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The 182 has been a mainstay of the Cessna single-engine line since its introduction. Many consider it the best all-around general aviation airplane ever made. To illuminate the progress made during the past 50 years, let's look at the

PHOTOGRAPHY BY MIKE FIZER

Then and now

Flying a 182 from Oregon to California

BY STEVEN W. ELLS

In 1958 general aviation was growing as businesses began to see the value of using small airplanes to better serve their clientele. That year Cessna introduced the Skylane, a deluxe version of its popular 182 series. Improvements included a bungee-type rudder trim system, wheel pants, a full instrument panel, and the relocation of the exhaust pipe exit to the right side of the lower cowl. Appearance changes included a three-color overall paint scheme—earlier 182s schemes used paint for trim accents over bare aluminum. Cessna sold 802 of the models that year at a base price of $14,350 for the 182 and $17,095 for the Skylane version.

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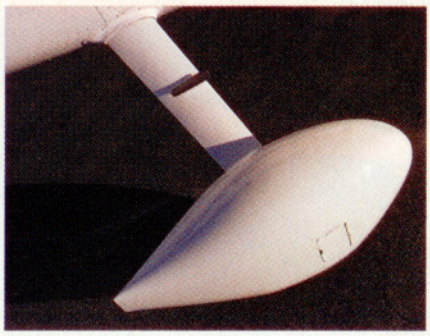
tools that were available for pilots in 1958 for planning and flying a 593-mile cross-country, and compare these with the tools that are available for planning and flying that same flight today. This 593-nm cross-country proceeds from the Medford airport in damp and mountainous southern Oregon to the balmy sun-soaked Avalon Airport on Catalina Island in California. The wonder of aviation is that both of these airplanes—a 1958 model and a new 2008 model—can make this trip in less than four and a half hours if the winds are cooperative.

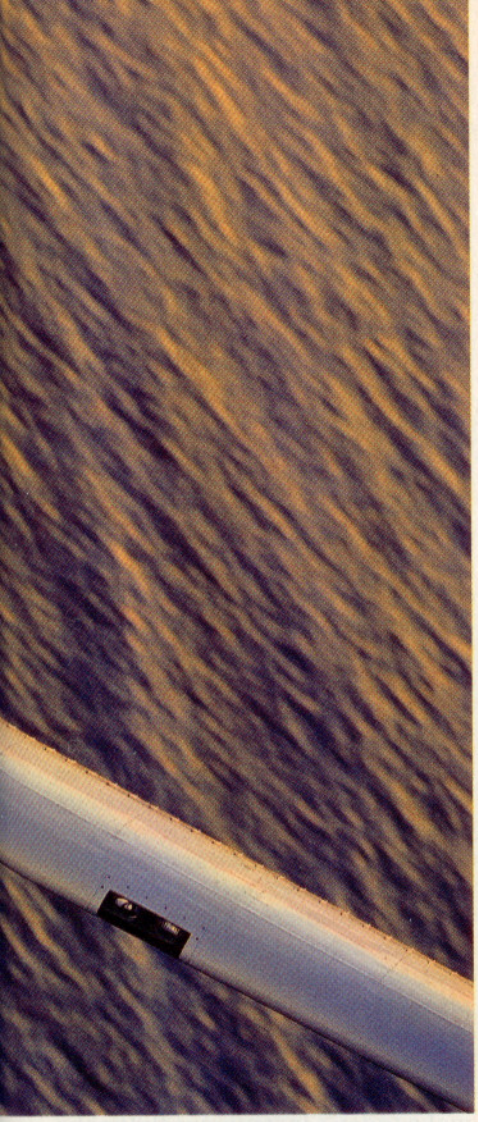


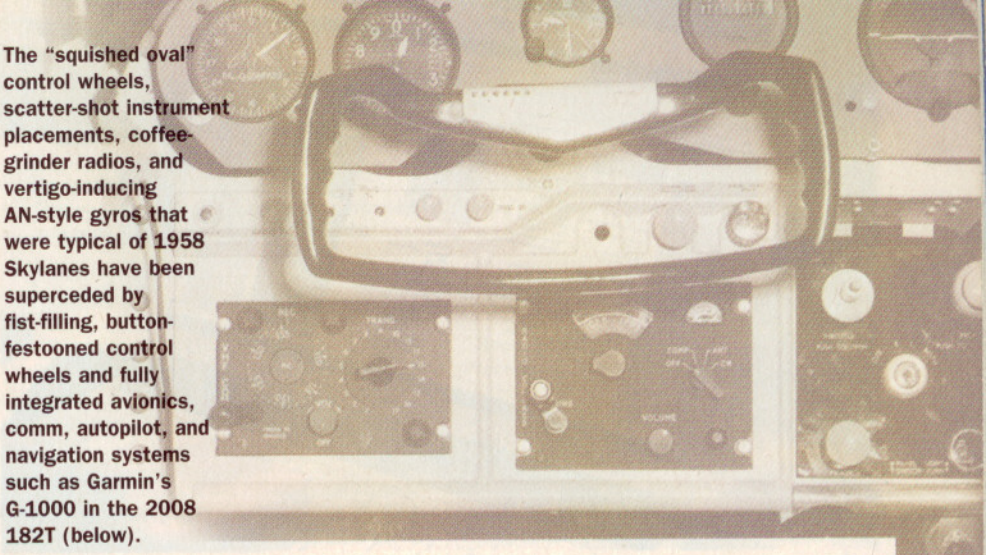
Even after 50 years of improvements and upgrades, such as a decided slant to the vertical fin and rudder, new avionics, and a different engine manufacturer, the Cessna 182 is still instantly recognizable.

Older and heavier

Six-cylinder, magneto-ignition, avgas-fueled engines power both the 1958 Skylane and the 2008 Cessna 182. Continental Motors Company, later Teledyne Continental Motors (TCM), supplied its robust O-470 series engines for the 182 line from 1956 through 1986. Then Cessna suspended production of its single-engine line until the General Aviation Revitalization Act (GARA) was passed in 1994. By the time that Cessna re-introduced the 182 line in 1999, Textron had acquired both Cessna—the airframe manufacturer, and Lycoming—TCM's competing airplane engine manufacturer. Since Cessna restarted its single-engine line, a Textron Lycoming IO-540 series engine has powered the 182. Cessna also offers a turbocharged version of the new 182 and it's selling better than the normally aspirated version. The 2,400 takeoff rpm and the shorter blades of the standard three-blade propeller on the 2008 model 182 result in low propeller blade tip speeds—a major noise-reduction factor. The longer-disc diameter of the two-blade propeller and 2,600 takeoff rpm of the earlier Continental O-470-equipped 182 models.

The 1958 Skylane had a maximum gross takeoff weight of 2,650 pounds and a typical empty weight of 1,720 pounds. Subtracting the weight of a full load of fuel (65 gallons with 55 usable) resulted in a payload of 540 pounds. The new 182T has a MTOW of 3,100 pounds and an average empty weight of 2,032 pounds. The whopping 92-gallon fuel capacity (87 useful) results in a full fuel payload of 516 pounds. The empty weight gain of 300-plus pounds in 50 years seems like quite a leap, but it must be remembered that while early Skylanes were well appointed for their day, what was regarded as an upgrade in 1958 can only be viewed as minimal-





The "squished oval" control wheels, scatter-shot instrument placements, coffee-grinder radios, and vertigo-inducing AN-style gyros that were typical of 1958 Skylanes have been superceded by fist-filling, button-festooned control wheels and fully integrated avionics, comm, autopilot, and navigation systems such as Garmin's G-1000 in the 2008 182T (below).

ist today. The Volkswagen Beetle—a minimalist design if there ever was one—was introduced to North American motorists in the late 1950s. One need only compare the 1950s-era Beetle to the most economical car of today to appreciate the comfort gains made during the past 50 years.

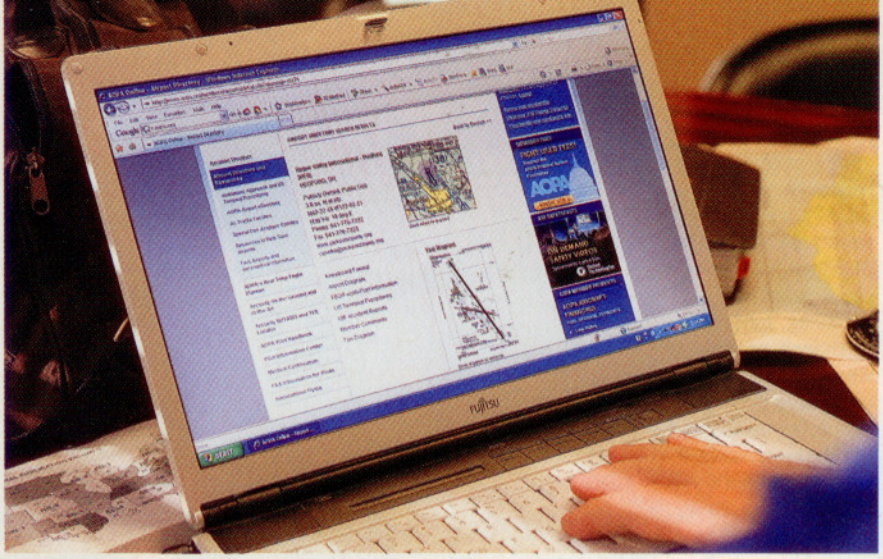
As the Cessna 182 line matured, Cessna incorporated major airframe changes that increased interior cabin space, swept the tail 35 degrees, replaced the bag-like fuel bladders with a 92-gallon capacity wet wing, and upgraded from flat landing gear legs to tubular gear legs. These changes, and the installation of more cabin comforts, resulted in a steady increase in empty weights, causing a slow decline in service ceiling numbers. The service ceiling of the 1958 Skylane is 19,800 feet. By 1985, when the 182 was powered by a high-compression O-470U engine, the service ceiling had fallen to 14,900 feet. Textron Lycoming has trimmed weight off the IO-540 engines, added roller camshaft followers, and re-worked the crankshaft counterweight system to produce a smooth-running engine. Because of these upgrades, and the larger displacement of the 540 engine over the 470 series engine, the lagging performance evident in the last of the TCM-powered 182s is no longer an issue. Performance-wise the 1958 and 2008 airplanes are remarkably similar. The 1958 Skylane had a top speed of 165 mph (143 knots). The 2008 model 182T is advertised as having a top speed of 150 knots.

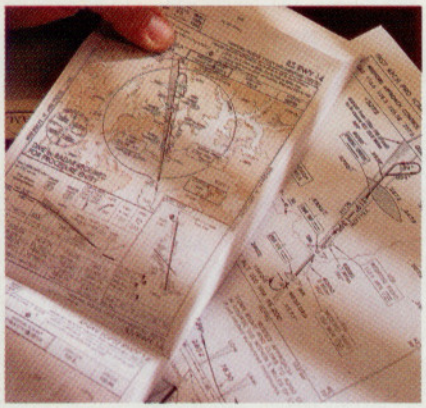
Safety features such as three-point shoulder harnesses buttressed by inflatable airbags from AmSafe for each occupant in the 2008 182T supplanted the simple lap belt in the 1958 Skylane.

There's no comparison between the cabin appointments, safety features, and cabin comfort of the 1958 Skylane and a new 182. The 2008 Cessna 182 is a very comfortable and safe airplane with luxurious interior appointments such as leather seats, sound-dampening carpets, and safety features such as 26-G impact seats and inertia reel and airbag-equipped seat belts. A typical equipment list includes a dual axis autopilot, a factory installed oxygen system, back-up alternator and battery, and a sophisticated integrated avionics system.

Flight planning

Today's pilot thrives in a world of battery powered laptop computers and almost universal access to the Internet. This access coupled with sophisticated flight planning software provides almost everything a pilot could desire





Internet-based tools such as the AOPA Real-Time Flight Planner have replaced the pencil, plotter, and E-6B calculator for flight planning. In spite of the availability of electronic charts, paper approach plates and airway charts are still the choice of many modern-day pilots.

in the way of weather information, flight planning tools, and flight plan filing convenience.

AOPA's Real Time Flight Planner (RTFP) is a great example of the tools available to today's pilots. Flight planning in 1958days consisted of two options. Pilots could obtain a briefing and file a flight plan over the telephone, or they could walk into one of the Aviation Communication Stations (ACS) located at many airports to study weather prognosis charts and get a face-to-face briefing before filing a flight plan with one of the attendants. In 1960 these stations were renamed Flight Service Stations (FSS).

The most commonly used tools for flight planning chores in the late 1950s were plotters, which were used to measure distances and determine headings with reference to printed charts, and mechanical calculators, most common of which is the E-6B style. Experienced pilots often carried a pocket-sized circular version of the E-6B that they called "whiz wheels." These calculators enabled pilots to derive true airspeeds, density altitudes, leg time, fuel burn, as well as convert statute mile to nautical miles, Celsius to Fahrenheit, and feet to meters. No batteries were required but it took time to work through a set of preflight calculations and fill out a navigation log.

Today, pilots need only to enter the starting and ending airport identifiers, the cruising altitude, and if the owner's aircraft profile is up to date, the flight planner instantly produces a complete flight plan with preferred routing, a navigation log with identifiers, minimum en route altitudes, time between stations calculations, a colored route chart, and FAA-format flight plan. Another click of a button files the plan.

The ease of route planning doesn't end at the computer. In addition to preferred routings, standard instrument departures (SID)s and standard terminal arrivals (STAR) are on the databases of many GPS navigators, easing the transitions into and out of en route preferred routings. The airways system has grown so organized that where yesterday's pilots joked that IFR meant, "I follow roads, or railroads," today's pilots say that IFR means, "I fly routings."

Beneficial changes

In response to the Grand Canyon crash of 1956, huge changes in the national airway system were implemented at a cost of more than $450 million. One of the most beneficial changes for GA pilots was the replacement of the aging, very high frequency omnidirectional range (VOR) facilities from maintenance-intensive tube-type mechanically driven equipment to more dependable solid-state equipment.

Instrument landing systems (ILS) that provided precision vertical and lateral guidance to airports were much easier to use and much safer than the Adcock low frequency ranges they replaced. As late as 1956, VFR charts were still depicting Adcock range installations. In spite of the rush to upgrade the national airway system, the changes that make today's instrument flying the safest in the world—nationwide radar coverage and satellite-based navigation systems—were far in the future.

In 1958 approach and departure radar control systems were available at major airport locations but en route radar coverage was still spotty. GA pilots who flew instruments in the late 1950s were required to make position reports on VHF radios as they progressed along their flight plan. Reports were required at compulsory reporting points—such as over VORs—and followed a pattern in which the pilot reported his altitude, time over the station, the name of the station he was over, the name of, and the time he would arrive over the next compulsory reporting point in the flight plan, and the name of the reporting point after the next one.

Few GA pilots flew instruments in the late 1950s. Hal Shevers, in addition to being the founder of Sporty's Pilot Shop, directed instrument refresher courses for AOPA in the early days. "There weren't many instrument ratings

in the late 1950s," remembers Shevers. "They became more common in the middle '60s."

The navigation and communication radios that were available in the 1950s were capable enough, but did require a lot of attention to tune frequencies. Narco's Mk II Omnigator, weighing 18 pounds, had 27 VHF transmit frequencies that radiated out on five watts of power, a marker beacon receiver, a VOR receiver with a course-deviation and to-from indictors, and a crystal-calibrated VHF communications receiver. The VHF receiver had to be calibrated before use.

A five-position knob had to be set to "CAL" for calibrate, a rotating knob was then turned until the desired reception frequency was aligned with a pointer—then the knob was moved slowly to tune the receiver. A steady whistle heard in the headphones indicated an on-frequency setting. After this "whistle-stop" tuning was complete the five-position knob was moved to the COM position.

There was no distance measuring equipment in GA airplanes in 1958, so pilots used dead reckoning and time-to-station rules of thumb such as, "For every 10 seconds it takes to make a 10-degree change between VOR radials off the same VOR, you are one minute from the station." DME, en route radar coverage, and the widespread acceptance of GPS have made position reports a historical footnote.

By comparison, positional awareness over the ground on electronic versions of VFR and IFR charts, airport taxi diagrams, as well as traffic information or advisory services (TIS or TAS), and terrain information via a terrain awareness warning system (TAWS) can all be displayed on the full-color multifunction display screen that's permanently mounted on the 2008 Cessna 182 instrument panel.

The Garmin G1000 integrated avionics system also consists of a second 12-inch screen situated in front of the pilot. This screen, called the primary flight display (PFD), shows the pilot all the flight instruments that are required for safe flying under the most extreme conditions, as well as wind direction and velocity, true airspeed, distance and time to next waypoint and destination, and a storehouse of other flight data. This system, which is standard equipment in the 2008 Cessna 182, also includes one of the best light aircraft autopilot systems ever built. These avionics have changed the way modern pilots fly. It's

SPECSHEET

1958 182A Skylane

Base price: $16,850
Current used price; good paint, interior, avionics, mid-time engine: $46,000

Specifications

Powerplant	Continental O-470L 230-hp carbureted
Recommended TBO	1,500 hr
Propeller	Hartzell two-Blade 82-inch diameter constant speed
Length	25 ft 2 in
Height	8 ft 6 in
Wingspan	36 ft
Wing area	175 sq ft
Wing loading	15.1 lb/sq ft
Power loading	11.5 lb/hp
Seats	4
Cabin length	7 ft 7 in
Cabin width	3 ft
Cabin height	4 ft
Empty weight	1,621 lb
Empty weight, as tested	1,774 lb
Max gross weight	2,650 lb
Useful load	1,029 lb
Useful load, as tested	876 lb
Payload w/full fuel	639 lb
Payload w/full fuel, as tested	486 lb
Max takeoff weight	2,650 lb
Fuel capacity, std	65 gal (55 gal usable) 390 lb (330 lb usable)
Oil capacity	12 qt
Baggage capacity	120 lb
Performance	
Takeoff distance, ground roll	555 ft
Takeoff distance over 50-ft obstacle	1,080 ft
Max demonstrated crosswind component	15 kt
Rate of climb, sea level	1,030 fpm
Max level speed, sea level	144 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	
@ 75% power, best economy, 5,000 ft	139 kt/3.1 hr (84 pph/14 gph)
@ 65% power, best economy, 10,000 ft	136 kt/3.9 hr (71.4 pph/11.9 gph)
@ 55% power, best economy, 15,000 ft	130 kt/4.5 hr (62.4 pph/10.4 gph)
Service ceiling	19,800 ft
Landing distance over 50-ft obstacle	1,310 ft
Landing distance, ground roll	560 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	58 KIAS
V_Y (best rate of climb)	74 KIAS
V_A (design maneuvering)	106 KIAS
V_{FE} (max flap extended)	87 KIAS
V_{NO} (max structural cruising)	139 KIAS
V_{NE} (never exceed)	160 KIAS
V_R (rotation)	55 KIAS
V_{S1} (stall, clean)	53 KIAS
V_{SO} (stall, in landing configuration)	49 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

2007 Cessna 182T

Base price: $367,000
Price as tested: $387,640

Specifications

Powerplant	Textron Lycoming 230-hp IO-540-AB1A5
Recommended TBO	2,000 hr
Propeller	McCauley three-Blade 79-inch diameter constant speed
Length	29 ft
Height	9 ft 4 in
Wingspan	36 ft
Wing area	174 sq ft
Wing loading	17.8 lb/sq ft
Power loading	13.5 lb/hp
Seats	4
Cabin length	8 ft 9 in
Cabin width	3 ft
Cabin height	4 ft 1/2 in
Empty weight	1,997 lb
Empty weight, as tested	2,114 lb
Max gross weight	3,100 lb
Useful load	1,103 lb
Useful load, as tested	995 lb
Payload w/full fuel	551 lb
Payload w/full fuel, as tested	443 lb
Max takeoff weight	3,110 lb
Max landing weight	2,950 lb
Fuel capacity, std	92 gal (87 gal usable) 552 lb (522 lb usable)
Oil capacity	9 qt
Baggage capacity	200 lb
Performance	
Takeoff distance, ground roll	795 ft
Takeoff distance over 50-ft obstacle	1,514 ft
Max demonstrated crosswind component	15 kt
Rate of climb, sea level	924 fpm
Max level speed, sea level	150 KCAS
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	
@ 80% power, best economy, 7,000 ft	145 kt/4.7 hr 15.9 gph/95.4 pph
@ 55% power, best economy, 10,000 ft	122 kt/7.6 hr 10 gph/60 pph
Service ceiling	18,100 ft
Landing distance over 50-ft obstacle	1,350 ft
Landing distance, ground roll	590 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	64 KIAS
V_Y (best rate of climb)	84 KIAS
V_A (design maneuvering)	110 KIAS
V_{FE} (max flap extended)	100 KIAS
V_{NO} (max structural cruising)	140 KIAS
V_{NE} (never exceed)	175 KIAS
V_R (rotation)	56 KIAS
V_{S1} (stall, clean)	54 KCAS
V_{SO} (stall, in landing configuration)	49 KCAS

For more information, contact Cessna Aircraft Company, One Cessna Blvd, Wichita, Kansas 67215; 800-4CESSNA; www.cessna.com.

50 years and 4,733 hours later

A 1958 Cessna Skylane, N4054D, had the honor of being the first airplane to grace a cover of *The AOPA Pilot* magazine. N4054D has upheld the Cessna 182's reputation as one of the best airplanes ever built by filling roles as a star in Cessna company advertising and in search-and-rescue missions in and around Idaho's mountains. It has been sold seven times, has hangared in Missouri, Illinois, North Carolina, Oregon, and Idaho, and is still going strong.

Cessna flew 54D for nearly 300 hours in research and development projects, and featured her in advertising pamphlets before a flying club in Missouri purchased her for $11,417 in 1959. The club later upgraded the avionics with two Narco Mk II Omnigators and a Tactair autopilot. During the late 1960s 54D changed hands three times. In November 1977 the FAA cited the owner for failing to sign and submit an updated, "Aircraft Registration Eligibility, Identification, and Activity Report," and revoked the certificate of registration. The airplane was re-registered and FAA records show a January 1979 sale to an individual in North Carolina. Less than a year later 54D moved west after being sold to a new owner in Hines, Oregon. The new owner installed a new "T" configuration instrument panel, an alternator, and a stack of new radios. 54D flew the western skies for its new owner for eight years before being sold in May 1987 to its present owner, who took it home to Lewiston, Idaho. The current owner, Tom Rogers, installed many modifications such as a STOL kit, an extended baggage compartment, and an FM transceiver to assist in search-and-rescue missions for the Nez Perce County Air Posse and the Civil Air Patrol. In January 2008 there were 4,733 hours on the airframe. The Cessna has never had accident or incident recorded against it. —*SWE*

now possible to fly hundreds of miles without touching the control yoke and never vary from the desired track or cruise altitude.

The flight

Neither the 1958 Skylane nor the 2008 Skylane had any problem climbing out of Rogue River Airport in Medford to the 11,800-foot minimum en route altitude (MEA) required to head south over the Siskiyou Mountain Range, which rises up to mark the southern boundary of Oregon.

To present a fair comparison, let's have both pilots cruise at 10,000 feet msl as they fly south over VORs at Red Bluff, Sacramento, Paso Robles, San Marcus, and on across the 54-nm overwater leg from the Ventura VOR to the final VOR at Santa Catalina Island. This routing covers 593 nautical miles. Figures from the 1958 owner's manual show a true airspeed of 135 knots while burning 11.9 gallons per hour. Setting aside 10 gallons for fuel reserves from the 55-gallon usable fuel results in a full-fuel range at this power setting of three hours and 48 minutes, or 510 nautical miles.

The pilot of the 1958 airplane elected to land at Sacramento for lunch and fuel after being aloft for an hour and 40 minutes.

The 2008 182 pilot's operating handbook (POH) revealed that pilots could select power settings as high as 85 percent at 10,000 feet. For a more even comparison, let's compare the new 182 when it's being flown at the same power setting (71 percent) as the 1958 airplane. In this case it would fly at 141 knots TAS and burn 12.9 gallons per hour. Setting aside 12 gallons for reserves yields a full fuel range of 819 nautical miles after five hours and 50 minutes aloft.

In the last 50 years the world has changed, the flying environment has changed, and even the smallest steps in every flight have changed. Paralleling all the changes are the improvements Cessna has incorporated into the 182. Based on this winning formula, there are pretty good odds that an *AOPA Pilot* editor may well sit down to write an article about the new 2058 182 in 50 more years. AOPA

E-mail the author at steve.ells@aopa.org.