTURES	TOTAL OVERS
Historical*										
1987	6.0	5.0	2.5	0.4	3.4	1.3	1.9	1.5	13.8	8.3
1988	6.1	5.6	2.7	0.4	3.4	1.3	1.6	1.5	13.8	8.7
1989	6.0	5.4	2.5	0.3	3.4	1.4	1.9	1.9	13.8	9.0
1990	6.3	5.9	2.6	0.4	3.3	1.3	1.8	1.8	14.0	9.4
1991	6.2	5.8	2.6	0.3	3.1	1.2	1.7	1.7	13.6	9.0
1992E	6.2	6.0	2.7	0.4	3.1	1.3	1.7	1.6	13.7	9.3
Forecast										
1993	6.3	6.1	2.9	0.4	3.1	1.3	1.7	1.7	14.0	9.5
1994	6.4	6.2	3.1	0.4	3.2	1.3	1.7	1.7	14.4	9.6
1995	6.5	6.3	3.2	0.5	3.3	1.4	1.7	1.7	14.7	9.9
1996	6.6	6.4	3.3	0.5	3.4	1.4	1.7	1.7	15.0	10.0
1997	6.8	6.5	3.4	0.5	3.4	1.4	1.7	1.7	15.3	10.1
1998	7.1	6.5	3.5	0.5	3.5	1.4	1.7	1.7	15.8	10.1
1999	7.4	6.6	3.5	0.6	3.5	1.5	1.7	1.7	16.1	10.4
2000	7.7	6.6	3.6	0.6	3.6	1.5	1.7	1.7	16.6	10.4
2001	7.9	6.7	3.7	0.6	3.6	1.5	1.7	1.7	16.9	10.5
2002	8.1	6.7	3.8	0.6	3.7	1.5	1.7	1.7	17.3	10.5
2003	8.3	6.8	3.9	0.6	3.7	1.5	1.7	1.7	17.6	10.6
2004	8.5	6.8	4.0	0.6	3.8	1.5	1.7	1.7	18.0	10.6

* Source: FAA Air Traffic Activity.

Note: Totals may not add because of rounding.

TOTAL FLIGHT SERVICES

AT FAA FLIGHT SERVICE STATIONS

(In Millions)

FISCAL YEAR	FLIGHT PLANS ORIGINATED	PILOT BRIEFS	AIRCRAFT CONTACTED	TOTAL FLIGHT SERVICES
Historical*				
1987	8.0	13.0	7.3	49.2
1988	7.9	11.9	6.7	46.3
1989	7.7	12.3	6.5	46.6
1990	7.3	11.8	6.3	44.6
1991	6.6	11.0	5.8	41.1
1992E	6.5	10.8	5.6	40.2
Forecast				
1993	6.3	10.5	5.2	38.8
1994	6.2	10.1	4.9	37.5
1995	6.3	10.0	4.8	37.4
1996	6.4	10.0	4.9	37.7
1997	6.5	10.1	4.9	38.1
1998	6.5	10.1	5.0	38.2
1999	6.6	10.1	5.0	38.4
2000	6.7	10.1	5.0	38.6
2001	6.7	10.2	5.0	38.8
2002	6.8	10.2	5.0	39.0
2003	6.8	10.3	5.0	39.2
2004	6.9	10.3	5.0	39.4

* Source: FAA Air Traffic Activity.

Notes: Total flight services is equal to the sum of flight plans originated and pilot briefs, multiplied by two, plus the number of aircraft contacted.

TABLE 35

FLIGHT PLANS ORIGINATED

AT FAA FLIGHT SERVICE STATIONS

(In Millions)

	FLIGHT PLANS ORIGINATED		
FISCAL YEAR	IFR-DVFR	VFR	TOTAL
Historical*			
1987	6.1	1.9	8.0
1988	6.0	1.9	7.9
1989	5.9	1.8	7.7
1990	5.5	1.8	7.3
1991	4.9	1.7	6.6
1992E	4.9	1.7	6.5
Forecast			
1993	4.7	1.6	6.3
1994	4.7	1.5	6.2
1995	4.8	1.5	6.3
1996	4.8	1.6	6.4
1997	4.9	1.6	6.5
1998	4.9	1.6	6.5
1999	4.9	1.7	6.6
2000	5.0	1.7	6.7
2001	5.0	1.7	6.7
2002	5.1	1.7	6.8
2003	5.1	1.7	6.8
2004	5.1	1.8	6.9

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

TABLE 36

AIRCRAFT CONTACTED

AT FAA FLIGHT SERVICE STATIONS

(In Millions)

	USER CATEGORY				FLIGHT RULES		
FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	IFR-DVFR	VFR	TOTAL
Historical*							
1987	0.4	1.0	5.4	0.5	2.1	5.2	7.3
1988	0.3	1.0	5.0	0.4	1.9	4.8	6.7
1989	0.3	0.9	4.9	0.4	1.9	4.5	6.5
1990	0.3	0.8	4.8	0.4	1.8	4.5	6.3
1991	0.2	0.8	4.4	0.4	1.7	4.1	5.8
1992E	0.2	0.8	4.2	0.4	1.7	3.9	5.6
Forecast							
1993	0.2	0.7	3.9	0.4	1.6	3.6	5.2
1994	0.2	0.7	3.6	0.4	1.6	3.3	4.9
1995	0.2	0.7	3.5	0.4	1.5	3.3	4.8
1996	0.2	0.7	3.6	0.4	1.5	3.4	4.9
1997	0.2	0.7	3.6	0.4	1.5	3.4	4.9
1998	0.2	0.7	3.7	0.4	1.5	3.5	5.0
1999	0.2	0.7	3.7	0.4	1.5	3.5	5.0
2000	0.2	0.7	3.7	0.4	1.5	3.5	5.0
2001	0.2	0.7	3.7	0.4	1.5	3.5	5.0
2002	0.2	0.7	3.7	0.4	1.5	3.5	5.0
2003	0.2	0.7	3.7	0.4	1.5	3.5	5.0
2004	0.2	0.7	3.7	0.4	1.5	3.5	5.0

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

TABLE 37

ACTIVE U.S. MILITARY AIRCRAFT

IN THE CONTINENTAL UNITED STATES [1/]

	FIXED WING AIRCRAFT				
FISCAL YEAR	JET	TURBOPROP	PISTON	HELICOPTER	TOTAL
Historical*					
1987	9,819	1,865	370	8,460	20,514
1988	9,954	2,222	305	8,529	21,010
1989	9,501	2,131	261	7,330	19,223
1990	10,360	2,199	258	7,200	20,017
1991	10,221	2,119	247	7,379	19,966
1992	9,672	2,035	229	7,274	19,210
Forecast					
1993	8,399	1,917	208	7,136	17,660
1994	8,111	1,874	169	6,793	16,947
1995	7,965	1,848	168	6,508	16,489
1996	7,887	1,831	166	6,347	16,231
1997	7,838	1,803	166	6,335	16,142
1998	7,820	1,774	164	6,354	16,112
1999	7,816	1,760	163	6,334	16,073
2000	7,855	1,761	162	6,305	16,083
2001	7,879	1,750	162	6,290	16,081
2002	7,854	1,737	161	6,275	16,027
2003	7,859	1,735	160	6,274	16,028
2004	7,850	1,735	160	6,274	16,019

* Source: Office of the Secretary of Defense, Department of Defense.

[1/] Includes Army, Air Force, Navy and Marine regular service aircraft, as well as Reserve and National Guard aircraft.

TABLE 38

ACTIVE U.S. MILITARY AIRCRAFT

HOURS FLOWN IN THE CONTINENTAL UNITED STATES [1/]

(In Thousands)

	FIXED WING AIRCRAFT				
FISCAL YEAR	JET	TURBOPROP	PISTON	HELICOPTER	TOTAL
Historical*					
1987	3,268	753	140	1,879	6,040
1988	3,339	808	92	1,763	6,002
1989	3,905	913	93	1,706	6,617
1990	3,849	908	202	1,772	6,731
1991	3,689	863	208	1,471	6,231
1992E	3,407	843	197	1,770	6,217
Forecast					
1993	2,727	725	65	1,854	5 371
1994	2,562	763	65	1,790	5,180
1995	2,536	771	65	1,750	5,122
1996	2,549	780	65	1,732	5,126
1997	2,536	762	65	1,698	5,061
1998	2,599	769	65	1,706	5,139
1999	2,648	781	65	1,707	5,201
2000	2,677	781	65	1,710	5,233
2001	2,717	779	65	1,710	5,271
2002	2,737	774	65	1,710	5,286
2003	2,751	772	65	1,710	5,298
2004	2,751	772	65	1,710	5,298

* Source: Office of the Secretary of Defense, Department of Defense.

[1/] Includes Army, Air Force, Navy and Marine regular service aircraft, as well as Reserve and National Guard aircraft.

Appendix A

ACTIVE U.S. LARGE CERTIFICATED AIR CARRIERS FY 1992

Air Carrier	Code	REPORTING ENTITIES DOM	INT	ATL	LAM	PAC
Major Carriers						
America West		X	X		X	X
American		X	X	X	X	X
Continental		X	X	X	X	X
Delta		X	X	X	X	X
Federal Express		X	X	X	X	X
Northwest		X	X	X		X
Pan American		X	X	X	X	
Trans World		X	X	X		
United		X	X	X	X	X
USAir		X	X	X	X	
National Carriers						
Air Wisconsin		X				
Alaska		X			X	
Aloha		X				
American Trans Air		X	X			
Emery	C	X	X			
Evergreen	NS	X	X			
Hawaiian		X	X			X
Markair		X				
Midway		X				
Southern Air	NS	X	X			
Tower			X	X		
United Parcel	C	X	X	X	X	X
USAir Shuttle		X	X		X	
Westair		X				
World	NS	X	X			
Large Regional Carriers						
Air Transport Intl.	C	X	X	X		
American Intl.	C	X	X			
Amerijet	C	X	X			
Arrow	C	X	X			
Aspen		X				
Braniff Intl.		X				
Carnival		X	X		X	
Challenge	C		X		X	
Executive Airlines		X	X		X	
Express One	NS	X	X			

ACTIVE U.S. LARGE CERTIFICATED AIR CARRIERS FY 1992 (cont.)

Air Carrier	Code	REPORTING ENTITIES DOM	INT	ATL	LAM	PAC
Large Regional Carriers (cont.)						
Flagship	C/NS	X	X	X		X
Florida West	C/NS	X	X			
Key		X	X		X	
MGM Grand		X				
Northern Air	C	X				
Reeve		X				
Rich	NS	X	X			
Simmons		X				
Sun Country	NS	X	X			
Trans Continental	C/NS	X	X			
Trans States		X				
Zantop	C	X				
Medium Regional Carriers						
Aerial	C		X		X	
Airline of the Americas	NS	X	X			
Airmark	NS	X				
Av Atlantic	NS	X	X			
Buffalo	C/NS	X				
Casino Express		X				
Great American	NS	X				
Intl. Cargo Express	NS		X			
Jet Fleet	NS		X			
Miami Air	NS	X	X			
Millon	C/NS		X			
North American	NS	X				
Patriot	C/NS		X			
Private Jet	NS	X	X			
Ryan Intl.	C	X	X			
Sierra Pacific	NS	X				
Spirit		X				
Trans Air Link	C/NS	X	X			
Wilbur's		X				
Wrangler	C/NS		X			

Codes: C=Cargo only, NS=Nonscheduled.

NOTE: Some carriers listed are included in the data base because they operated during the year, even though they were out of business by the end of the fiscal year. Carriers are classified by RSPA based on annual operating revenues as follows: Major=$1 billion +; Nationals=$100 million to $1 billion; Large Regionals= $20 million to $99.99 million; Medium Regionals=$0 to $19.99 million.

Appendix B

CARRIERS NO LONGER INCLUDED IN AIR CARRIER DATA BASE

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3) Domestic	Int'l.	Date of Last Reported Traffic (4)
1. Aeromech (KC)	S	MR	7-79		5-81**
2. Aeron	F	MR		4-83	5-89*
3. Air America	S	LR			12-89*
4. Air Atlanta (CC)	S	LR	2-84		7-86*
5. AirCal (OC)	S	N	1-79		3-87m
6. Air Florida (QH)	S	N	1-79	7-80	5-84*
7. Air Illinois (UX)	S	LR	1-83		2-84*
8. Airlift (RD)	C	MR	7-84	7-84	12-85*
9. Airmark	C	MR	8-84	9-84	12-84*
10. Air Midwest (ZV)	S	LR	X		12-84**
11. Air National (AH)	C	LR		4-84	6-84*
12. Air Nevada (LW)	S	MR	4-81		7-82**
13. Air New England (NE)	S	MR	X		10-81*
14. Air North (NO)	S	MR	6-80		8-82**
15. Air North/Nenana (XG)	S	MR	3-81		8-82**
16. Air One (CB)	S	LR	4-83		7-84*
17. AirPac (RI)	S	LR	4-84		12-85*
18. All Star (LS)	S	MR	4-83	4-83	10-85*
19. Altair (AK)	S	MR	1-79		9-82*
20. American Int'l. (AV)	S	LR	11-82		9-84*
21. Apollo (ID)	S	MR	5-79		7-81**
22. Arista (RI)	C	MR	12-82	8-82	3-84*
23. Aspen (AP)	S	LR	1-85		4-91m
24. Atlantic Gulf (ZY)	C	MR	9-85		7-86*
25. Best (IW)	S	MR	7-82		10-85**
26. Big Sky (GQ)	S	MR	6-79		9-82**
27. Blue Bell (BB)	C	MR	6-83		2-84*
28. Braniff (BN) (8)	S	N	3-84		6-89*
29. Britt (RU)	S	LR	10-84		6-87**
30. Cascade (CZ)	S	LR	1-85		11-85*
31. Capitol (CL)	S	N	7-80	7-81	9-84*
32. Challenge (CN)	F	MR		8-82	6-86*
33. Challenge Air Int'l.	S	MR		7-86	8-87*
34. Cochise (DP)	S	MR	1-79		12-81*
35. Coleman (CH)	S	MR	9-79		3-80*

CARRIERS NO LONGER INCLUDED

IN AIR CARRIER DATA BASE (Continued)

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3) Domestic	Int'l.	Date of Last Reported Traffic (4)
36. Colgan (CJ)	S	MR	4-81		3-83**
37. Connor	F	MR		X	7-91*
38. Discovery	S	LR	3-90		7-90*
39. Eastern (EA)	S	M	X	X	1-91*
40. Emerald (OD)	S	LR	7-82		6-91*
41. Empire (UR)	S	LR	10-79		4-86m
42. Five Star (12)	C	LR	12-85		5-89*
43. Flight International	C	MR	4-84	6-84	9-85*
44. Florida Express (ZO)	S	LR	1-84	1-87	2-89m
45. Flying Tiger (FT)	F	M	X	X	8-89m
46. Frontier (FL)	S	N	X	X	8-86m
47. Frontier Horizon (FH)	S	LR	1-84		1-85*
48. Galaxy (GY)	C	MR	10-83	12-83	5-87*
49. Global (GL)	C	LR	X	X	12-84*
50. Golden Gate (GG)	S	MR	5-80		7-81*
51. Golden West (GW)	S	MR	2-79		7-82**
52. Gulf Air Transport (GA)	C	MR		1-85	12-89*
53. Guy America (HX)	S	MR		8-81	2-83*
54. Hawaii Express (LP)	S	LR	10-82		10-83*
55. Imperial (II)	S	MR	1-80		6-82**
56. Independent Air	C	MR			7-90
57. International Air Service	C	LR	7-88		3-89*
58. Int'l. Air Service (IE)	C	LR	11-83		5-85*
59. Interstate	F	LR	5-85	5-85	10-87*
60. Jet America (SI)	S	N	1-82		8-87m
61. Jet Charter	C	MR	7-82	7-82	5-85*
62. Kodiak (KO)	S	MR	X		11-82**
63. L.A.B. (JF)	S	MR	1-82		8-82**
64. McClain (MU)	S	LR	11-86		2-87**
65. Mid-South (VL)	S	MR	6-80		2-84*
66. Midstate (IU)	S	MR	7-81		7-82**
67. Mid Pacific (HO)	S	LR	10-85		9-87*
68. Midway Express	S	LR	10-84		7-85*
69. Mississippi Valley (XV)	S	MR	4-79		8-82**
70. Munz (XY)	S	MR	X		8-83*

CARRIERS NO LONGER INCLUDED

IN AIR CARRIER DATA BASE (Continued)

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3) Domestic	Int'l.	Date of Last Reported Traffic (4)
71. New Air (NC)	S	MR	5-79		9-82**
72. New York Air (NY)	S	N	12-80		12-86m
73. New Wien (WC)	S	MR	9-85		10-85*
74. Northeastern (QS)	S	LR	7-84		2-85*
75. Orion	F	MR	1-87	1-87	12-89
76. Overseas (OV)	C	LR	10-82		10-85*
77. Ozark (OZ)	S	N	X		9-86m
78. Pacific East (PR)	S	LR	9-82		3-84*
79. Pacific Express (VB)	S	LR	2-82		10-83*
80. Pacific Southwest (PS)	S	N	1-79		4-88m
81. Peninsula (KS)	S	MR	1-82		1-83**
82. People Express (PE)	S	N	5-81	5-83	12-86m
83. Piedmont (PI)	S	M	X	7-87	8-89m
84. Pilgrim (PM)	S	LR	9-85		12-86*
85. Ports of Call Travel Club	C	LR	9-85		1-86*
86. Presidential (XV)	S	LR	10-85	11-89*	
87. Pride Air (NI)	S	LR	10-85		11-85*
88. Republic (RC)	S	M	X		9-86m
89. Rocky Mountain (JC)	S	MR	7-81		9-82**
90. Royale (CQ)	C	LR	3-84		6-84**
91. Royal West	S	LR	7-86		
92. Ryan	C	LR	4-84	4-84	5-86*
93. Sea Airmotive (KJ)	S	MR	1-80		6-82**
94. Sky Bus (FW)	S	MR	7-85		11-86*
95. Skystar	C	MR	1-85	3-85	1-87*
96. Sky West (QG)	S	MR	7-79		12-84**
97. Sky World	C	LR	10-85	10-85	7-89*
98. Samoa (MB)	S	MR		2-85	6-85*
99. Southeast (NS)	S	MR	7-79		1-80*
100. South Pacific Island (HK)	S	LR		7-81	11-86*
101. Sun Coast (WS)	C	MR		5-87	9-87*
102. Sunworld (JK)	S	LR	5-83		9-88
103. Swift Aire (WI)	S	MR	1-79		7-81*
104. T-Bird (DQ)	C	MR		4-82	8-84*
105. Total Air (TA)	C	MR	10-84	5-85	1-87*

CARRIERS NO LONGER INCLUDED

IN AIR CARRIER DATA BASE (Continued)

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3) Domestic	Int'l.	Date of Last Reported Traffic (4)
106. TPI International	F	MR		3-90	8-90*
107. Transamerica (TV)	S	N		5-79	9-86*
108. Trans International	F	MR	5-85	1-85	12-88*
109. Transtar (MA)	S	LR	8-81		8-87m
110. Universal	F	MR		X	3-90
111. Wien (WC)	S	N	X		11-84*
112. Western (WA)	S	M	X	X	3-87m
113. Western Yukon (WX)	S	MR	7-81		6-82*
114. Worldwide	C	MR	10-84	10-84	3-86*
115. Wright (FW)	S	MR	X		11-82**

(1) S = Scheduled; C = Charter; F = All-Cargo.
(2) M = Majors; N = Nationals; LR = Large Regionals; MR = Medium Regionals.
(3) Date of first reported traffic is indicated for those carriers starting service since the passage of the Airline Deregulation Act of 1978. Traffic reported by those carriers certificated prior to deregulation is indicated by an X.
(4) Carriers that have discontinued scheduled passenger service indicated by an *. Carriers now filing RSPA Form 298-C in lieu of RSPA Form 41 indicated by **. Carriers that have merged operations indicated by an m.

Appendix C

U.S. AIR CARRIERS
NONSCHEDULED TRAFFIC AND CAPACITY

DOMESTIC

FISCAL YEAR	ASMs (MIL)	RPMs (MIL)	L.F. (%)	ENPLANEMENTS (000)
Historical				
1983	6,854	5,109	74.5	2,882
1984	8,142	6,078	74.6	3,840
1985	9,841	7,491	76.1	5,318
1986	8,404	6,345	75.5	4,856
1987	6,170	4,422	71.7	3,933
1988	6,651	4,954	74.5	4,490
1989	6,862	5,128	74.7	4,887
1990	7,393	5,551	75.1	5,208
1991	7,888	5,488	69.5	5,041
1992E	7,932	5,147	64.9	5,147

INTERNATIONAL

FISCAL YEAR	ASMs (MIL)	RPMs (MIL)	L.F. (%)	ENPLANEMENTS (000)
Historical				
1983	9,443	8,045	85.2	3,034
1984	8,513	7,385	86.8	2,824
1985	8,637	7,438	86.1	2,857
1986	7,517	6,327	84.2	2,662
1987	10,510	8,626	82.1	3,708
1988	11,118	9,148	82.3	3,932
1989	12,165	9,444	77.6	4,660
1990	11,220	8,152	72.7	3,906
1991	16,325	10,566	64.7	4,213
1992E	10,586	7,997	75.5	3,523

U.S. AIR CARRIERS

NONSCHEDULED TRAFFIC AND CAPACITY (Continued)

	TOTAL			
FISCAL YEAR	ASMs (MIL)	RPMs (MIL)	L.F. (%)	ENPLANEMENTS (000)
Historical				
1983	16,297	13,154	80.7	5,916
1984	16,655	13,463	80.8	6,664
1985	18,478	14,929	80.8	8,175
1986	15,921	12,672	79.6	7,518
1987	16,680	13,048	78.2	7,641
1988	17,769	14,102	79.4	8,422
1989	19,027	14,570	76.6	9,547
1990	18,613	13,703	73.6	9,114
1991	24,213	16,055	66.3	9,254
1992E	18,518	14,014	75.7	8,670

Source: RSPA Form 41

Appendix D

U.S. AIR CARRIERS

CARGO REVENUE TON MILES

(In Millions)

FREIGHT/EXPRESS RTMs

FISCAL YEAR	DOMESTIC	INTERNATIONAL	TOTAL
Historical			
1983	3,809	2,910	6,719
1984	4,391	3,328	7,719
1985	3,943	3,340	7,284
1986	4,869	3,988	8,857
1987	5,782	4,781	10,563
1988	6,699	5,702	12,401
1989	7,413	6,749	14,162
1990	7,542	6,771	14,313
1991	7,451	6,906	14,358
1992E	7,716	6,674	14,390

MAIL RTMs

FISCAL YEAR	DOMESTIC	INTERNATIONAL	TOTAL
Historical			
1983	1,040	400	1,440
1984	1,145	441	1,586
1985	1,203	450	1,653
1986	1,233	438	1,671
1987	1,314	435	1,749
1988	1,423	463	1,886
1989	1,463	488	1,951
1990	1,478	516	1,994
1991	1,463	507	1,970
1992E	1,607	499	2,106

U.S. AIR CARRIERS
CARGO REVENUE TON MILES (Continued)
(In Millions)

TOTAL RTMs

FISCAL YEAR	DOMESTIC	INTERNATIONAL	TOTAL
Historical			
1983	4,849	3,310	8,159
1984	5,536	3,769	9,305
1985	5,146	3,790	8,936
1986	6,102	4,426	10,528
1987	7,096	5,216	12,312
1988	8,122	6,165	14,287
1989	8,876	7,237	16,113
1990	9,020	7,287	16,307
1991	8,914	7,414	16,328
1992E	9,323	7,173	16,496

Source: RSPA Form 41

Appendix E

ACTIVE U.S. REGIONALS/COMMUTERS

1. Action Air
2. Air Alpha
3. Air Cape
4. Air LA
5. Air Midwest
6. Air Molokai
7. Air Nevada
8. Air Sedona
9. Air Sunshine
10. Air Vantage
11. Air Vegas
12. Airways International
13. Alaska Island Air *
14. Allegheny Commuter
15. Alliance Air *
16. Aloha IslandAir
17. Alpha Air
18. Alpine Air
19. Arctic Circle Airlines*
20. Arizona Pacific Airways
21. Atlantic Coast
22. Atlantic Southeast
23. Baker Aviation *
24. Barrow Air *
25. Bellair *
26. Bemidji
27. Bering Air *
28. Big Sky
29. Business Express **
30. Cape Air
31. Cape Smithe *
32. CCAir
33. Chalks International
34. Chartair
35. Charter One
36. Chautauqua Airlines
37. Christman Air System
38. Colgan Air
39. Comair
40. Commutair
41. Conquest Airlines
42. Continental Express
43. Crown Airways
44. Dawn Air
45. Direct Air
46. Ellis Air Taxi *
47. Empire Airways
48. ERA Aviation *
49. Executive Airlines **
50. Express Airline I
51. Flagship Airlines
52. Flamenco
53. Florida Air
54. Freedom Air *
55. Frontier Flying Service *
56. GP Express
57. Grand Airways*
58. Grand Canyon Helicopter
59. Great Lakes Aviation
60. Gulf Air Taxi *
61. Gulf Flight Center
62. Gulfstream International
63. Hageland Aviation Services *
64. Haines Airways *
65. Harbor Air Service *
66. Harbor Airlines
67. Henson Aviation
68. Hermans Air *
69. Horizon **
70. Iliamna Air Taxi *

ACTIVE U.S. REGIONALS/COMMUTERS (Continued)

71. Island Express
72. Jet Express
73. Jetstream International
74. Kenmore Air Harbor
75. Ketchikan Air Service *
76. L'Express Airlines
77. LAB Flying Service *
78. Lake Powell Air Service *
79. Lake Union Air Service *
80. Larry's Flying Service *
81. Las Vegas Airlines
82. Loken Aviation *
83. Lone Star Airlines
84. Long Island Airlines
85. Mesa Air Shuttle
86. Mesaba Aviation
87. Metro-flight Airlines
88. Midway Commuter
89. Mohawk Airlines
90. New England Airlines
91. New York Helicopters
92. Northeast Express Regional
93. Olson Air Service *
94. Pacific Coast Airlines
95. Pacific Island Aviation *
96. Pan Am Express
97. Paradise Island
98. Peninsula Airways *
99. Pennsylvania Airlines
100. Precision Airlines
101. Redwing Airlines
102 Rocky Mountain Airways
103. Ross Aviation
104. Ryan Air Service *
105. Samoa Air *
106. Scenic Airlines
107. Sea Air Shuttle
108. Simmons Airlines **
109. Skagway Air Service *
110. SkyOne Express
111. SkyWest Aviation
112. Skymaster Airlines
113. Southcentral Air *
114. Southeast Airlines
115. Springdale Air
116. StatesWest Airlines
117. Sunaire(Aviation Associates)
118. Tanana Air Service *
119. Taquan Air Service *
120. Tatonduk Air Service *
121. Temsco Airlines *
122. Trans Air
123. Trans States Airlines **
124. Trans World Express
125. Viequies Air Link
126. Village Aviation(Camai Air) *
127. Virgin Air
128. Walker's International
129. Warblow's Air Venture*
130. West Isle Air
131. WestAir **
132. Westates Airlines
133. Wilbur's Inc. *
134. Wings of Alaska *
135. Wings West Airlines
136. WRA Inc.
137. Wright Air Service *
138. Yutana Airlines *
139. Yute Air Alaska *
140. 40-Mile Air *

* Carriers, primarily in Alaska, whose traffic is not included in the regional/commuter data base and forecast.

** Carriers operate both large turbojet and turboprop aircraft and report traffic data on RSPA Form 41.

Appendix F

GENERAL AVIATION AIRCRAFT COST INDICES

SINGLE ENGINE PISTON AIRCRAFT

PRICE AND COST INDICES

(1972 = 100)

Calendar Year	Purchase Price	Maintenance Cost	Operating Cost	Total Cost
1970	93.7	86.4	98.2	95.0
1971	95.7	93.2	98.8	97.4
1972	100.0	100.0	100.0	100.0
1973	100.0	109.2	109.9	109.8
1974	100.0	129.6	148.8	143.6
1975	114.1	138.9	158.9	153.6
1976	132.4	169.1	173.1	172.1
1977	142.2	184.5	202.2	197.5
1978	149.9	192.0	230.9	220.5
1979	165.6	201.1	287.6	264.5
1980	173.8	214.8	364.6	324.5
1981	216.6	227.8	425.7	372.7
1982	245.3	256.2	443.7	393.6
1983	280.7	269.1	450.6	401.9
1984	304.3	279.6	446.1	401.5
1985	316.4	289.1	436.8	397.1
1986	338.4	294.6	411.9	380.4
1987	*	300.0	405.3	376.9
1988	*	308.5	405.3	379.2
1989	*	317.3	405.3	381.5
1990	*	327.9	430.3	402.7
1991	*	338.5	466.5	432.0
1992	*	346.7	459.7	429.2

* Not calculated because all models in index have stopped production.

Source: FAA-APO Estimates

GENERAL AVIATION AIRCRAFT COST INDICES (CONTINUED)

MULTI-ENGINE PISTON AIRCRAFT

PRICE AND COST INDICES

(1972 = 100)

Calendar Year	Purchase Price	Maintenance Cost	Operating Cost	Total Cost
1970	82.6	96.7	98.1	97.5
1971	90.5	99.9	98.8	99.2
1972	100.0	100.0	100.0	100.0
1973	100.0	109.0	109.9	109.5
1974	102.9	130.0	148.6	140.5
1975	117.5	150.0	158.8	154.9
1976	128.6	172.8	173.0	173.0
1977	137.6	187.8	202.0	196.8
1978	151.8	196.5	230.8	215.8
1979	168.9	207.1	287.3	252.1
1980	185.3	216.6	364.2	299.5
1981	211.3	226.5	425.3	338.1
1982	232.9	240.6	443.4	359.2
1983	248.0	250.4	450.2	362.6
1984	289.4	260.0	445.7	364.3
1985	327.5	268.8	436.7	363.1
1986	343.2	274.2	411.7	351.2
1987	341.0	279.3	405.0	349.6
1988	367.6	287.2	405.0	353.1
1989	400.7	295.3	405.0	356.7
1990	439.9	305.2	429.9	375.0
1991	450.6	315.1	466.1	399.6
1992	475.4	322.7	459.3	399.1

Source: FAA-APO Estimates

GENERAL AVIATION AIRCRAFT COST INDICES (CONTINUED)

TURBOPROP AIRCRAFT

PRICE AND COST INDICES

(1972 = 100)

Calendar Year	Purchase Price	Maintenance Cost	Operating Cost	Total Cost
1970	87.7	99.3	92.7	95.3
1971	93.9	103.1	97.9	99.9
1972	100.0	100.0	100.0	100.0
1973	100.0	108.9	118.8	114.8
1974	103.0	130.0	146.6	139.9
1975	113.8	144.4	156.8	151.7
1976	125.6	150.2	164.6	158.7
1977	125.6	144.1	181.9	166.6
1978	131.9	156.8	221.4	195.2
1979	145.0	160.7	296.9	241.8
1980	157.8	163.4	354.0	276.9
1981	182.7	169.6	403.8	309.0
1982	189.9	180.2	420.8	323.2
1983	204.3	187.5	434.7	334.6
1984	213.0	194.7	434.7	337.5
1985	236.2	201.3	429.9	335.4
1986	247.5	205.3	384.8	310.2
1987	251.8	209.1	384.8	311.7
1988	295.6	215.0	384.8	314.1
1989	318.4	221.1	384.8	316.6
1990	343.1	228.5	422.4	342.0
1991	357.52	235.9	465.1	370.3
1992	380.1	241.6	458.0	368.4

Source: FAA-APO Estimates

GENERAL AVIATION AIRCRAFT COST INDICES (CONTINUED)

TURBOJET AIRCRAFT

PRICE AND COST INDICES

(1972 = 100)

Calendar Year	Purchase Price	Maintenance Cost	Operating Cost	Total Cost
1970	87.0	94.6	92.6	93.3
1971	87.0	96.2	97.8	97.2
1972	100.0	100.0	100.0	100.0
1973	100.2	109.0	118.7	115.6
1974	104.7	130.0	127.4	128.2
1975	115.1	140.2	156.8	151.4
1976	123.4	153.5	164.6	160.9
1977	135.9	167.6	181.9	177.3
1978	151.5	174.3	221.4	206.2
1979	167.2	179.4	296.9	259.0
1980	205.7	182.7	353.9	298.7
1981	216.7	187.1	403.8	333.9
1982	240.4	198.7	420.8	348.9
1983	251.8	206.7	434.7	361.2
1984	266.2	214.7	434.7	363.7
1985	278.4	221.3	429.9	362.8
1986	299.0	225.7	384.8	333.8
1987	309.3	229.9	384.8	335.2
1988	328.2	236.4	384.8	337.3
1989	326.9	243.1	384.8	339.4
1990	363.1	251.2	422.8	367.8
1991	370.0	259.3	465.6	399.4
1992	411.4	265.6	458.4	396.6

Source: FAA-APO Estimates

Appendix G

FAA TOWERED AIRPORTS

Birmingham, AL (BHM)
Dothan, AL (DHN)
Huntsville Madison County, AL (HSV)
Mobile Bates Field, AL (MOB)
Montgomery Dannelly Field, AL (MGM)

Tuscaloosa Van De Graaf, AL (TCL)
Anchorage International, AK (ANC)
Anchorage Lake Hood SPB, AK (LHD)
Anchorage Merrill, AK (MRI)
Bethel, AK (BET)

Fairbanks International, AK (FAI)
Juneau, AK (JNU)
Kenai Municipal, AK (ENA)
King Salmon, AK (AKN)
Kodiak, AK (ADQ)

Deer Valley, AZ (DVT)
Falcon/Mesa, AZ (FFZ)
Goodyear, AZ (GYR)
Grand Canyon Municipal, AZ (GCN)
Phoenix Sky Harbor Int'l., AZ (PHX)

Prescott, AZ (PRC)
Scottsdale, AZ (SDL)
Tucson, AZ (TUS)
Fayetteville Drake Field, AR (FYV)
Fort Smith Municipal, AR (FSM)

Little Rock Adams Field, AR (LIT)
Texarkana, AR (TXK)
Bakersfield Meadows Field, CA (BFL)
Burbank, CA (BUR)
Camarillo, CA (CMA)

Carlsbad Palomar, CA (CRQ)
Chico, CA (CIC)
Chino, CA (CNO)
Concord, CA (CCR)
El Monte, CA (EMT)

Fresno Air Terminal, CA (FAT)
Fullerton Municipal, CA (FUL)
Hawthorne, CA (HHR)
Hayward, CA (HWD)
La Verne Brackett, CA (POC)

Lancaster Fox Airport, CA (WJF)
Livermore Municipal, CA (LVK)
Long Beach, CA (LGB)
Los Angeles International, CA (LAX)
Modesto City County, CA (MOD)

Monterey, CA (MRY)
Napa County, CA (APC)
Oakland International, CA (OAK)
Ontario, CA (ONT)
Oxnard Ventura County, CA (OXR)

Palm Springs Municipal, CA (PSP)
Palmdale, CA (PMD)
Palo Alto, CA (PAO)
Redding, CA (RDD)
Riverside Municipal, CA (RAL)

Sacramento Executive, CA (SAC)
Sacramento Metro, CA (SMF)
Salinas Municipal, CA (SNS)
San Carlos, CA (SQL)
San Diego Brown Field, CA (SDM)

San Diego Gillespi, CA (SEE)
San Diego Lindberg, CA (SAN)
San Diego Montgomery, CA (MYF)
San Francisco, CA (SFO)
San Jose International, CA (SJC)

San Jose Reid Hillview, CA (RHV)
San Luis Obispo, CA (SBP)
Santa Ana/Orange County, CA (SNA)
Santa Barbara, CA (SBA)
Santa Maria Public, CA (SMX)

FAA TOWERED AIRPORTS

Santa Monica, CA (SMO)
Santa Rosa Sonoma County, CA (STS)
South Lake Tahoe, CA (TVL)
Stockton, CA (SCK)
Torrance Municipal, CA (TOA)

Van Nuys, CA (VNY)
Aspen Pitkin County, CO (ASE)
Broomfield Jefferson County, CO (BJC)
Colorado Springs, CO (COS)
Denver Stapleton Int'l., CO (DEN)

Denver/Centennial, CO (APA)
Grand Junction, CO (GJT)
Pueblo, CO (PUB)
Bridgeport, CT (BDR)
Danbury Municipal, CT (DXR)

Groton/New London, CT (GON)
Hartford Brainard, CT (HFD)
New Haven, CT (HVN)
Windsor Locks, CT (BDL)
Wilmington Greater Wilmington, DE (ILG)

Washington National, DC (DCA)
Craig Field Jacksonville, FL (CRG)
Daytona Beach, FL (DAB)
Fort Lauderdale, FL (FLL)
Fort Lauderdale Executive, FL (FXE)

Fort Myers Page Field, FL (FMY)
Fort Myers Regional, FL (RSW)
Fort Pierce, FL (FPR)
Gainesville, FL (GNV)
Hollywood, FL (HWO)

Jacksonville International, FL (JAX)
Key West, FL (EYW)
Melbourne, FL (MLB)
Miami International, FL (MIA)
Opa Locka, FL (OPF)

Orlando Executive, FL (ORL)
Orlando International Airport, FL (MCO)
Panama City Bay County, FL (PFN)
Pensacola, FL (PNS)
Pompano Beach Airpark, FL (PMP)

Sanford, Fl (SFB)
Sarasota Bradenton, FL (SRQ)
St. Petersburg Clearwater, FL (PIE)
St. Petersburg Whitt, FL (SPG)
Tallahassee, FL (TLH)

Tamiami, FL (TMB)
Tampa International, FL (TPA)
Vero Beach, FL (VRB)
West Palm Beach, FL (PBI)
Albany, GA (ABY)

Atlanta DeKalb Peachtree, GA (PDK)
Atlanta Fulton County, GA (FTY)
Atlanta International, GA (ATL)
Augusta, GA (AGS)
Columbus, GA (CSG)

Macon Lewis B. Wilson, GA (MCN)
Savannah Municipal, GA (SAV)
Hilo General Lyman Field, HI (ITO)
Honolulu, HI (HNL)
Kahului, HI (OGG)

Kona Ke Ahole, HI (KOA)
Lihue, HI (LIH)
Molokai, HI (MKK)
Boise, ID (BOI)
Idaho Falls Fanning Field, ID (IDA)

Lewiston, ID (LWS)
Pocatello, ID (PIH)
Twin Falls, ID (TWF)
Alton St. Louis Regional, IL (ALN)
Aurora Municipal, IL (ARR)

Bloomington/Normal, IL (BMI)
Carbondale, IL (MDH)
Champaign University of Illinois, IL (CMI)
Chicago Du Page, IL (DPA)
Chicago Meigs, IL (CGX)

Chicago Midway, IL (MDW)
Chicago O'Hare International, IL (ORD)
Chicago Palwaukee, IL (PWK)
Decatur, IL (DEC)
East St. Louis State Park, IL (CPS)
Moline, IL (MLI)

FAA TOWERED AIRPORTS

Peoria, IL (PIA)
Rockford, IL (RFD)
Springfield Capital, IL (SPI)
Bloomington Monroe County, IN (BMG)
Evansville, IN (EVV)

Fort Wayne, IN (FWA)
Indianapolis International, IN (IND)
Lafayett Purdue University, IN (LAF)
Muncie Delaware County, IN (MIE)
South Bend, IN (SBN)

Terre Haute, IN (HUF)
Cedar Rapids, IA (CID)
Des Moines Municipal, IA (DSM)
Dubuque, IA (DBQ)
Sioux City Municipal, IA (SUX)

Waterloo, IA (ALO)
Hutchinson, KS (HUT)
Olathe, KS (OJC)
Salina, KS (SLN)
Topeka Forbes Field, KS (FOE)

Wichita Mid Continent, KS (ICT)
Cincinnati Greater, KY (CVG)
Lexington, KY (LEX)
Louisville Bowman, KY (LOU)
Louisville Standiford, KY (SDF)

Alexandria, LA (ESF)
Baton Rouge Ryan Field, LA (BTR)
Houma, LA (HUM)
Lafayette, LA (LFT)
Lake Charles, LA (LCH)

Monroe, LA (MLU)
New Orleans Lakefront, LA (NEW)
New Orleans Moisant, LA (MSY)
Shreveport, LA (SHV)
Shreveport Downtown, LA (DTN)

Bangor International, ME (BGR)
Portland, ME (PWM)
Baltimore Washington Int'l, MD (BWI)
Camp Springs Andrews AFB, MD (ADW)
Hagerstown, MD (HGR)

Bedford, MA (BED)
Beverly Muncipal, MA (BVY)
Boston Logan, MA (BOS)
Hyannis, MA (HYA)
Lawrence, MA (LWN)

Nantucket Memorial, MA (ACK)
New Bedford, MA (EWB)
Norwood, MA (OWD)
Westfield, MA (BAF)
Worcester, MA (ORH)

Ann Arbor Municipal, MI (ARB)
Battle Creek, MI (BTL)
Detroit City, MI (DET)
Detroit Metro Wayne County, MI (DTW)
Detroit Willow Run, MI (YIP)

Flint Bishop, MI (FNT)
Grand Rapids, MI (GRR)
Jackson Reynolds Municipal, MI (JXN)
Kalamazoo, MI (AZO)
Lansing, MI (LAN)

Muskegon, MI (MKG)
Pontiac, MI (PTK)
Saginaw Tri City, MI (MBS)
Traverse City, MI (TVC)
Duluth, MN (DLH)

Minneapolis Crystal, MN (MIC)
Minneapolis Flying Cloud, MN (FCM)
Minneapolis St. Paul Int'l., MN (MSP)
Rochester, MN (RST)
St. Paul, MN (STP)

Greenville Municipal, MS (GLH)
Gulfport, MS (GPT)
Jackson Hawkins, MS (HKS)
Jackson Municipal Airport, MS (JAN)
Meridian Key, MS (MEI)

Columbia Regional, MO (COU)
Joplin, MO (JLN)
Kansas City International, MO (MCI)
Kansas City Municipal, MO (MKC)
Springfield, MO (SGF)

FAA TOWERED AIRPORTS

St. Joseph, MO (STJ)
St. Louis International, MO (STL)
St. Louis Spirit of St. Louis, MO (SUS)
Billings, MT (BIL)
Great Falls, MT (GTF)

Helena, MT (HLN)
Missoula, MT (MSO)
Grand Island, NE (GRI)
Lincoln Municipal, NE (LNK)
Omaha, NE (OMA)

Las Vegas McCarran Int'l, NV (LAS)
North Las Vegas, NV (VGT)
Reno International, NV (RNO)
Lebanon, NH (LEB)
Manchester, NH (MHT)

Atlantic City, NJ (ACY)
Caldwell, NJ (CDW)
Morristown, NJ (MMU)
Newark, NJ (EWR)
Teterboro, NJ (TEB)

Trenton, NJ (TTN)
Albuquerque Int'l, NM (ABQ)
Roswell, NM (ROW)
Santa Fe, NM (SAF)
Albany County, NY (ALB)

Binghamton Broome County., NY (BGM)
Buffalo International, NY (BUF)
Elmira, NY (ELM)
Farmingdale, NY (FRG)
Islip MacArthur, NY (ISP)

Ithaca Tompkins County, NY (ITH)
John F. Kennedy International, NY (JFK)
La Guardia, NY (LGA)
Niagara Falls, NY (IAG)
Poughkeepsie Dutchess County, NY (POU)

Rochester Monroe County, NY (ROC)
Syracuse Hancock International, NY (SYR)
Utica, NY (UCA)
White Plains Westchester, NY (HPN)
Asheville, NC (AVL)

Charlotte Douglas, NC (CLT)
Fayetteville Grannis, NC (FAY)
Greensboro Regional, (GSO)
Kinston, NC (ISO)
Raleigh Durham, NC (RDU)

Wilmington New Hanover County, NC (ILM)
Winston Salem, NC (INT)
Bismarck, ND (BIS)
Fargo Hector Field, ND (FAR)
Grand Forks International, ND (GFK)

Minot International, ND (MOT)
Akron Canton Regional, OH (CAK)
Cincinnati Lunken, OH (LUK)
Cleveland Burke Lakefront, OH (BKL)
Cleveland Hopkins Int'l, OH (CLE)

Columbus Ohio State, OH (OSU)
Dayton, OH (DAY)
Mansfield Lahm Municipal, OH (MFD)
Port Columbus International, OH (YNG)
Toledo Express, OH (TOL)

Youngstown, OH (YNG)
Clinton Sherman, OK (CSM)
Lawton Municipal, OK (LAW)
Oklahoma City Wiley Post, OK (PWA)
Oklahoma City Will Rogers, OK (OKC)

Tulsa International, OK (TUL)
Tulsa Riverside, OK (RVS)
Eugene, OR (EUG)
Hillsboro, OR (HIO)
Klamath Falls, OR (LMT)

Medford Jackson County, OR (MFR)
Portland International, OR (PDX)
Salem McNary Field, OR (SLE)
Troutdale, OR (TTD)
Allentown, PA (ABE)

Capital City/Harrisburg, PA (CXY)
Erie, PA (ERI)
Harrisburg International, PA (MDT)
Lancaster, PA (LNS)
North Philadelphia, PA (PNE)

FAA TOWERED AIRPORTS

Philadelphia International, PA (PHL)
Pittsburgh Allegheny, PA (AGC)
Pittsburgh Greater International, PA (PIT)
Reading, PA (RDG)
Wilkes Barre, PA (AVP)

Williamsport, PA (IPT)
Providence, RI (PVD)
Charleston AFB Municipal, SC (CHS)
Columbia Metropolitan, SC (CAE)
Florence City, SC (FLO)

Greenville Municipal, SC (GMU)
Greer, SC (GSP)
Rapid City, SD (RAP)
Sioux Falls Foss Field, SD (FSD)
Bristol Tri City, TN (TRI)

Chattanooga, TN (CHA)
Knoxville McGhee Tyson, TN (TYS)
Memphis International, TN (MEM)
Nashville Metropolitan, TN (BNA)
Abilene, TX (ABI)

Amarillo, TX (AMA)
Austin, TX (AUS)
Beaumont Port Arthur, TX (BPT)
Brownsville International, TX (BRO)
College Station, TX (CLL)

Corpus Christi, TX (CRP)
Dallas Addison, TX (ADS)
Dallas Love Field, TX (DAL)
Dallas Redbird, TX (RBD)
Dallas/Ft. Worth Int'l, TX (DFW)

El Paso International, TX (ELP)
Fort Worth Meacham, TX (FTW)
Fort Worth/Alliance, TX (AFW)
Harlingen Industrial AP, TX (HRL)
Houston Hobby, TX (HOU)

Houston Intercontinental, TX (IAH)
Longview, TX (GGG)
Lubbock, TX (LBB)
McAllen, TX (MFE)
Midland, TX (MAF)

San Angelo, TX (SJT)
San Antonio International, TX (SAT)
San Antonio Stinson, TX (SSF)
Tomball D. W. Hooks, TX (DWH)
Tyler, TX (TYR)

Waco Municipal, TX (ACT)
Ogden Municipal, UT (OGD)
Salt Lake City Int'l, UT (SLC)
Burlington International, VT (BTV)
Charlottesville Albemarle, VA (CHO)

Lynchburg, VA (LYH)
Newport News, VA (PHF)
Norfolk International, VA (ORF)
Richmond Byrd Int'l, VA (RIC)
Roanoke, VA (ROA)

Washington Dulles Int'l, VA (IAD)
St. Croix Alex Hamilton, VI (STX)
St. Thomas H.S. Truman, VI (STT)
Everett Paine Field, WA (PAE)
Moses Lake Grant, WA (MWH)

Olympia, WA (OLM)
Pasco Tri Cities, WA (PSC)
Renton, WA (RNT)
Seattle Boeing, WA (BFI)
Seattle Tacoma Int'l, WA (SEA)

Spokane Felts Field, WA (SFF)
Spokane International, WA (GEG)
Tacoma Narrows, WA (TIW)
Walla Walla, WA (ALW)
Yakima Air Terminal, WA (YKM)

Charleston, WV (CRW)
Clarksburg Benedum, WV (CKB)
Huntington, WV (HTS)
Morgantown, WV (MGW)
Parkersburg Wood County, WV (PKB)

Wheeling, WV (HLG)
Appleton, WI (ATW)
Green Bay Austin Straubel, WI (GRB)
Janesville, WI (JVL)
Lacrosse, WI (LSE)

FAA TOWERED AIRPORTS

Madison, WI (MSN)
Milwaukee Mitchell, WI (MKE)
Milwaukee Timmerman, WI (MWC)
Oshkosh Wittman Field, WI (OSH)
Casper, WY (CPR)
Cheyenne, WY (CYS)
San Juan International, PR (SJU)
San Juan Isla Grande, PR (SIG)
Kwajalein AAF, WK (KWA)
Pago Pago International, AS (TUT)

Appendix H

CONTRACT TOWERS

1. Flagstaff, Arizona (FLG)
2. Pacoima/Whitman, California (WHP)
3. Lakeland, Florida (LAL)
4. Valdosta Municipal, Georgia (VLD)
5. Hailey, Idaho (SUN)
6. Marion Williamson County, Illinois (MWA)
7. Waukegan, Illinois (UGN)
8. Topeka-Phillip Ballard, Kansas (TOP)
9. Owensboro-Daviees County, Kentucky (OWB)
10. Paducah Barkley Field, Kentucky (PAH)
11. New Iberia, Louisiana (ARA)
12. Martha's Vineyard, Massachusetts (MVY)
13. Cape Girardeau, Missouri (CGI)
14. Nashua, New Hampshire (ASH)
15. Farmington Municipal, New Mexico (FMN)
16. Hobbs Lea County, New Mexico (HOB)

CONTRACT TOWERS (Continued)

17. Cleveland-Cuyahoga County, Ohio (CGF)
18. Ardmore Municipal, Oklahoma (ADM)
19. Clinton Sherman, Oklahoma (CSM)
20. Enid Woodring Municipal, Oklahoma (WDG)
21. Pendleton, Oregon (PDT)
22. Myrtle Beach, South Carolina (CRE)
23. Smyrna, Tennessee (MQY)
24. Laredo, Texas (LRD)
25. Bellingham, Washington (BLI)
26. Lewisburg-Greenbrier, West Virginia (LWB)
27. Mosinee, Wisconsin (CWA)

Appendix I

TERMINAL CONTROL AREAS AND AIRPORT RADAR SERVICE AREAS

Birmingham, AL (BHM)
Huntsville Madison County, AL (HSV)
Mobile Bates Field, AL (MOB)
Montgomery Dannelly Field, AL (MGM)
Anchorage International, AK (ANC)

Phoenix Sky Harbor Int'l., AZ (PHX/P50*)
Tucson, AZ (TUS/U90)
Fort Smith Municipal, AR (FSM)
Little Rock Adams Field, AR (LIT)
Burbank, CA (BUR/B90*)

El Toro, CA (NZJ)*
Fresno Air Terminal, CA (FAT)
Los Angeles Int'l, CA (LAX/L56*)
Monterey, CA (MRY)
Oakland International, CA (OAK/O90*)

Ontario, CA (ONT/O40*)
Palm Springs Municipal, CA (PSP)
Sacramento Metro, CA (SME/MCC*)
San Diego Lindberg, CA (SAN/NKX*)
San Francisco, CA (SFO)

San Jose International, CA (SJC)
Santa Ana/Orange County, CA (SNA)
Santa Barbara, CA (SBA)
Colorado Springs, CO (COS)
Denver Stapleton Int'l, CO (DEN/D84*)

Hartford Bradley Int'l, CT (BDL/Y90*)
Washington National, DC (DCA)
Daytona Beach, FL (DAB)
Fort Lauderdale, FL (FLL)
Fort Myers Regional, FL (RSW)

Jacksonville International, FL (JAX)
Miami International, FL (MIA)
Orlando Int'l Airport, FL (MCO)
Pensacola, FL (PNS/P31*)
Sarasota Bradenton, FL (SRQ)

Tallahassee, FL (TLH)
Tampa International, FL (TPA)
West Palm Beach, FL (PBI)
Atlanta International, GA (ATL)
Augusta, GA (AGS)

Columbus, GA (CSG)
Macon Lewis B. Wilson, GA (MCN)
Savannah Municipal, GA (SAV)
Honolulu, HI (HNL)
Honolulu, HI (ZHN)

Kahului, HI (OGG)
Boise, ID (BOI)
Champaign Univ. of Illinois, IL (CMI)
Chicago Midway, IL (MDW)
Chicago O'Hare Int'l, IL (ORD/C90*)

Moline, IL (MLI)
Peoria, IL (PIA)
Rockford, IL (RFD)
Springfield Capital, IL (SPI)
Evansville, IN (EVV)

Fort Wayne, IN (FWA)
Indianapolis International, IN (IND)
South Bend, IN (SBN)
Cedar Rapids, IA (CID)
Des Moines Municipal, IA (DSM)

Wichita Mid Continent, KS (ICT)
Cincinnati Greater, KY (CVG)
Lexington, KY (LEX)
Louisville Standiford, KY (SDF)
Baton Rouge Ryan Field, LA (BTR)

Lafayette, LA (LFT)
Lake Charles, LA (LCH)
Monroe, LA (MLU)
New Orleans Moisant, LA (MSY)
Shreveport, LA (SHV)

TERMINAL CONTROL AREAS AND AIRPORT RADAR SERVICE AREAS

Bangor International, ME (BGR)
Portland, ME (PWM)
Baltimore Washington Int'l, MD (BWI/B95*)
Camp Springs Andrews AFB, MD (ADW)
Boston Logan, MA (BOS/A90*)

Detroit Metro Wayne County, MI (DTW/D21*)
Flint Bishop, MI (FNT)
Grand Rapids, MI (GRR)
Kalamazoo, MI (AZO)
Lansing, MI (LAN)

Muskegon, MI (MKG)
Saginaw Tri City, MI (MBS)
Minneapolis St. Paul, MN (MSP/M98*)
Gulfport, MS (GPT)
Jackson Municipal Airport, MS (JAN)

Kansas City International, MO (MCI)
St. Louis International, MO (STL/T75*)
Billings, MT (BIL)
Great Falls, MT (GTF)
Lincoln Municipal, NE (LNK)

Omaha, NE (OMA/R90*)
Las Vegas McCarran Int'l., NV (LAS)
Reno International, NV (RNO)
Atlantic City, NJ (ACY)
Newark, NJ (EWR)

Albuquerque International, NM (ABQ)
Albany County, NY (ALB)
Binghamton Broome County, NY (BGM)
Buffalo International, NY (BUF)
Elmira, NY (ELM)

Griffiss AFB, NY (RME)
John F. Kennedy Int'l, NY (JFK/N90*)
La Guardia, NY (LGA)
Rochester Monroe County, NY (ROC)
Syracuse Hancock Int'l, NY (SYR)

Asheville, NC (AVL)
Charlotte Douglas, NC (CLT)
Fayetteville Grannis, NC (FAY)
Greensboro Regional, NC (GSO)
Raleigh Durham, NC (RDU)

Wilmington New Hanover County, NC (ILM)
Fargo Hector Field, ND (FAR)
Akron Canton Regional, OH (CAK)
Cleveland Hopkins Int'l., OH (CLE)
Columbus International, OH (CMH)

Dayton, OH (DAY)
Toledo Express, OH (TOL)
Youngstown, OH (YNG)
Oklahoma City Will Rogers, OK (OKC)
Tulsa International, OK (TUL)

Portland International, OR (PDX/P80*)
Allentown, PA (ABE)
Capital City/Harrisburg, PA (CXY)
Erie, PA (ERI)
Philadelphia International, PA (PHL)

Pittsburgh Greater Int'l, PA (PIT)
Wilkes Barre, PA (AVP)
Providence, RI (PVD/G90*)
Charleston AFB Municipal, SC (CHS)
Columbia Metropolitan, SC (CAE)

Greer, SC (GSP)
Bristol Tri City, TN (TRI)
Chattanooga, TN (CHA)
Knoxville McGhee Tyson, TN (TYS)
Memphis International, TN (MEM)

Nashville Metropolitan, TN (BNA)
Abilene, TX (ABI)
Amarillo, TX (AMA)
Austin, TX (AUS)
Beaumont Port Arthur, TX (BPT)

Corpus Christi, TX (CRP)
Dallas Love Field, TX (DAL)
Dallas/Ft. Worth Regional, TX (DFW/D10*)
El Paso International, TX (ELP)
Houston Hobby, TX (HOU)

Houston Intercontinental, TX (IAH/I90*)
Longview, TX (GCG)
Lubbock, TX (LBB)
Midland, TX (MAF)
San Antonio International, TX (SAT)

TERMINAL CONTROL AREAS AND AIRPORT RADAR SERVICE AREAS

Salt Lake City Int'l., UT (SLC/S56*)
Burlington International, VT (BTV)
Norfolk Regional, VA (ORF)
Richmond Byrd International, VA (RIC)
Roanoke, VA (ROA)

Washington Dulles Int'l, VA (IAD)
Seattle Tacoma Int'l, WA (SEA/S46*)
Spokane International, WA (GEG)
Charleston, WV (CRW)
Huntington, WV (HTS)

Green Bay Austin Straubel, WI (GRB)
Madison, WI (MSN)
Milwaukee Mitchell, WI (MKE)
Agana NAS, SP (GUM/ZUA*)
San Juan International, PR (SJU/ZSU)

* Indicates that airport has terminal radar approach control (TRACON)

Appendix J

GLOSSARY OF TERMS

Air Carrier Operations -- Arrivals and departures of air carriers certificated in accordance with FAR Parts 121 and 127.

Air Route Traffic Control Center (ARTCC) -- A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.

Air Taxi -- An air carrier certificated in accordance with FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

Air Traffic -- Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

Air Traffic Hub -- Cities and Metropolitan Statistical Areas requiring aviation services. May include more than one airport. Communities fall into four classes as determined by the community's percentage of the total enplaned passengers by scheduled air carriers in the 50 United States, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration:

1. Large: 1.00 percent (4,283,192 passengers and over in CY 1991).
2. Medium: 0.25 percent to 0.999 percent (between 1,070,798 and 4,283,191 passengers in CY 1991).
3. Small: 0.05 percent to 0.249 percent (between 214,160 and 1,070,797 passengers in CY 1991).
4. Nonhub: Less than 0.05 percent (fewer than 219,272 passengers in CY 1990).

Air Travel Club -- An operator certificated in accordance with FAR Part 123 to engage in the carriage of members who qualify for that carriage by payment of an assessment, dues, membership fees, or other similar remittance.

Aircraft Contacted -- Aircraft with which the flight service stations have established radio communications contact. One count is made for each en route landing or departing aircraft contacted by a flight service station, regardless of the number of contacts made with an individual aircraft during the same flight. A flight contacting five FSSs would be counted as five aircraft contacted.

Aircraft Handled -- See IFR AIRCRAFT HANDLED.

Aircraft Operations -- The airborne movement of aircraft in controlled or noncontrolled airport terminal areas, and counts at en route fixes or other points where counts can be made. There are two types of operations: local and itinerant.

1. LOCAL OPERATIONS are performed by aircraft that:

   (a) operate in the local traffic pattern or within sight of the airport;

   (b) are known to be departing for or arriving from flights in local practice areas located within a 20-mile radius of the airport;

   (c) execute simulated instrument approaches or low passes at the airport.

2. ITINERANT OPERATIONS are all aircraft operations other than local operations.

Airport Advisory Service -- A service provided by flight service stations at airports not served by a control tower. This service provides information to arriving and departing aircraft concerning wind direction/speed, favored runway, altimeter setting, pertinent-known traffic/field conditions, airport taxi routes/traffic patterns, and authorized instrument approach procedures. This information is advisory and does not constitute an ATC clearance.

Air Traffic Control Tower -- A terminal facility that through the use of air/ground communications, visual signaling, and other devices, provides ATC services to airborne aircraft operating in the vicinity of an airport and to aircraft operating on the movement area.

All-Cargo Carrier -- An air carrier certificated in accordance with FAR Part 121 to provide scheduled air freight, express, and mail transportation over specified routes, as well as to conduct nonscheduled operations that may include passengers.

Approach Control Facility -- A terminal air traffic control facility providing approach control service.

Approach Control Service -- Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, for enroute aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service.

ARTCC -- See AIR ROUTE TRAFFIC CONTROL CENTER.

ASMs -- See AVAILABLE SEAT MILES.

Available Seat Miles (ASMs) -- The aircraft miles flown in a flight stage, multiplied by the number of seats available on that stage for revenue passenger use.

Business Transportation -- Any use of an aircraft, not for compensation or hire, by an individual for transportation required by the business in which the individual is engaged.

Center -- See AIR ROUTE TRAFFIC CONTROL CENTER.

Center Area -- The specified airspace within which an air route traffic control Center (ARTCC) provides air traffic control and advisory service.

Center Radar Approach Control (CERAP) -- A combined air route traffic control center (ARTCC) and a terminal radar approach control facility (TRACON).

CERAP -- See CENTER RADAR APPROACH CONTROL.

Commercial Air Carrier -- An air carrier certificated in accordance with FAR Part 121 or 127 to conduct scheduled services on specified routes. These air carriers may also provide nonscheduled or charter services as a secondary operation. Four carrier groupings have been designated for statistical and financial data aggregation and analysis.

1. MAJORS: Air carriers with annual operating revenues greater than $1 billion.

2. NATIONALS: Air carriers with annual operating revenues between $100 million and $1 billion.

3. LARGE REGIONALS: Air carriers with annual operating revenues between $10 million and $99,999,999.

4. MEDIUM REGIONALS: Air carriers with annual operating revenues less than $10 million.

Common IFR Room -- A highly automated terminal radar control facility. It provides terminal radar service in an area encompassing more than one major airport that accommodates instrument flight operations.

Commuter Air Carrier -- An air carrier certificated in accordance with FAR Part 135 or 121 that operates aircraft with a maximum of 60 seats, and that provides at least five scheduled round trips per week between two or more points, or that carries mail.

Commuter/Air Taxi Operations -- Arrivals and departures of air carriers certificated in accordance with FAR Part 135.

Direct User Access Terminal System -- An automated pilot self-briefing and flight plan filing system. For pilots with access to a computer, modem, and touch telephone, the system provides direct access to a national weather data base and the ability to file flight plans without contact with a flight service station.

Domestic Operations -- All air carrier operations having destinations within the 50 United States, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.

DUATS -- See DIRECT USER ACCESS TERMINAL SYSTEM

Executive Transportation -- Any use of an aircraft, not for compensation or hire, by a corporation, company or other organization for the purpose of transporting its employees and/or property, and employing professional pilots for the operation of the aircraft.

FAA -- Federal Aviation Administration.

Facility -- See AIR TRAFFIC CONTROL TOWER.

Flight Plan -- Prescribed information relating to the intended flight of an aircraft that is filed orally or in writing with a flight service station or an air traffic control facility.

Flight Service Station (FSS) -- Air Traffic Service facilities within the National Airspace System that provide preflight pilot briefings and en route communications with IFR flights; assist

lost IFR/VFR aircraft; assist aircraft having emergencies; relay ATC clearances; originate, classify, and disseminate Notices to Airmen (NOTAMs); broadcast aviation weather and NAS information; receive and close flight plans; monitor radio NAVAIDS; notify search and rescue units of missing VFR aircraft; and operate the national weather teletypewriter systems. In addition, at selected locations, FSSs take weather observations, issue airport advisories, administer airmen written examinations, and advise Customs and Immigration of transborder flights.

Flight Services -- See TOTAL FLIGHT SERVICES.

Foreign Flag Air Carrier -- An air carrier other than a U.S. flag air carrier in international air transportation. "Foreign air carrier" is a more inclusive term than "foreign flag air carrier," including those non-U.S. air carriers operating solely within their own domestic boundaries. In practice, the two terms are used interchangeably.

FSS -- See FLIGHT SERVICE STATION.

General Aviation -- All civil aviation activity except that of air carriers certificated in accordance with FAR Parts 121, 123, 127, and 135. The types of aircraft used in general aviation (GA) activities cover a wide spectrum from corporate multi-engine jet aircraft piloted by professional crews to amateur-built single engine piston acrobatic planes, balloons, and dirigibles.

General Aviation Operations -- Arrivals and departures of all civil aircraft, except those classified as air carrier and commuter/air taxi.

Hub -- See AIR TRAFFIC HUB.

IFR -- See INSTRUMENT FLIGHT RULES.

IFR Aircraft Handled -- The number of IFR departures multiplied by two, plus the number of IFR overs. This definition assumes that the number of departures (acceptances, extensions, and originations of IFR flight plans) is equal to the number of landings (IFR flight plans closed).

IFR Departures -- An IFR departure includes IFR flights that:

1. originate in an ARTCC's area;
2. are extended by the ARTCC; or
3. are accepted by the ARTCC under sole enroute clearance procedures.

IFR Overs -- An IFR flight that originates outside the ARTCC area and passes through the area without landing.

IFSS -- See INTERNATIONAL FLIGHT SERVICE STATION.

Instructional Flying -- Any use of aircraft for the purpose of formal instruction with the flight instructor aboard, or with the maneuvers on the particular flight(s) specified by the flight instructor.

Instrument Approach -- A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually. An instrument approach is prescribed and approved for a specific airport by competent authority (FAR Part 91).

Instrument Flight Rules (IFR) -- Rules governing the procedures for conducting instrument flight.

Instrument Operation -- An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility or air route traffic control center.

International and Territorial Operations -- The operation of aircraft flying between the 50 United States and foreign points, between the 50 United States and U.S. possessions and territories, and between two foreign points. Includes both the combination passenger/cargo and the all-cargo carriers engaged in international and territorial operations.

International Flight Service Station (IFSS) -- A central operations facility in the flight advisory system, manned and equipped to control aeronautical point-to-point telecommunications and air/ground telecommunications with pilots operating over international territory or waters, providing flight plan filing, weather information, search and rescue action, and other flight assistance operations.

Itinerant Operations -- See AIRCRAFT OPERATIONS.

Large Regionals -- See COMMERCIAL AIR CARRIER.

Local Operations -- See AIRCRAFT OPERATIONS.

Majors -- See COMMERCIAL AIR CARRIER.

Medium Regionals -- See COMMERCIAL AIR CARRIER.

Military Operations -- Arrivals and departures of aircraft not classified as civil.

Nationals -- See COMMERCIAL AIR CARRIER.

Personal/Pleasure Flying -- Any use of an aircraft for personal purposes not associated with a business or profession, and not for hire. This includes maintenance of pilot proficiency.

Pilot Briefing -- A service provided by the flight service station to assist pilots in flight planning. Briefing items may include weather information, NOTAMs, military activities, flow control information, and other items as requested.

Radar Air Traffic Control Facility (RATCF) -- An air traffic control facility, located at a U.S. Navy (USN) or Marine Corps (USMC) air station, utilizing surveillance and, normally, precision approach radar and air/ground communication equipment to provide approach control services to aircraft arriving, departing, and transiting the airspace controlled by the facility. The facility may be operated by the FAA, the USN and the FAA, the USN, or the USMC. Service may be provided to both civil and military airports.

Radar Approach Control (RAPCON) -- An air traffic control facility, located at a U.S. Air Force (USAF) base, utilizing surveillance and, normally, precision approach radar and air/ground communication equipment to provide approach control services to aircraft arriving, departing, and transiting the airspace controlled by the facility. The facility may be operated by the FAA, or the USAF. Service may be provided to both civil and military airports.

Radio Contact -- The initial radio call-up to a flight service station by enroute aircraft; a complete interchange of information and a termination of the contact.

RAPCON -- See RADAR APPROACH CONTROL.

RATCF -- See RADAR AIR TRAFFIC CONTROL FACILITY.

Registered Active General Aviation Aircraft -- A civil aircraft registered with the FAA that has been flown one or more hours during the previous calendar year. Excluded are aircraft owned and operated in regularly scheduled, nonscheduled, or charter service by commercial air carriers and aircraft in excess of 12,500 pounds maximum gross takeoff weight, and owned and operated by a commercial operator certificated by the FAA to engage in intrastate common carriage.

Research and Special Programs Administration (RSPA) -- The Research and Special Programs Administration of the U.S. Department of Transportation. Responsible for the collection of air carrier traffic and financial data on Form 41 that was collected formerly by the Civil Aeronautics Board.

Revenue Passenger Enplanements -- The total number of passengers boarding aircraft. Includes both originating and connecting passengers.

Revenue Passenger Load Factor -- Revenue passenger-miles as a percent of available seat-miles in revenue passenger services, i.e., the proportion of aircraft seating capacity that is actually sold and utilized.

Revenue Passenger Mile (RPM) -- One revenue passenger transported one mile in revenue service. Revenue passenger miles are computed by summation of the products of the revenue aircraft miles flown during a flight stage, multiplied by the number of revenue passengers carried on that flight stage.

Revenue Ton Mile (RTM) -- One ton of revenue traffic transported one mile.

RPM -- See REVENUE PASSENGER MILE.

RSPA -- See RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION

RTM -- See REVENUE TON MILE.

Secondary Airport -- An airport receiving approach control service as a satellite to a primary approach control facility, or one at which control is exercised by the approach control facility under tower en route control procedures.

Supplemental Air Carrier -- An air carrier certificated in accordance with FAR Part 121, and providing nonscheduled or supplemental carriage of passengers or cargo, or both, in air transportation. Also referred to as nonscheduled or charter air carriers.

Terminal Radar Approach Control (TRACON) -- An FAA traffic control facility using radar and air/ground communications to provide approach control services to aircraft arriving, departing, or transiting the airspace controlled by the facility. Service may be provided to both civil and military aircraft. A TRACON is similar to a RAPCON (USAF), RATCF (USN), and ARAC (Army).

Total Flight Services -- The sum of flight plans originated and pilot

briefs, multiplied by two, plus the number of aircraft contacted. No credit is allowed for airport advisories.

Total Cperations -- All arrivals and departures performed by military, general aviation, commuter/air taxi, and air carrier aircraft.

Tower -- See AIR TRAFFIC CONTROL TOWER.

TRACON -- See TERMINAL RADAR APPROACH CONTROL.

U.S. Flag Carrier -- Air carrier holding a certificate issued by the U.S. Department of Transportation, and approved by the President, authorizing the carrier to provide scheduled operations over a specified route between the United States (and/or its terri-tories) and one or more foreign countries.

VFR -- See VISUAL FLIGHT RULES.

VFR Tower -- An airport traffic control tower that does not provide approach control service.

Visual Flight Rules (VFR) -- Rules that govern the procedures for conducting flight under visual conditions. Also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. Used by pilots and controllers to indicate type of flight plan.