LIGHT GENERAL AND PERSONAL AVIATION

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U.S. Student and Private Pilot Populations

Assumptions

A major assumption in developing the panel's consensus forecast was that the regulatory environment for general aviation will not be fundamentally or substantially changed over the next 10 years.

The panel was particularly concerned about the possibility that a new system of user fees might be levied on private aircraft owners and operators. If such a system is adopted, these forecasts will be inaccurate. The opinion of the panel was that a user-fee system would have a highly damaging impact on general aviation. Since the piston-powered airplane segment is particularly price-sensitive, user fees could degrade safety, reduce activity levels, and drive down the size of the pilot population.

Forecasts

Two forecasts of airmen were developed by the panel for the 1966-2000 time period: one for the active student pilot population and the other for the private pilot population.

Student Pilots

The active student pilot population in the United States is expected to decline 1.3 percent in 1995 and 0.4 percent in 1996. Thereafter the student pilot population will begin to rebound and grow by 1.9 percent per year in 1997-2000 (Figure 1). The number of student pilots will decline from 96,250 in 1995 to 94,600 in 1997 and then rise to 100,100 by the turn of the century.

Private Pilots

The story is basically the same, with only minor variations, for the active private pilot population, which is expected to decrease by 1.3 percent in 1995 and 0.8 percent in 1996 and then increase by an average annual rate of 1.1 percent from 1997 to 2000. The total active pilot population will drop from 284,250 in 1995 to 278,350 in 1996 before turning around and reaching 287,600 by 2000 (Figure 2).

Near-Term Forecast Considerations

The driving factors influencing the decline and then growth of the airman population are similar. A major

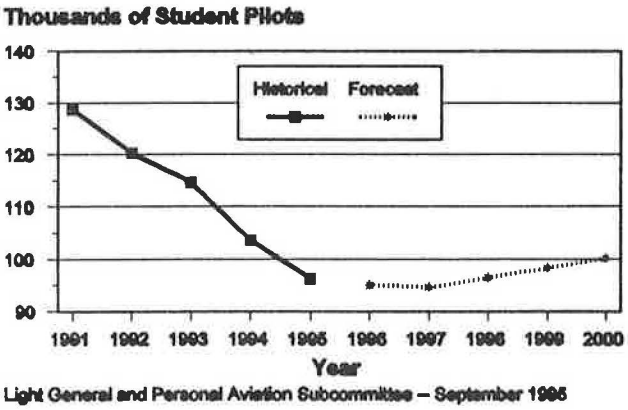

FIGURE 1 Active student pilot population, 1991–2000.

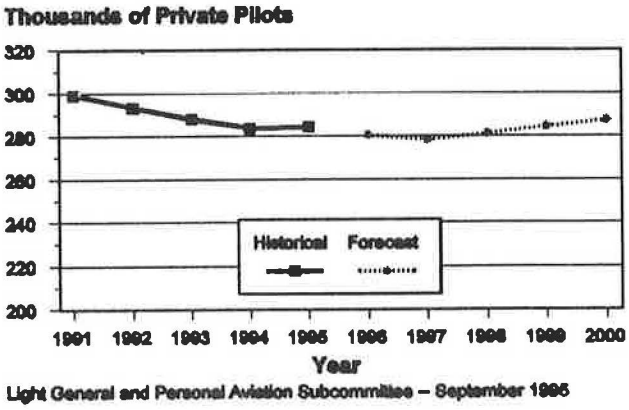

FIGURE 2 Active private pilot population, 1991–2000.

factor in the near term is the deteriorating flight instructor and flight training infrastructure in this country. Over the years the number of flight schools has declined substantially. Fewer fixed base operators (FBO) offer flight training programs. The physical facilities of many FBOs and flight schools are not in the best condition, due at least partially to the economic strain that most FBOs are experiencing. Compounding the problem is the shortage of training aircraft. No new training aircraft are being produced in this country, and only a few are being imported.

After passage of the General Aviation Revitalization Act of 1994, U.S. manufacturers began increasing production and constructing new plants to manufacture piston-powered aircraft. In fact, piston airplane shipments rose by over 10 percent in the first half of 1995 alone. But even at the maximum anticipated production rate, many more new aircraft will have to enter the fleet before the age of the piston-powered fleet begins to drop from today's average of 27 years. Consequently many of the aircraft now used by flight schools are old and deteriorating.

The industry needs to do a better job of promotion and marketing. The available aircraft are old and not very "sexy" by today's standards. There are more fences around general aviation airports, large and small. FBOs are often not skilled in attracting and retaining new customers. Financing programs are lacking for aircraft purchase and flight training.

FBOs and flight schools need to project a more professional image and provide better value for the dollar. By improving training programs and increasing the use of simulators, training and proficiency maintenance programs could become more time-efficient, attracting more customers. By establishing improved training standards and regulations and reducing the unnecessary regulatory burden, FAA could play a key role in revitalizing general aviation. The industry has focused on these problems, and significant efforts are under way.

The economy plays a major role in the growth or decline of the pilot population, as does the aging of the U.S. population. During the 1995-2000 forecast period, the outlook for the national economy is generally positive and will likely help, rather than hinder, the growth of general aviation. However, there are proportionally fewer young people today than at anytime in the past, and most have less disposable income than previous generations at a comparable age. These factors could reduce the potential number of people wanting to learn to fly.

The number of individuals learning to fly must be increased if there is to be any real growth in the pilot population. Reducing the number of active pilots who drop out of aviation due to the time and cost of operating an aircraft and maintaining proficiency would help sustain the pilot population, but the most significant factor is new student pilot starts. Nothing is more fundamental to new aircraft purchases than a growing pilot population.

There is also a generational effect that can be used to stimulate the pilot population. In order to get today's young people involved in aviation, the industry plans to nurture them more. The keys to this are providing a better perceived value for the dollar and communicating the benefits of general aviation more widely.

Airspace restrictions, air traffic control requirements, capacity problems, procurement reform, and the inability to develop a new ATC system that is more efficient in terms of time and money have also hindered the growth of the pilot population. These factors will probably continue to dampen growth unless significant changes take place through FAA and Congressional action.

Over the near term, the major factors affecting the student and private pilot population in this country include the industry's ability to market its product (positive or negative, depending on how it is done), the aging pilot population (generally negative), the aging and limited aviation training infrastructure (negative), the depressed number of student starts (negative), and limited flexibility in training and aircraft financing programs.

Long-Term Forecast Considerations

There are a number of bright spots on the horizon which drive the increases expected in the pilot population between 1997 and 2000. These include renewed optimism in the pilot community, aircraft manufacturers, and the industry as a whole that can be attributed to passage of product liability reform legislation in 1994. This renewed optimism is stimulating enthusiasm and new products throughout the general aviation sector. However, much more can and should be done with respect to product liability reform to help the industry in the future. In some respects the industry — especially the insurance portion — is still holding its breath until the newly enacted statute of repose has been fully tested in the courts.

Another reason for optimism is awakening interest of aircraft manufacturers in new products. Cessna, for example, has already committed to reentering the single-engine piston-powered aircraft market at about the time the forecast starts to turn around. Piper is emerging from Chapter 11 and has already begun increasing production. Other aircraft manufacturers are also increasing future production schedules to match anticipated new demand.

Another positive sign for the future is NASA's Advance General Aviation Transport Experiment (AGATE) program, which combines new and already available advanced technologies into a new type of aircraft that will make flying more practical and enjoyable and less expensive. By incorporating user-friendly technology, AGATE also hopes to reduce training requirements and improve efficiency. Many feel that improved technology will stimulate demand for piston-powered aircraft and increase the pilot population.

New programs, such as the AOPA Project Pilot Program (both Phase I and Phase II), the NATA Learn to Fly Program, and GAMA's Piston Engine Revitalization Program, will also be up and running and paying dividends in a couple of years. It is likely that Cessna and others, as part of marketing for new aircraft, will also develop improved training programs centered around computer-based training.

Many in the industry believe training programs using computer simulation could significantly reduce training costs and at the same time improve safety. The panel anticipated that FAA will encourage increased use of PC-based simulators for training, thereby stimulating the industry while improving safety.

Over the longer haul, the factors affecting the student and private pilot populations include the industry's marketing capability (a positive factor in the future if new market targets are identified and better recruitment messages and nurturing programs are developed), new product introductions (positive because of Cessna reentering the marketplace and the NASA AGATE program), ATC system modernization (positive if done right, but a backbreaker if done incorrectly), and new training programs (positive, especially if PC-based simulation programs are expanded).

Observations

The panel was concerned about the precision of some FAA data, such as certain portions of the General Aviation and Activity Survey and FAA airmen and aircraft registry data in Oklahoma City. If the annual activity survey and the data collection methods of the two registries were improved, the FAA and the industry could produce more accurate and reliable forecasts for piston-powered aircraft and pilots. Perhaps better communication between those responsible for the registries and those who use the information would help. At the very least, it would improve FAA's forecasting ability and data collection process.

Flight Activity

Assumptions

Many factors have caused the decline of general aviation, and many are influencing recovery. Programs and initiatives that reduce the cost of flying or improve the flying experience (such as the new technology to come from the NASA AGATE Program) will have a very positive long-term effect on the industry.

The panel assumed no increases in fuel taxes or aviation system user fees. If there should occur, the activity forecasts would be significantly lower than presented here.

TABLE 1 GROWTH RATE OF PISTON-POWERED AIRCRAFT FLEET

	1995–1996	1996–1997	1995–2000
Average Annual Growth (percent)	-2.7	-1.8	0

Forecasts

Because all the factors that will help increase flight activity will not be in place until 1997-1998, flight activity will continue to decrease in 1996. The industry's initial positive steps toward recovery will only check the decline, not reverse it. Flight activity will decline by approximately 2 percent from 1995 to 1996. It will then stabilize at a 0.9 Percent decline for 1997 (compared to 1996). In the latter half of the 1990s, however, there will be a significant upturn, with activity increasing at an average annual growth rate of 0.5 percent for the six years from 1995 to 2000.

As the factors needed to reverse the decline are falling into place, the panel was cautiously optimistic about the latter half of the decade. The overall 1995-2000 forecast is close to being flat, and the panel did not foresee significant growth.

The following factors were considered in generating the panel's consensus forecast of flight activity.

- Tort reform was passed in 1994.
- Restart of piston airplane production by Cessna has been announced, but the impact will primarily come in 1997 and beyond.
- Other piston airplane manufacturers are also increasing production.
- If programs to promote more student starts are successful, there will be a rise in flight hours for training purposes.
- Recent increases in overall industry optimism will help offset the long-term downward trend.
- Fleet size has not yet stabilized.
- The pilot population and student starts were down in 1994 and 1995. Downward pressure on activity must be overcome.
- Aircraft utilization (hours per aircraft) has declined for 15 years.
- The current piston-powered fleet can provide additional flight hours, even without additional aircraft.
- New technology, increase in fleet size and aircraft production, and student pilot starts will generate additional activity, but the effects will take three to five years to surface.
- Pilots fly more discretionary hours when the economy is good.
- Additional promotion of student starts and aircraft utilization will generate more flight hours.
- To provide easier access to airfield facilities and to increase student starts, it is important to retain and add FBOs.
- If the air traffic control system becomes more difficult to use, complex, or congested, it could adversely affect general aviation flying.

The Piston-Powered Aircraft Fleet

Assumptions

Panelists assumed a "government neutral" basis for fleet forecasts, i.e., they assumed no change from the status quo in government policy regarding taxation, user fees, FAA regulations, or policy on promotion of general aviation. If user fees are imposed, they would have a negative impact on the forecast according to the types of activity upon which they are imposed.

Forecasts

The consensus was that the current downward trend in the size of the fixed-wing piston-powered fleet will continue, but at a decreasing rate, through 1997-1998. After that time, the fleet will increase in size until it returns to the 1995 level by 2000 (Table 1).

The primary factors affecting this forecast were:

- Trends in fleet size over the last few years,
- Magnitudes of different flows of aircraft in and out of the fleet, and
- Factors that tend to increase or decrease the number of aircraft entering or leaving the fleet.

TABLE 2 FACTORS INFLUENCING U.S. DOMESTIC SHIPMENTS AND FLEET ATTRITION

POSITIVE FACTORS	NEGATIVE FACTORS
Product liability legislation, both the 1994 Repose Act and the broader tort reform legislation now pending in Congress	Noise and emission regulations add to operating and maintenance costs and increase retirements
The NASA AGATE program to facilitate development of affordable small aircraft with new technology and capabilities	Potential new user fees on operations and FAA services, such as new aircraft certifications, STCs, pilot certificates, and other negative regulatory actions
New marketing efforts by pilot groups (AOPA Project Pilot and EEA Young Eagles) and manufacturers (GAMA) and NBAA No Plane/No Gain Program	Increased attrition due to increasing age of the fleet and consequent increased maintenance costs
New production increases forecast by current type-certified manufacturers	Increased fuel and operating costs
Affordable long-term financing	Pilot population, which is forecast to decline through 1997 and then increase

The trend in fleet size in recent years has been consistently negative. Over the period 1989-1994 the fixed-wing piston-powered fleet declined from 180,000 to 144,000 aircraft, an average drop of four percent per year. The year-to-year declines ranged from a high of nine percent to a low of zero.

The panel began by assuming four percent per year as the current rate of decline. Estimates of future growth or decline made from this trend line were based on several factors that influence U.S. domestic shipments and attrition in the piston aircraft fleet (Table 2).

There are other factors which are difficult to predict and could have either a positive or negative effect:

- The general economy and personal disposable income in the United States and worldwide,
- Net exports, which are strongly influenced by economic conditions and currency exchange rates in other countries, and
- Certification rules, which may be either more or less in line with industry engineering practices.

Some of the factors listed in Table 2 will have a stronger effect in the short term (the next three years), others in the long term. In general, positive factors, such as AGATE, new product liability rules, and new marketing efforts, will not have a significant effect on fleet size until the end of the five-year forecast period.

U.S. Department of Commerce figures for 1994 indicate 337 net exports of single- and multi-engine airplanes under 4,400 pounds gross weight (120 new and 217 used). This amounted to 0.2 percent of the fleet and about three percent of the fleet attrition in 1994. Because of the relatively small size of net exports and their unpredictability, the panel assumed that net exports would continue at their present rate and have little effect on total fleet size.

Experimental Aircraft

The number of amateur built experimental (ABE) aircraft in the fleet has consistently increased over the last 25 years, from a total of 2,100 registrations in 1970 to 21,505 in 1993. FAA estimates about one half of these aircraft are active.

The increasing popularity of ABE aircraft appears to the result of several factors, chiefly affordability and performance.

Affordability

ABE aircraft are substantially less expensive than any new production aircraft (aircraft produced under a type and production certificate). This is primarily because of

the large amount of labor that the builder provides. The builder generally does not attribute a cost to his or her labor, on the grounds that the time spent in construction would otherwise be spent on less rewarding pursuits. Additional savings can be had if the builder qualifies for a repairman's certificate (based on intimate familiarity with that particular airplane) and obtains authorization to perform annual inspection of aircraft condition.

Performance

Many ABE aircraft have superior speed, maneuverability, fuel economy, or handling characteristics compared to light production aircraft. Some have stall speeds under 30 knots; other cruise at over 300 knots. In many cases these performance benefits are due to the incorporation of advanced features and technology not available on used, or even most new, production airplanes that were designed and produced decades ago. Among these improved performance features are:

- New-technology engines, including high-efficiency, high-output certificated engines and experimental engines with advanced electronic ignition and fuel injection systems;
- Low-drag, natural laminar flow wings and carefully contoured fuselage aerodynamics, NASA-developed spin-resistant airfoils, and unconventional planforms, such as canards and three lifting surfaces; and
- Complex contours and very smooth surfaces held to high tolerances, crafted from advanced composites, such as fiberglass, high-performance oven-cured carbon, or stretch-formed aluminum.

ABE Registrations

In the past two years the growth rate of ABE registrations has increased substantially. This is believed to be caused by three factors:

- A rise in sales of kit aircraft in the 1990s (from 1,180 in 1990 to an estimated 3,800 in 1994) due to improved designs and increased availability of models with acceptable cross-country performance;
- Increased kit completion and faster completion due to a greater number of "fast build" kits and various volunteer and commercial builder-assistance mechanisms, and
- An increase in the proportion of ABE aircraft that are registered as active aircraft due to improved designs that provide greater utility and better flying qualities.

However, ABE aircraft are still a small part of the fleet; and increases in ABE registrations are overwhelmed by decreases in the production aircraft fleet. For example, in 1992-1993 the percentage of ABE registrations rose 15 percent while registration of production airplanes fell 4.5 percent. In number, however, the increase in ABE aircraft was 2,829 units and the decrease in production airplanes was 8,428 — a net decline of 5,599 in new registrations.