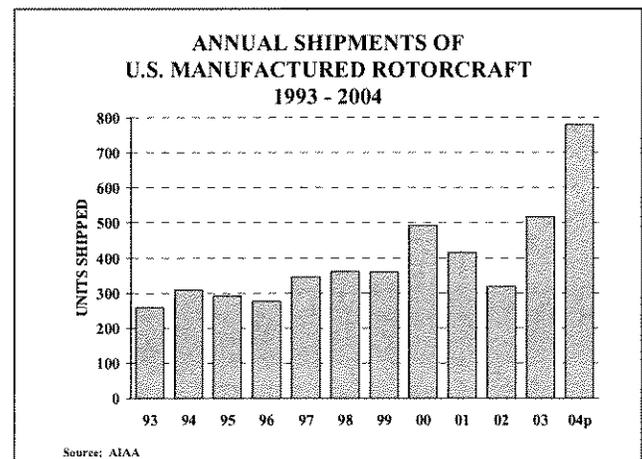


# CHAPTER VI

## HELICOPTERS

Helicopters participate in a wide range of aviation activities, which are not only important, but contribute to the nation's economy as well. These activities include aerial observation; sightseeing; agricultural application; law enforcement; fire fighting; personal transportation; emergency medical services; transporting personnel and supplies to offshore oil rigs; traffic reporting; electronic news gathering; corporate or business transportation; and heavy lift for the oil, utility, and lumber industries.

shipped in 2003 and represents by far the highest level of helicopter shipments since 1991.



### REVIEW OF 2003/2004

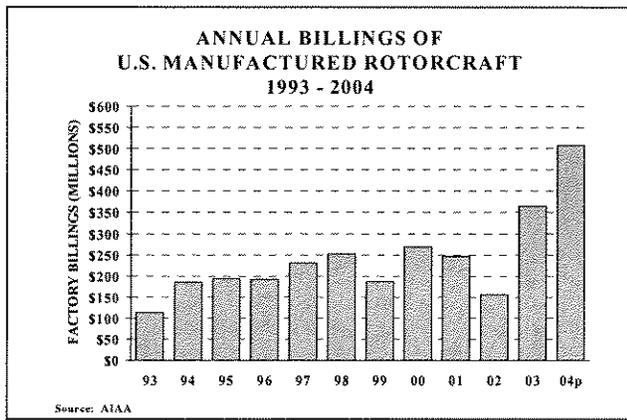
#### SHIPMENTS

Preliminary data for calendar year 2004 reported by the Aerospace Industries Association of America (AIA)<sup>1</sup> indicate that shipments of new U.S. civil helicopters will total 781 units. This is a 51.1 percent increase over the 517 units

The value of the helicopter shipments totaled \$509 million in 2004, an increase of 39.1 percent from billings of \$366 million in 2003.

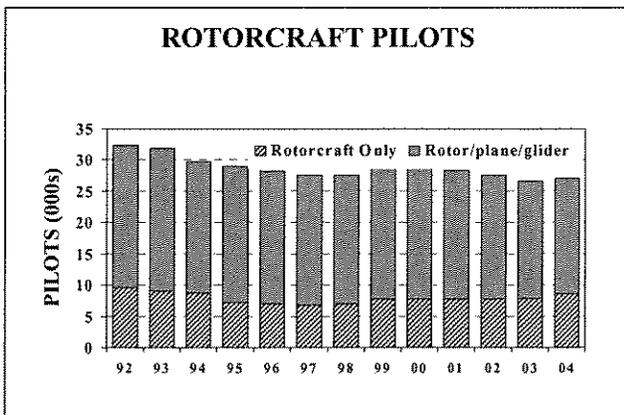
Over the past 7 years, the average value per helicopter shipped has ranged from a high of \$707,930 in 2003 to a low of \$413,158 in 2002. In 2004 the average value was \$651,729. Indications are that the increase in the number of shipments is due primarily to the Robinson R44 and the increase in value is due primarily to the Sikorsky S-76.

<sup>1</sup> 2004 Year-End Review and 2005 Forecast—An Analysis, Aerospace Industries Association of America, December 2004. These sales and shipment figures do not include U.S. imports from foreign manufactures.



## PILOTS

The total rotorcraft pilot population includes pilots who are certificated to operate only rotorcraft (helicopters and gyrocopters) as well as those that may operate rotorcraft as well as other airplanes and/or gliders. The total number of active rotorcraft pilots increased 3.0 percent in 2004, from 26,231 in 2003 to 27,031 in 2004.



The number of pilots certificated to fly only rotorcraft increased from 7,916 in 2003 to 8,586 in 2004--up 8.5 percent.

## 2003 GENERAL AVIATION AND AIR TAXI ACTIVITY SURVEY

Only preliminary results of the General Aviation and Air Taxi Activity Survey (GA Survey) are available for discussion in this document. Although the preliminary results are subject to change, they have been used as the baseline for developing the rotorcraft active fleet and hours flown forecasts.

The active rotorcraft fleet and hours flown by aircraft type are detailed for the period 1996 to 2003 in Chapter V, Tables V-2 and V-3. The 2003 preliminary results for active rotorcraft and hours flown are also listed in Chapter X, Table 35.

## FLEET AND HOURS FLOWN

There were an estimated 6,791 active civil rotorcraft in the United States in 2003, an increase of 2.2 percent over the 6,648 rotorcraft reported for 2002. This included 4,588 turbine rotorcraft (up 6.8 percent) and 2,203 piston rotorcraft (down 6.3 percent).

According to the 2003 estimates, rotorcraft flew 2.2 million hours in 2003, an increase of 16.8 percent over 2002. Turbine rotorcraft hours (1.7 million), were up 20.6 percent in 2003 and accounted for 78.2 percent of total rotorcraft hours. Hours flown by piston rotorcraft were estimated at 477,000 in 2003--an increase of 5.1 percent..

## FUTURE ISSUES

Issues facing the rotorcraft industry include availability of infrastructure, improved safety image, price-to-performance ratio, the maturing of the offshore oil and air medical markets, and environmental impact. Expanding infrastructure faces both public and local government resistance because of safety and environmental concerns. Security restrictions imposed on general aviation and rotorcraft, in particular, has had an impact on the use of helicopters for newsgathering and traffic reporting. Even with falling prices and improved operating performance, the demand for rotorcraft could be dampened by the lack of adequate landing facilities. Helicopters are seen as one option for transporting passengers or cargo from airports into the city or urban sites. However, operators often find themselves unable to convince communities that a heliport can be a good neighbor.

## TECHNOLOGY

Technological advances could stimulate helicopter usage. The Global Positioning System (GPS) and other free flight enabling technologies offer the promise of freeing all aircraft, including helicopters, to use efficient direct routing to their destinations. These technologies may also enable helicopters to fly routes less noticeable to persons on the ground, increasing community acceptance and further enhancing the utility of helicopter operations.

Another major technological advance is the civil tilt-rotor, which combines the vertical takeoff and landing capabilities of a helicopter with the speed and range of a turboprop aircraft. A tilt-rotor has engines that pivots 90 degrees so the aircraft can take off vertically like a helicopter then fly horizontally like an airplane.

Other innovative rotorcraft configurations that may benefit from advanced (vertical) flight research include quad tilt rotor, ducted coaxial rotor, folding prop-rotor, and canard rotor/wing. Intelligent rotorcraft systems and efficient active rotor systems may also compete with the above revolutionary systems for research funding—from both NASA and the FAA.

Airport utilization is important to the future of the rotorcraft industry. The ability of helicopters to utilize Category I airports requires achieving instrument landing systems (ILS) approach capabilities to 100-foot minimums. A Category I ILS approach procedures provides for an approach to height above touchdown of not less than 200 feet and with a runway visual range of not less than 1,800 feet. At the Helicopter Association International's (HAI) annual convention in March 2004, an FAA representative stated that low-visibility airport-approach capability is an intermediate step toward one of the two milestones on the agency's helicopter technology "road map" of research and development initiatives. The ultimate goal is zero-ceiling and zero-visibility operations.

## MARKET FACTORS

Factors increasing the demand for helicopters include economic growth, the aging of the fleet, and the availability of new more efficient models. New models stimulate demand due to improvements in performance and cost of operation. Factors that may slow the demand for new products include lower levels of petroleum extraction in the United States (one of the primary uses of helicopter services)--at least in the short-term--and limitations relating to supporting infrastructure.

Current high oil prices could stimulate helicopter activity supporting oil exploration in the Gulf of Mexico. Based on the latest data

collected by the Helicopter Safety Advisory Conference (HSAC), the total helicopter fleet in the Gulf was 607 in 2003. These 607 aircraft carried an estimated 2.6 million passengers and flew an estimated 381,273 hours. These latter two figures are comparable to those of 1999, but down 26 and 14 percent, respectively, from 2000.

Government regulation and harmonization initiatives may also influence market demand. Aviation regulations could stimulate or reduce the market for aircraft services, depending on whether particular regulations permit or prohibit operations where market demand exists.

Harmonization is the process of reducing substantive differences between U.S. regulations and those of other nations. Harmonization of aircraft certification requirements helps open international markets to aircraft manufacturers located in participating nations.

A rapidly growing segment of general aviation is fractional ownership. Several companies have expressed interest in offering fractional ownership of helicopters. For a variety of reasons, including speed and operating range, fractional ownership of helicopters will need to be configured differently than it is for business jets. As of March 2004 there were two successful U.S. operators--Sikorsky Shares and Heliflite.

## **HELICOPTER FORECASTS**

The forecasts of the rotorcraft fleet and flight hours discussed in this section are presented in tabular form in Chapter X, Table 35. Many of the assumptions used to develop these forecasts were derived from discussions with industry experts—including consultants, manufacturers, and industry associations and

from reports presented at meetings of the TRB subcommittee on Civil Helicopter Aviation.

Forecasts for certificated pilots are based on 2004 data obtained from the airmen certification records maintained at the FAA Mike Monroney Aeronautical Center in Oklahoma City.

## **ACTIVE FLEET**

The active rotorcraft fleet is expected to grow from an estimated 6,791 in 2003 to 7,915 in 2016, an average annual increase of 1.2 percent over the 13-year forecast period.

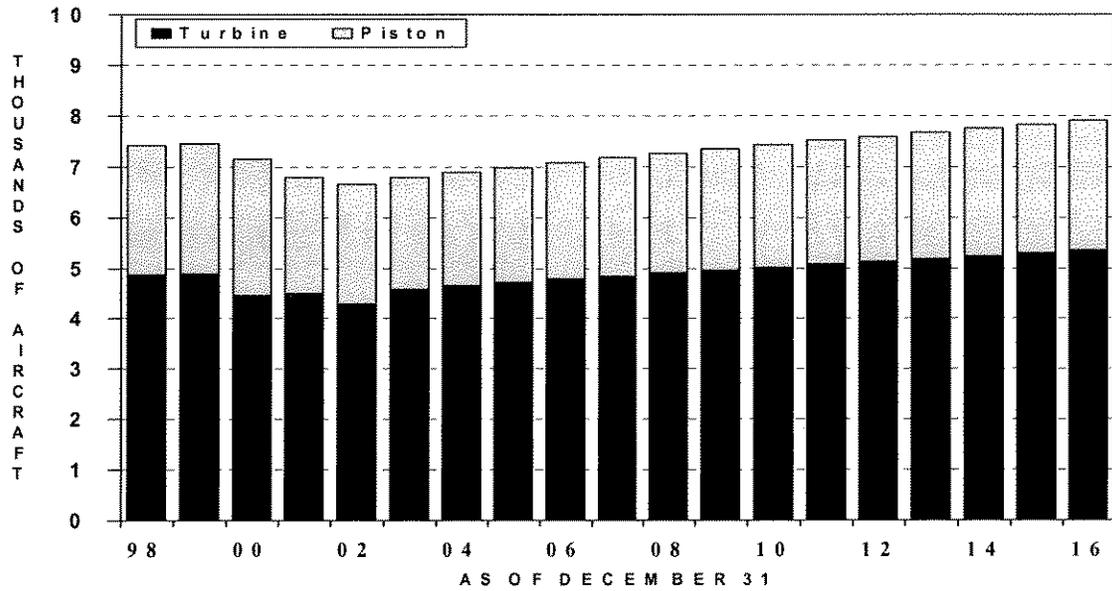
The number of turbine rotorcraft is expected to total 5,345 by 2016--an increase of 16.5 percent over the 2003 level of 4,588. The turbine rotorcraft fleet is forecast to increase at an average annual rate of 1.2 percent over the forecast period. Turbine powered rotorcraft are expected to account for 67.5 percent of the rotorcraft fleet in 2016.

The piston rotorcraft fleet is also expected to increase by 1.2 percent annually over the forecast period, reaching a total of 2,570 by 2016.

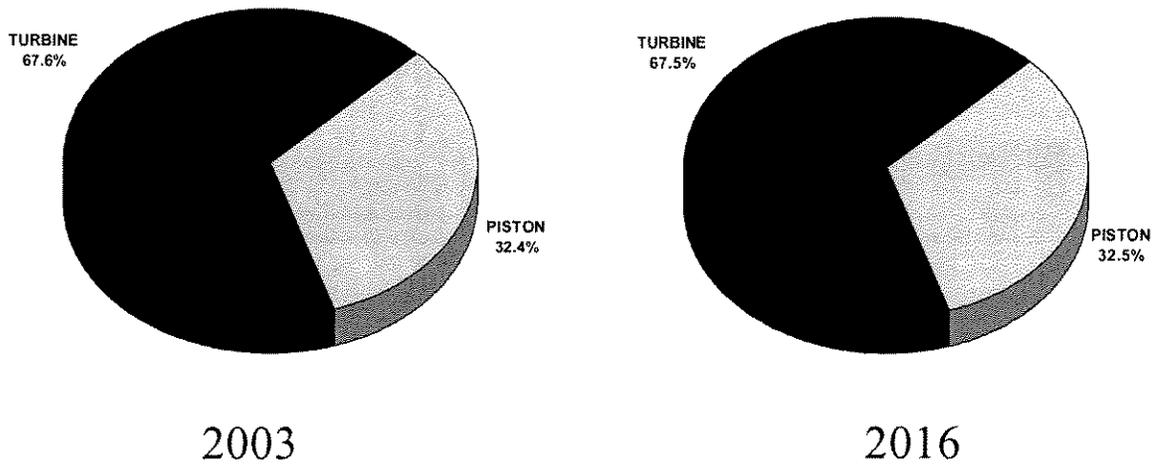
## **UTILIZATION**

The annual utilization rate for all rotorcraft increased from 282.1 hours in 2002 to 322.8 miles in 2003, an increase of 14.4 percent. However, the 2003 rate is still much lower than the 1999 rate of 353.0 hours. Utilization rates for turbine and piston rotorcraft increased and 12.9 and 12.2 percent, respectively, in 2003.

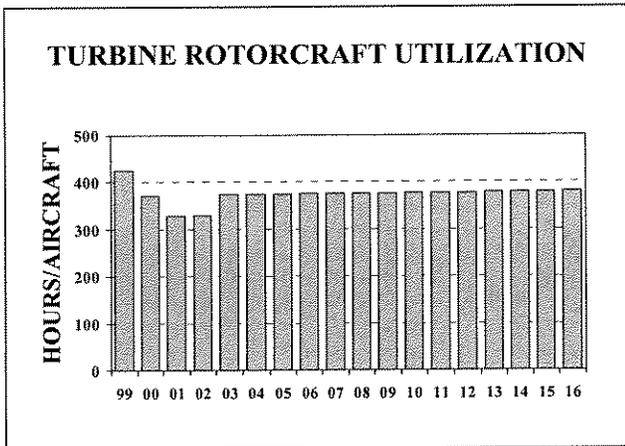
# ACTIVE ROTORCRAFT



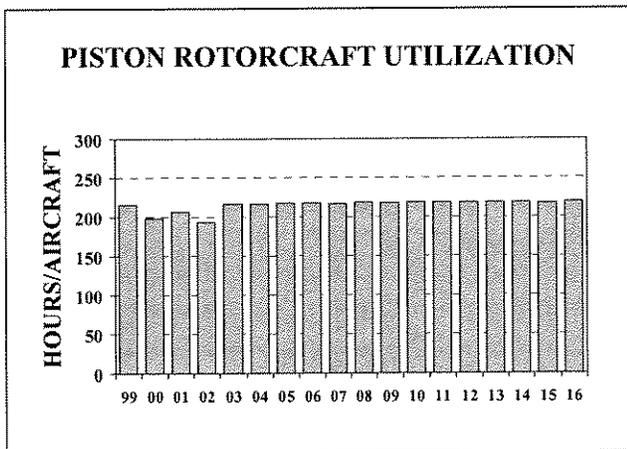
## PERCENT BY AIRCRAFT TYPE



## FLIGHT HOURS



Utilization rates for all rotorcraft are expected to increase from 322.8 hours in 2003 to 328.5 hours in 2016, an average annual increase of just 0.1 percent. Turbine-powered helicopter utilization rates are forecast to increase from 373.8 hours in 2003 to 380.7 hours in 2016. Piston-powered rotorcraft utilization is forecast to total 219.8 hours in 2016, up from 216.5 hours in 2003.



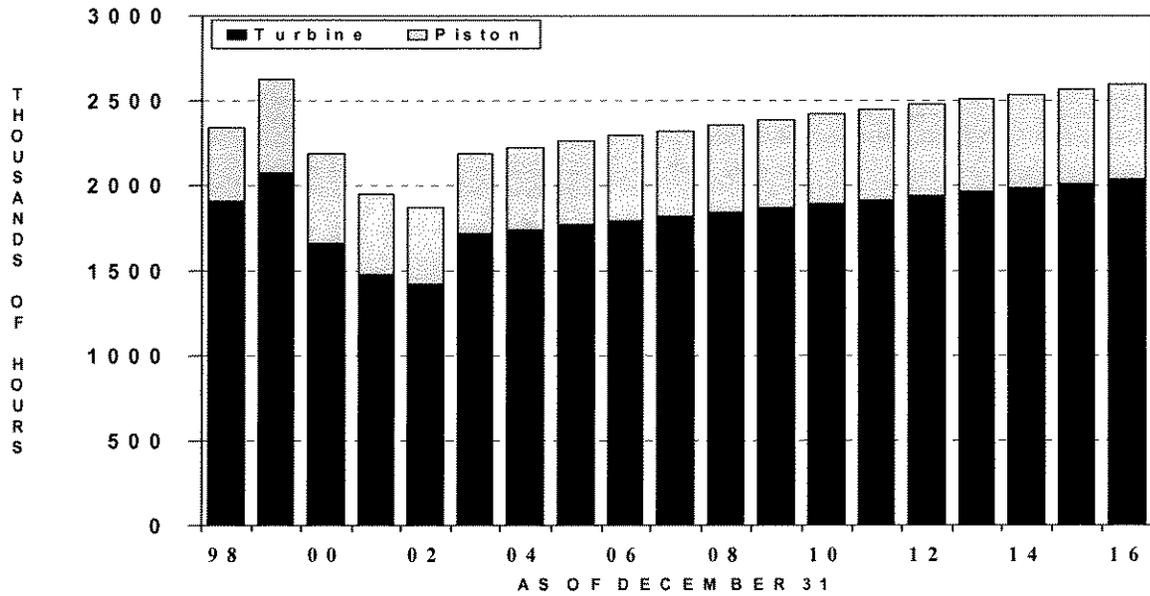
Rotorcraft flight hours are forecast to increase from 2.2 million in 2003 to 2.6 million in 2016, an average annual increase of 1.3 percent. Total flight hours for turbine-powered rotorcraft are projected to increase by 1.3 percent annually, from 1.7 million in 2003 to 2.0 million in 2016.

Flight hours for the piston-powered portion of the rotorcraft fleet are also expected to increase at an average annual increase of 1.3 percent, from 477,000 hours in 2003 to 565,000 hours in 2016.

## HELICOPTER PILOTS

The number of rotorcraft only pilots is expected to increase at an annual rate of 1.2 percent over the 12-year forecast period, from 8,586 in 2004 to 9,870 in 2016.

# ROTORCRAFT HOURS FLOWN



## PERCENT BY AIRCRAFT TYPE

