

## HELICOPTERS

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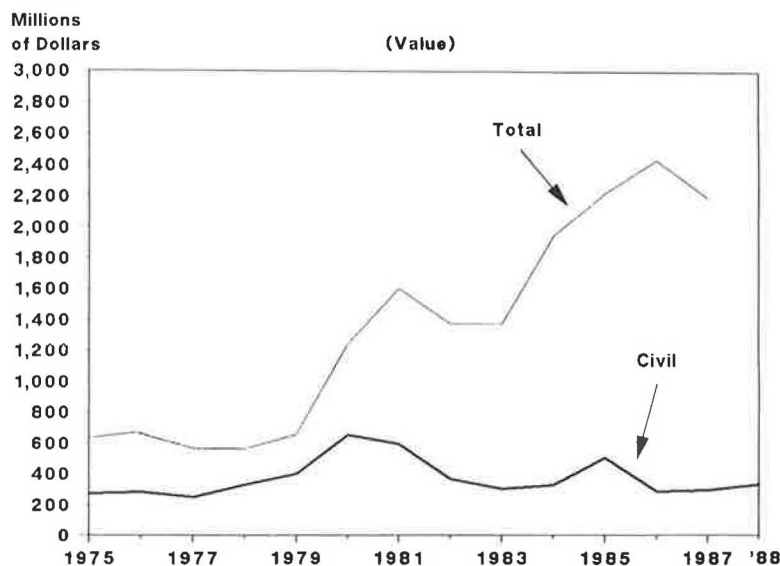
The objective of the panel on civil helicopter aviation was to identify major issues that are viewed as inhibitors to rotorcraft advancement, to develop conclusions, and to identify actions that could resolve the issues. The panel was comprised of expert representatives from helicopter and heliports operators, aviation media, manufacturers, Department of Defense, Department of Commerce, FAA, emergency medical services, Port Authority of New York/New Jersey, and professional helicopter associations.

### Economic Outlook for Rotorcraft Industry

Based upon a Department of Commerce economic briefing, the general outlook for the rotorcraft industry is encouraging. As depicted in Figure 1, civil rotorcraft sales bottomed out in 1987. Orders for some manufacturers in 1988 and 1989 have been brisk, particularly in the light single and light twin-engine categories. U.S. rotorcraft sales are adding to the overall U.S. aerospace trade surplus. Iraq, Japan, Singapore, U.K., and Australia should continue to be the top U.S. export markets. Japan, which will soon be the country with the third largest number of

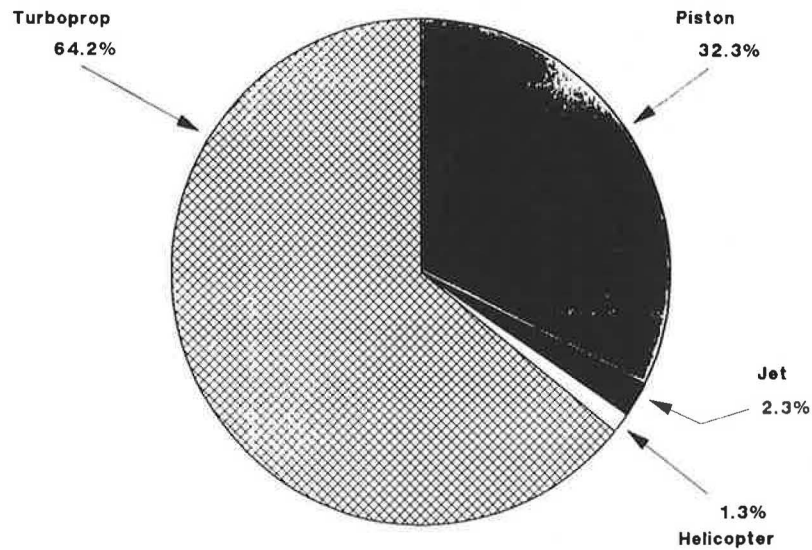
registered helicopters in the free world, has plans for hundreds of new heliports. The market continues to be void of good used helicopters primarily because of extraordinary increased foreign purchases. Offshore activity is still relatively stagnant; emergency medical service has slowed down and is restructuring; public service is fairly active; and executive and private sales are on the upswing. Modest annual increases in sales are expected for the next decade. From the presentation came two facts particularly pertinent to the panel: rotorcraft, as a percentage of the commuter aircraft fleet, are still almost nonexistent – 1.3 percent; and rotorcraft utilization in the commuter market is also virtually nonexistent – 0.3 percent. (Figures 2 and 3) The unmistakable message is that rotorcraft are still not looked upon by the airlines and airports as a viable solution to airport and airspace congestion and related ground transportation problems. The obvious answer, as articulated in the 1985 and 1987 helicopter panels in Chapter 4 of the draft 1989 Rotorcraft Master Plan, is the need for the FAA, airline industry, and National Airspace System (NAS) to encompass the rotorcraft industry as part of the solution to airspace, airport, and ground-related congestion problems.

The panel agreed that there is still a growing need for rotorcraft. However, it was recognized that the rotorcraft industry has been unable to exploit the market potential fully. Although there are many reasons, two specific barriers stand out above the others: public acceptance and lack of public heliports.



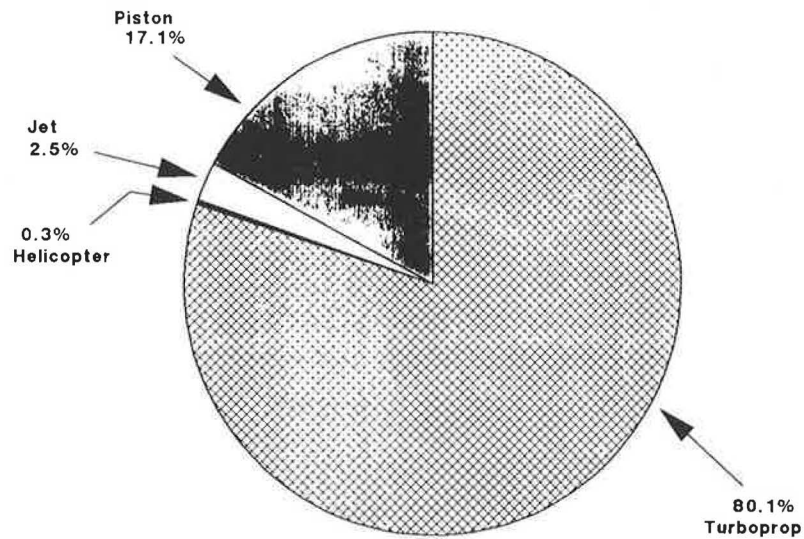
Source: U.S. Department of Commerce

FIGURE 1. U.S. Rotorcraft Shipments



Source: Regional Airline Association

FIGURE 2. U.S. Commuter Aircraft Fleet - 1988



Source: Regional Airline Association

FIGURE 3. Utilization of the U.S. Commuter Aircraft Fleet - 1988  
(Percent Shares of Hours Flown)

Regarding public acceptance, the general public is still ambivalent about the benefits that can be derived from rotorcraft and views helicopters as noisy, relatively unsafe, and an intrusion on privacy.

The panel applauded the proactive efforts of FAA in acting as a rotorcraft advocate by publishing the Rotorcraft Master Plan, the Advisory Circular for Heliport Design, and the draft Advisory Circular for

Vertiport Design and by sponsoring aviation panels, participating with professional rotorcraft organizations, such as the Helicopter Association International and the American Helicopter Society, and working with industry. Additionally, FAA has capitalized on the favorable publicity of the tiltrotor by establishing a tiltrotor program office and including tiltrotors in vertiport designs. These actions and the recognition and acceptance of emergency medical service (EMS) helicopter benefits by the general public will strengthen public acceptance of helicopter operations. But it was recognized that more must be done.

The Panel concluded that: (1) the rotorcraft industry should support the collective efforts of FAA and professional rotorcraft associations to establish a program involving rotorcraft users and beneficiaries when and were possible to promote rotorcraft and heliports to non-aviation groups—e.g., city planners, architects, and the general public as a part of its mission to "foster the growth of aviation"; (2) FAA should reissue its "Benefits of Rotorcraft" booklet and develop a corresponding video; (3) TRB should sponsor a study on the potential for commercial helicopters and tiltrotor aircraft to augment intercity and regional operations. (At the 1990 TRB Annual Meeting there was a panel of non-rotorcraft members from the airline industry to discuss "Commercial Aviation: Aviation: Is There a Niche for Rotorcraft?"); (4) the Rotorcraft Master Plan should be incorporated in the National Transportation Plan being established by the Secretary of Transportation; and (5) because of the current visibility and interest in the tiltrotor, FAA and other agencies should consider both helicopters and tiltrotors in proper proportion, and viable helicopter programs should continue to be supported during the development and acceptance of the tiltrotor.

#### Discussion Topics

Panel discussion was limited to the following: (1) heliport and vertiport activities and impact on future rotorcraft aviation, (2) Department of Defense budget impacts, (3) cost factors, (4) technology needs, (5) insurance, and (6) international rule making.

Heliports and Vertiports. The lack of public heliports continues to stifle rotorcraft expansion. In Chapter 4 of the draft FAA 1989 Rotorcraft Master Plan the need for heliports and vertiports and specifically designated rotorcraft airways and approach criteria in and around heliports and vertiports and commercial airfields is specified. Currently, rotorcraft must fly within fixed-wing airspace under fixed-wing flight rules and use public airports. As a result, the unique advantages of vertical takeoff/landing aircraft cannot be exploited.

Heliports convenient to downtown population centers are absolutely essential for the rotorcraft industry to relieve airport and airspace congestion. The panel felt that, if no additional population-center heliports or vertiports were built, the impact on the rotorcraft industry would be severe. There is a direct correlation between public heliports and rotorcraft activities. Properly placed public heliports and vertiports will attract rotorcraft business, as exemplified by the New York City Wall Street and Indianapolis heliports.

At the present time, there are well over 4000 heliports in the U.S. Over 90 percent of these heliports are private and are not eligible for government funding support. Without that funding, private heliport owners may not make the minimum improvements necessary to qualify as FAA-approved public heliports. Additionally, to meet the needs of the population centers (rather than the center of cities), heliports and vertiports should have IFR capabilities and reasonable SVFR minimums to provide safe scheduled service.

Because there are only a limited number of public heliports, the growth of rotorcraft and rotorcraft operations remains constrained. Funds exist in the Aviation Trust Fund for heliport expansion, but there are few applicants. Much of the promotion, both by industry organizations and FAA, has been to aviation-related groups who already have an interest in the growth of heliports.

It was concluded that: (1) FAA should conduct a statistical analysis on the feasibility of rotorcraft relieving congestion at airports and take the lead in bringing together airline, community officials, and rotorcraft operators to address and resolve the airport and ground transportation congestion problems; (2) heliport planning should be focused on population centers as opposed to city centers, and these heliports should connect with other forms of transportation (railways, interstates, remote parking facilities, etc.) to provide true accessibility; and (3) FAA should investigate the means of encouraging and creating quasi-public or joint private-public heliports and vertiports in order to expand public access to existing and new facilities.

Department of Defense Budget Impacts. The rotorcraft industry is changing as a result of shrinking worldwide defense budgets. In the past, every major helicopter manufacturer relied heavily upon the military forces of its government for support. Not only have the military services been the best customers, they have also funded the R&D programs, from which were derived many civil technological advancements. Also, many of today's civil pilots received their initial pilot training in military service.

With the advent of "world peace", lessening threats, and reduced U.S. and NATO military budgets, many of the current military programs are being reduced, stretched, or cancelled. As an example, the U.S. Army plans to retire approximately 2000 utility heliports into the commercial market. These helicopters will not be replaced.

There are both pros and cons to this type of program. It will provide relatively inexpensive helicopters with which civil operators can refurbish their fleets. Conversely, with helicopter manufacturers just now recovering from years of depressed sales, a flood of relatively inexpensive retired military helicopters into the commercial market will undoubtedly affect new and used sales. It may also burden manufacturers with liability exposure and put into the civil fleet helicopters that are not certified for civil use. (Limited airworthiness certification to "Restrictive Category" will not necessarily protect the public.) As the former FAA Administrator, T. Allan McArtor, said in the spring issue of *ROTOR* magazine, "... there needs to be an intensive review of the facts [aesthetics, noise, legality, etc.] before additional [military] helicopters are retired."

The panel concluded that OMB should conduct a cost-benefit analysis to study both the short- and long-term effect of the release of retired military helicopters into the commercial market.

Budget constraints are creating another kind of problem for the helicopter industry: a pilot and mechanic shortage. Pilots are not acquiring sufficient flight time and experience to obtain employment after their discharge. The most critical and near-term problem is the shortage of mechanics. There is no transition program for maintenance personnel like that for pilots. Military mechanics do not receive the breadth of training or practice that is required for civil A&P license. While pilots operate under both civil and military air regulations, mechanics have little exposure to civil regulations. Thus, they are not qualified to obtain civilian employment in the field upon discharge without further training.

The panel also concluded that (1) the Department of Defense should investigate a limited or modified revival of the GI Bill to provide transition training to support the aviation industry as a national initiative; and (2) FAA should institute an awareness campaign involving state education agencies to promote aviation maintenance as a career.

**Cost Factors.** Heliport operations are capital intensive, whether commercial, corporate, or public service/governmental. Many times government contracts for helicopter services are for such short

terms and are predicated on such circumstances (forest fires, for example) that commercial operators are not able to bid cost-effectively. As a result, government entities use military helicopters, or other governmental helicopters, to provide these services sometimes without due regard for actual cost to taxpayers. A precedent has been set for longer-term contracts with fixed-wing aerial tankers used in fighting fires, which has resulted in a stabilized, responsive, fleet of civil fixed-wing aerial tankers.

This issue lacks sufficient documentation to justify a request to government agencies to review and restructure contract laws. In any event, it does not seem likely that longer contracts to promote acquisition could be legislated. Equipment replacement is undoubtedly an allowable overhead expense now. The operators will have to deal with this in a free-market environment. Apparently the procuring agencies are being served adequately by the winning competitors. If, indeed, it is an unfair business practice, the problem needs more careful documentation.

The question was raised as to whether U.S. commercial operators are charging enough to facilitate continuation of their business particularly in light of rising cost for acquisition and maintenance of new and used helicopters. The consensus was that commercial operations in the United States have traditionally been and still are underpriced when compared with the costs of operations, capital investment, and helicopter services in the rest of the world. Such low prices will not facilitate the procurement of supplemental or replacement aircraft.

It was concluded that (1) TRB and HAI should work together to fully document the impact of short-term contracting practices on the viability of specialized helicopter operations business; and (2) HAI, as the trade association for the civil helicopter industry, and other entities as appropriate, should take action to document the impact of civil helicopter rate structures on safety and sustained operations.

**Technology Needs.** Because of increased development costs and less government participation in R&D programs, some manufacturers are forced to "reinvent the wheel" rather than develop new commercially applicable technologies for rotorcraft. The industry would be better served by a cohesive government-industry or manufacturer-manufacturer effort to accomplish such items as increased engine reliability (e.g., an engine that goes to TBO with health usage monitoring), certification for flight into known icing, night vision capabilities for both EMS and public service operations, noise level reduction, low altitude communication including NavSat networking,

airframe maintainability, and safety improvements. No one manufacturer has the capability or funding necessary to make all these technology leaps.

The panel concluded that NASA, DOD, FAA and AHS should jointly identify commercially applicable technology projects and develop the innovative means for achieving joint sponsorship of high priority research tasks that are broadly applicable to the rotorcraft industry. Relaxation of the constraints brought on by anti-trust fears should be ameliorated to allow the formation of technology consortiums by manufacturers.

Technology, however, is only as good as the knowledge of the people using it. One of the most critical needs in this area is in judgmental training. Situation awareness programs are needed both for pilots and people who work in and around helicopters, e.g., flight nurses and police.

Insurance. The good news is that the cost of hull insurance for helicopters has decreased from about ten percent of total acquisition cost in 1985 to about three percent today. This tends to be a cyclical occurrence, which implies that the situation will change and rates may again rise. No forecast was made as to the timing of the rise.

The bad news is that the high costs of liability insurance continue to inhibit the industry. Several bills (H.R. 2238 and S. 473) have been introduced in the Congress for tort liability reform. Each year the relevant bill comes closer to passing, but, as yet, none has reached that point.

The panel concluded that passage of liability tort reform legislation is needed to remove this major obstacle to the growth of aviation in the United States.

International Rule Making. Two major groups are presently making or influencing international regulations that cover the gamut from aircraft certification to pilot currency training. These groups are the International Civil Aviation Organization and the European Economic Community. At this time, FAA has elected to take an observer role in the ICAO meetings rather than have a direct voice in the proceedings. Concern was expressed that, in both the development of JARS by the EEC and regulations by ICAO, American operators and manufacturers

could be competitively restricted from operating. For example, helicopters certified in the United States are likely not to be approved for operation in Europe without further testing and modifications at the operators' expense.

It was concluded that FAA, in concert with the U.S. Department of Commerce and rotorcraft industry, should explore opportunities to ensure that U.S. aerospace companies remain competitive.

#### Data Needs

The additional subject discussed by the panel at the request of the Transportation Research Board was data collection. The requirement was to assess the quality and availability of rotorcraft industry data and identify areas where the data base could be improved. This special task is presented as part of this report because data collection within the rotorcraft industry is considered poor. Although there are several government agencies and individual manufacturers collecting and compiling rotorcraft data, none is considered totally accurate, and only a couple are considered marginally credible. Manufacturers have excellent historical delivery data. After a second resale, the data become vague, particularly if the unit is purchased by foreign concerns. Even rotorcraft registry agencies lose track after resale occurs.

There are several aspects to the problem. Part of the problem has to do with definition of the type of rotorcraft -- production, experimental, homebuilt, reclassified, etc. Another problem is the reluctance of some operators to report data because of zoning, liability, competition, taxes, or just poor record keeping. Also, when an operator sells a used helicopter and reports it, the sale may or may not be officially recorded. The buyer may or may not correctly reregister the aircraft, thus creating a break in the record keeping of a given mainframe.

The panel concluded that FAA should establish a panel to examine the magnitude and impact of this issue and propose appropriate regulatory procedures to correct the existing infrastructure deficiencies. Additionally, FAA should conduct a one-time effort to identify by tail number and airframe identification all existing rotorcraft in North America.