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1. Impact of the following activity on growth of helicopters:
   a. Oil and gas industry:
      Worldwide fleet of about 1200 offshore helicopters will remain constant in the next few years. Helicopter fleet of about 600 turbines is expected to decrease in the Gulf of Mexico. The North Sea fleet will also see a reduction. However, the fleet is expected to increase in other areas such as South America, Africa, and Asia.
   b. Air medical industry:
      1) U.S. helicopter fleet has grown to about 400 units but is expected to decline in the next several years due to redundant operations in many major metropolitan areas. Hospital management is increasingly aware and concerned about cost.
      2) However, the industry is experiencing growth with single engine helicopters in a areas not served by majors, which may offset the decline expected in major metropolitan areas.
   c. Law enforcement:
      1) The U.S. helicopter fleet consists of about 1200 turbine helicopters of which about 50 percent are registered military surplus. The ease of acquiring military surplus equipment led to a major expansion over the last five years, which will result in growth of activity in regularly certified helicopters in the future.
      2) Fleet growth in the U.S. was 2.7 percent in 1998 or 32 units net including only 4 net military surplus helicopters. Availability or military surplus equipment is now negligible and no longer a major factor in law enforcement growth.
   d. Scheduled commercial airlines:
      Sikorsky indicates a recent resurgence of activity, but the market is still a relatively minor application in the worldwide market and the U.S.
   e. Fractional ownership operations:
      Both Bell and Sikorsky are experimenting with programs, but there are problems not experienced in fixed-wing, such as typically short stage lengths and the need for a large back-up fleet.
   f. Utility operations:
      1) Currently the largest application in civil helicopter operations, this activity constitutes more than 50 percent of the U.S. fleet. Agriculture work is down slightly, but other applications such as electrical, fire support, offshore oil support, etc., are up.
      2) Growth of utility fleet is expected to match the industry growth of about 2 percent overthe next few years.
   g. Corporate/private (not for hire):
      1) Roughly 12 percent of the U.S. turbine fleet, this application is showing positive growth. In 1997 sales of new and used turbine helicopters amounted to 12.8 percent of the 884 units sold to U.S. operators. In 1998, the percentage grew to 18.3 or 790 units. In the first eight months of 1999, growth is 17.3 percent or 603 units, which is about 26 percent of 904 units annualized.
      2) Growth of the corporate/private fleet is expected to exceed 10 percent for the next few years depending upon the overall U.S. economy.

2. Manufacturer's perspective:
   a. The overview presentation made it clear that OEMs acknowledge the importance of cost in industry growth, but generally the manufacturers are expecting continued growth of demand for new turbine helicopters.
   b. The majority of Eurocopter's 1998 and 1999 and anticipated year 2000 sales are of newly introduced products including the EC135, EC155, EC145 and the EC120. Worldwide unit sales amount to about 40 percent of the commercial market.

c. Sikorsky has developed a new analytical framework to solve for minimum operating cost, including the cost of failures and downtime. They see commercial growth in S-76 sales and forecasting 250 units for the S-92.

d. MDH has reduced the 902's selling price by 20 percent and concurrently significantly reduced its cycle time. The company is optimistic with new management and its line of turbine helicopters.

e. Bell Helicopter's share of the worldwide commercial market is also about 40 percent. Bell is experiencing growth in its product line, particularly with the 407.

f. Bell/Agusta's tilt rotor program may capture a larger share of the corporate/private twin engine market for executive transport, which is now at about 150 units. It may also affect the fixed wing turboprop market.

3. Outlook for piston helicopter demand:

a. Delivery of new piston helicopters to U.S. operators in terms of units is approaching delivery of new turbine helicopters. In 1998, there were 109 new pistons compared with about 140 new turbines. In 1999 through August YTD deliveries of new pistons totaled 98 to U.S. operators compared with about 99 turbines.

b. Today Robinson Helicopters dominates the new piston helicopter market with about 84 percent of total new sales through August 1999. Part of the reason is an expanding general aviation market (corporate/private), which for pistons is about 36 percent of piston sales compared with turbines, which total about 18 percent.

4. Regulation/legislation:

A potential obstacle to growth of helicopters is the failure to consider rotorcraft requirements and unique capabilities when seeking consensus in rule making (e.g., the new rules on pilot reserve time may force small operators into prohibitive operating costs).

Problems:

a. Recent NPRM was checked with airlines but not with the Helicopter Association International (HAI).

b. It will be essential to preserve the present infrastructure without further limits that would make some heliports obsolete; new heliport design guide could be a problem.

c. The HAI's surveys indicate that the costs of regulation compliance are now 11 to 12 percent of total operating costs and are expected to increase. These, plus rising salaries and the costs of contracted maintenance, have offset much of the gain in aircraft productivity. Fifty percent of the commercial operators surveyed are at or below break-even.

d. Regulations modeled after the excessively limiting JAR-Ops 3 JAA regulations could also tend to limit growth of the industry.

5. Forecast worksheets:

a. Turbine helicopters

1) The OEM community estimates the U.S. turbine helicopter fleet at about 6600 units. Customer Service Departments support the following:

Agusta	88 units
American Eurocopter	1100 units
Bell Helicopter Textron	4000 units
MD Helicopters	1244 units
Sikorsky (excluding S58T & S55T)	180 units
Total U.S. fleet	6612 units

2) The helicopter panel believes that the OEM fleet estimate is about right. Growth is estimated at 2 percent annually for the next two years, then 1 percent annually for the next three years.

3) Studies conducted by Conklin & Dedecker estimate turbine helicopter flight hours per aircraft at about 515. This level has been relatively stable for the past 5 years.

b. Piston helicopters:

1) The helicopter panel believes that the U.S. piston helicopter fleet is about 4500 units—about twice the FAA estimate.

2) Growth of the piston fleet through August 1999 is 1.8 percent, which is expected to be at least 2.5 percent by year end. Growth for the next two years is estimated at 2 percent, with that percentage declining as the fleet grows in later years.

3) The panel estimates flight hours per helicopter at about one-half of the turbine or about 250 hours per aircraft.

c. Pilots:

No information was readily available at the meeting, but the panel is looking into this question further and expects to recommend an estimate in the near future.

The helicopter panel is concerned that a low FAA estimate of the U.S. helicopter fleet adversely affects the position of the helicopter industry, particularly in regulatory matters. The lack of FAA representation on the helicopter panel of the current TRB/FAA workshop tended to feed the panel's concerns.