

## Other Issues That Affect Growth

Surplus aircraft The equivalent of perhaps 1,000 aircraft -- 10 percent of the active fleet -- is not now working. The extent of the problem may be hidden, because many of these aircraft are being held in inventory rather than put up for sale, where they might alert creditors to an operator's fragility.

Military aircraft Projected deliveries of 1,000 military aircraft in the next five years will affect the airspace problem and may displace a significant number of older aircraft to the already slow used aircraft market.

Insurance costs Third-party liability awards have quadrupled in the last ten years, and insurance premiums on helicopters are now prohibitive. It was felt that these costs do not fairly reflect helicopter performance, and that they are inequitably allocated.

Human resources A growing shortage of skilled maintenance technicians will affect direct operating costs and helicopter reliability as the aircraft and their maintenance requirements become more sophisticated. There is a parallel need to upgrade standards for pilots.

The driving issue is still the need to integrate helicopters into the national transportation system in a way that will allow them to contribute to the system by fully utilizing the unique efficiencies of vertical lift. As one member of the helicopter session put it, "How many more miles of concrete runway do we have to build to accommodate the inadequacies of horizontal flight, and how much longer will we have to operate our vertical flight equipment in this outmoded fixed-wing system?"

## BUSINESS AVIATION

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This session discussed current and future trends in business aviation and areas of needed future research. Several aspects of the problem were examined, including present conditions, trends, legislation and regulation that affect the industry and future technology.

In summary, it was concluded that business aviation continues to play an important part in our national transportation system, and except for its most visible segment, new aircraft production, the industry is doing quite well.

### Current Situation

There is evidence of some improvement in the current situation within the business aviation industry. Studies indicate that total fleet hours and average aircraft utilization are both up over the past two or three years, yet neither figure has yet gotten back to the historical highs of 1979 and 1980.

Both fixed-base operators and overhaul centers are reporting increased levels of business. They are selling more fuel and performing more maintenance and repair work for operators. However, new aircraft shipments, a very visible measure of the health of the industry, remain low. This is a critical factor to the industry.

There are several reasons for this situation. One of the most important factors affecting the sale of new aircraft is the large supply of good, low-time, late-model aircraft currently available on the market. Many of these aircraft were built between 1979 and 1981, are in excellent condition, and are priced at less than one-half the cost of a corresponding new model. In many cases the new and used airplanes are identical, and the new aircraft salesman finds that he is competing against a low-priced version of his own product.

Second, many of the traditional end markets for new business aircraft have dried up in recent years. Certain business segments, such as natural resources, agriculture, and the traditional smokestack industries, do not now have the available discretionary income needed to invest in aircraft.

Finally, the true acquisition cost of new aircraft is at an all-time high. The combination of pricing, interest rates, insurance, current tax rates, and expectations of future inflation rates make this a less than desirable time to invest in a new aircraft. In addition, the possibility of a pending tax reform has caused many potential customers to delay their purchase decision until the entire tax matter has been resolved.

### Economic Outlook

In order to develop a picture of trends within the industry it is necessary to define the anticipated economic scenario. The group adopted the scenario presented by many of the major forecasting firms. This is a picture of moderate economic growth, an inflation rate of 4 to 6 percent, slowly falling oil prices, slow improvement in corporate profits, and an orderly decline of the dollar on world markets. Furthermore, it was assumed that there will be no major protectionist restraints or significant net tax reform measures that would affect business aviation. Also, there will not be any meaningful improvements in markets critical to business aircraft, namely natural resources, agriculture, or the traditional smokestack industries.

### Changing Industry Structure

The structure of business aviation has been changing very rapidly. There have been more mergers of aviation-related companies than ever before, eliminating the independents. Just recently General Dynamics acquired Cessna; Ryder Systems purchased Aviall, an overhaul facility; and Allied Corporation and the Signal Companies have merged. There is evidence indicating that this trend is far from over and that further consolidation of airframe manufacturers, suppliers, overhaul and maintenance centers, as well as operators can be expected.

While operators of business aircraft will not merge in the traditional sense, many will pool their resources in new ways. More creative leasing arrangements and alternate methods of both ownership and utilization of business aircraft will be developed. Two forms of aircraft pooling are becoming popular. The first is the charter networks that are being established among independent charter operators to give customers a "one phone call" approach to arranging their flights. The second form of pooling is another type of charter service. Several companies that own and operate business aircraft, and would normally operate under a FAR Part 91 certificate have found that they have excess capacity within their fleets. Rather than eliminate or waste this excess capacity, these

companies are obtaining their Part 135 certification and chartering their aircraft to other companies. The implications of these trends could be interesting to all types of suppliers within the industry.

#### Other Future Trends

The group identified other trends that are likely to occur. Flying activity will continue to increase at a rate of 2 to 3 percent per year. For the remainder of the decade there will continue to be an oversupply of good used aircraft, but by about 1990 this supply is expected to be back down to the traditional levels of the early 1980s. The prices of used aircraft will remain low for the next two to three years and will rise gradually as supply lessens.

In addition to "new" and "used" aircraft, there will be growth of another category, the "remanufactured" airframe. These are older, existing aircraft that in most cases are completely rebuilt with new or zero-time engines, modernized avionics, and new interiors and paint. Several independent companies have programs to remanufacture older HS-125s, Jetstarts, and Saberliners. One airframe manufacturer, Cessna, has announced a program to modernize older Citation 500s.

Industry forecasters believe that manufacturers will continue to shrink their product lines, decreasing the overlap of model offerings of any one company. The list of optional equipment on new aircraft is likely to shrink as well, as manufacturers attempt to standardize their product lines in order to hold down costs.

A continued move is expected toward more regulation of business aircraft, especially in terms of noise and safety. Product liability has become a major issue for airframe manufacturers, and the situation is expected to worsen during the forecast period. No major legislation will be enacted this decade to help alleviate the situation. Many members of the group also thought that, given the current mood of Congress, there is a possibility of increased taxation of corporate aircraft, but no conclusions were reached about when such taxation might begin or what form any additional taxes might take.

Major concerns regarding airport access are being expressed by many communities, operators, and both airport and government officials. The general aviation operating authority has been limited at some important airports, and the increased use of reliever airports by airlines has placed additional pressure on the business aviation community. Within recent years this has happened at Love Field in Dallas and Hobby Airport in Houston. Just recently a commuter airline requested authority to operate at Charlie Brown Airport, a general aviation facility near Atlanta.

Technology advances that will continue to be incorporated in new aircraft designs will be evolutionary rather than revolutionary in nature, contributing to incremental gains in aircraft efficiency. Innovative technologies that affect aircraft design will be developed primarily in the areas of composites, wing positioning and design, engine configuration, and electronics. Advanced technology is being incorporated into flight operations departments of many operators as well, contributing to the overall effectiveness of the aircraft. Computerized maintenance has become the standard practice for many operators, providing detailed analysis of the overall state of the aircraft. Many software programs are now available for crew and aircraft scheduling as well as flight planning.

There will be further advances in avionics that will contribute to the increased operating efficiency of the business aircraft. The advent of digital systems will lower weight and volume. New, previously unavailable functions such as flight management systems or global positioning systems are gaining acceptance and will be in use by the end of the decade. Also within this time frame, the United States will be completely covered by Loran C, offering improved navigation capabilities for all facets of civil aviation.

#### Future Research Needs

In order to understand more fully the nature of the business aviation environment, there are several areas in which further research is needed. To be able to project future demand more accurately, forecasters need more information relating to the users of business aircraft. This would include profiles of both operators and non-operators of business aircraft, aircraft usage by standard industrial classification (SIC) code, company size, profitability, and location. More needs to be known about the aircraft acquisition process and the factors involved when a company investigates the possibility of purchasing an aircraft. A statistical data base of the business aircraft fleet similar to that of the air transport industry needs to be developed. This would involve the collection of data relating to aircraft usage, flight hours, and attrition. Unfortunately, this type of information is very difficult to obtain. There is also a need for more consolidated information regarding new aircraft orders and retail sales data by aircraft class, including foreign manufacturers.

Other areas in which additional research is needed include the investigation of lower cost manufacturing techniques, human factors research including flight training techniques and possible alternative methods, the impact of new technology on pilots, and finally research into the wants and needs of both current and prospective business aircraft passengers.