CESSNA 337 SKYMASTER

JUST SAY THREE-THREE-SEVEN

Thirty years later, still trying to get some respect

BY MARC E. COOK

Yes, this airplane has been called by just about every derogatory permutation of its given name—Skymasher, Skytrasher, and Mixmaster, for example—and a few others making fun of its centerline-thrust configuration—push-me/pull-you and suck-and-blow. The hardy soul arriving in one of Cessna's great multiengine experiments garners sneers from drivers of "real" twins—you know, those airplanes with an engine on each wing and a minimum-controllable number etched on the airspeed indicator. The kind with the occasional foray into uncontrollability when its "real" pilot reacts improperly to an engine-out emergency.

That's not to say the Skymaster has a better safety record than conventional twins. Surprisingly, it does not. We had the AOPA Air Safety Foundation run a report on the 337 series, and the statistics show that, as Cessna intended, the Skymaster shows its pilot no untoward qualities with a powerplant shut down. You won't find its name under the heading "stall/spin during

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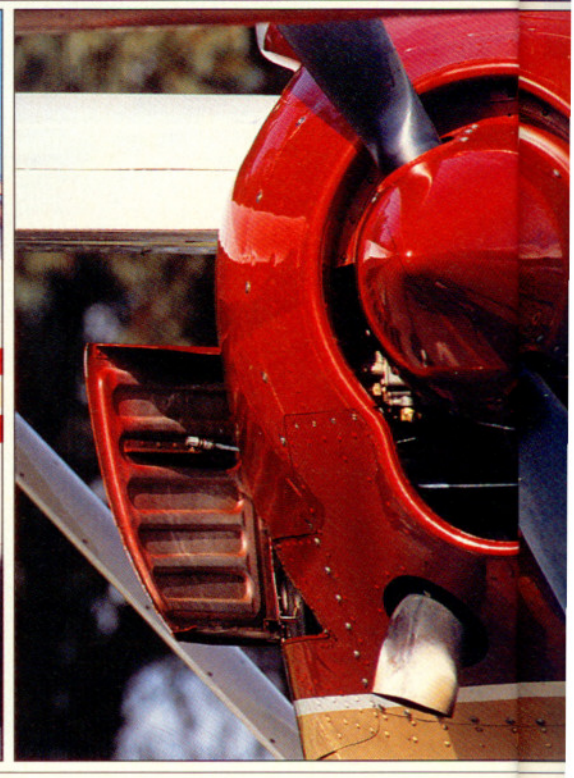
maneuvering." But the 337 has racked up quite a few accidents stemming from fuel exhaustion or mismanagement, and from tangling with weather beyond the capabilities of the airplane or pilot.

It seems freeing the pilot from asymmetric-thrust worries has merely shifted the accident causes elsewhere. Perhaps because the Skymaster is less susceptible to the conventional yaw-spin-boom twin accident, pilots do not take the 337 as seriously as other twins. In a conventional multiengine airplane, pilots are trained to be spring-loaded during certain segments of flight—to be ready to abort the takeoff or secure the offending engine without delay, lest the airplane wander off into the weeds. Skymaster pilots are not concerned with such ditch-darting but must be aware that the airplane will not climb out unless properly configured. Good multiengine operating practice remains a necessary ingredient in keeping the 337 in one piece.

So where do we find Cessna's new-think multi 30 years after its debut? It has been described as one of the best entry-level twins, with a robust airframe and fine low-speed and engine-out manners. The airplane's systems and engines—six-cylinder Continental 360s—call for careful shopping, however, to keep from buying a true hangar queen. And the used prices reflect that caution: The 337s are generally less expensive than conventional twins of the same age. For example, a 210-horsepower, 1967 Skymaster runs $29,000, according to the *Aircraft Bluebook–Price Digest*, compared to $50,500 for a same-vintage Beech Travel Air (which sports 180-hp engines) and $44,000 for a Piper Twin Comanche. Turbocharged and pressurized 337s hold their value better but still are less expensive to purchase than other conventional twins of similar power.

Cessna introduced the original Skymaster with fixed landing gear and normally aspirated 210-hp Continentals. That model, the 336 Skymaster, came to market in late 1963 but was superseded for the 1965 model year by the 337, sporting retractable gear borrowed from the Centurion. (The Skymaster would return the favor later, offering its pressurization system to the new-for-1978 P210.)

Few changes came to the basic air-

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Dick Adam's P337 on initial approach to Oceano Airport, near his home base of Santa Maria, California.

frame between introduction and cessation of production in 1980, save, of course, for the beefing up to accommodate pressurization for 1973. Model history shows more changes in the systems and powerplants than anything else. Starting life with the 210-hp Continental IO-360-A, the 337 would in non-turbo form keep the same basic powerplants to the end, with the major changes dedicated to improving the bottom-end components and solving case-cracking problems. The 337's engines produce their maximum power at a rather lofty 2,800 rpm, which gives off enough of a racket at takeoff to send noise-meter needles a-wiggling. Skymaster owners need to be especially concerned with keeping the airport neighbors happy.

From 1965 onward, evolutionary alterations came to the non-turbo 337. Maximum gross weight started at 4,200 pounds and grew incrementally to 4,630 in 1980. Big news arrived in the form of the turbocharged version in 1967. Fully automatic wastegates and Garrett turbos were grafted onto the Continentals, which became TSIO-360s, still delivering 210 hp. The straight turbo option was dropped at the end of the 1971 run in preparation for the 1973 debut of the pressurized 337.

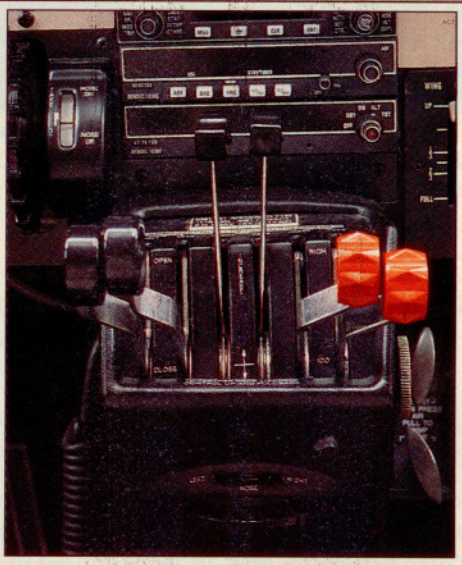
The 337 has been described as one of the best entry-level twins, with a robust airframe and fine manners.

With a maximum pressure differential of 3.35, giving a 10,000-foot cabin at 20,000 feet, the P337—which was piggybacked onto the turbo 337's type certificate and so also officially dubbed the T337—appeared as a true economy P-twin. With pressurization came more powerful, 225-hp Continentals. The turbo, nonpressurized Skymaster did not reappear until 1978 and, for construction reasons, had the small windows of the P model. All told, 1,867 of the 337 and T337 models were built, along with 334 pressurized versions. Cessna sold a total of 510 M337s (known as O-2As and O-2Bs) to the military—which gained the reputation of being almost literally bulletproof. The Reims plant in France built a total of 109 of the various 337s under license.

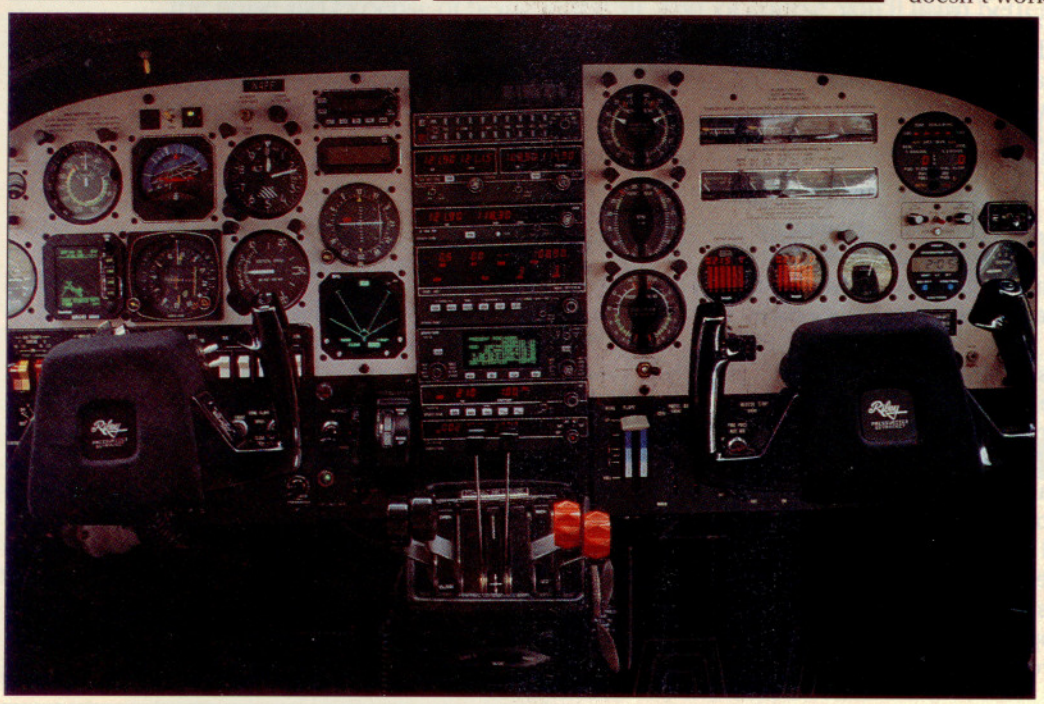
As promised by the Cessna design

staff way back when, the 337's manners make it the perfect step-up twin for a pilot accustomed to a Skylane or a Centurion. Handling is standard-issue Cessna, heavy in pitch but unflappable and hugely stable in airspeed once trimmed. Aileron response is quicker than the 210 and lighter, but you'll never have an incurable urge to reenact your favorite Blue Angels routine. (Yes, there have been air-show acts with 337s, but you know the guy flying was *working hard.*) Overall, the 337 follows the Cessna handling hallmarks and carries them to a new level, with the Skymaster being just a bit heavier and faster and more demanding than the big singles below it in the line.

The Skymaster can chug along with one feathered without having a huge rudder cocked into the breeze.



Perhaps the greatest advance brought by the Skymaster was docile engine-out handling. Lose a powerplant on takeoff, and the 337 will not try to head for the weeds. At maximum weight, however, the Skymaster is truly lethargic unless the dead engine's propeller is feathered. Pilots transitioning to the 337 are taught to monitor the exhaust gas temperature gauges on the takeoff roll to make sure both engines are producing power. If an engine dies in cruise, the usual dead-foot, dead-engine chant doesn't work; you must look carefully at the instruments and be sure to verify your choice before feathering a prop.



Single-engine climb is nothing to crow about on any of the models, falling in the 200- to 400-feet-per-minute range, depending upon installed power and maximum gross weight. These numbers are in line with those of other light twins.

Single-engine service ceiling is very good, better than conventional twins. A nonturbo 1967 model has a single-engine ceiling of 7,500 feet with the rear engine out, and 9,500

feet with the front engine shut down. A 1971 turbo 337 will claw its way up to at least 14,400 feet (17,200 on just the rear engine), while a 1980 P337 can climb to 18,700 feet on just one engine. For most naturally aspirated light twins, the single-engine ceiling is anywhere from 4,000 to 6,000 feet. The difference is, naturally, that the Skymaster can chug along with one feathered without having a huge rudder cocked into the breeze or any of the other aerodynamic compromises inherent in a conventional twin running with an engine shut down.

The big Cessna can be brought down final approach at surprisingly low velocities, too. For the heaviest airplanes, Cessna recommends a normal approach of 80 to 90 knots, with short-field procedures calling for just 78 knots over the fence. The lighter, earlier models can shave about 4 knots off that figure.

Count on optimum cruise speeds for the normally aspirated models in the 165-knot range at 5,000 feet, burning 23 gallons per hour total. That's a bit slower and a bit thirstier than conventional twins packing a pair of 180-hp engines. Cruise speeds of the T337 show a best of 190 knots at 25,000 feet, burning 22 gph total, while a 1980 P337 (225 hp each engine) tops out at 204 knots, using 26.6 gph at 20,000 feet. The later T337 and P337 models are only certified to 20,000 feet, whereas the earlier turbo models have no such limitation, a quirk of changes in the certification standards that took place in the 1970s.

While the 337 is no speedster, at least the cabin has the stretch-out room to make the journey comfortable. Cessna called the 337 a six-place airplane (and the P337 a five-placer), but to carry a half dozen people means having them hold their luggage on their laps because there's no room left for baggage. (Unless, of course, you find a 337 with the optional cargo pod, which will give you room for

1979 Cessna P337H

Average new cost, equipped: $171,205

Current market value: $96,000

Specifications

Powerplants	Two Continental TSIO-360-CB, 225 hp at 2,800 rpm
Recommended TBO	1,400 hr
Propeller	McCauley constant-speed, full-feathering, 76-in diameter
Length	29 ft 10 in
Height	9 ft 2 in
Wingspan	38 ft 2 in
Wing area	202.5 sq ft
Wing loading	23.2 lb/sq ft
Power loading	10.4 lb/hp
Seats	5
Cabin length	10 ft 7 in
Cabin width	3 ft 6 in
Cabin height	4 ft 2 in
Empty weight	3,218 lb
Maximum gross weight	4,700 lb
Useful load	1,482 lb
Payload w/full fuel	594 lb
Fuel capacity, std	151 gal (148 gal usable) 906 lb (888 lb usable)
Oil capacity, ea engine	8 qt

Performance

Takeoff distance, ground roll	945 ft
Takeoff distance over 50-ft obstacle	1,500 ft
Max demonstrated crosswind component	12 kt
Rate of climb, sea level, two engines	1,170 fpm
Rate of climb, 10,000 feet, two engines	1,010 fpm
Rate of climb, sea level, one engine	375 fpm
Rate of climb, 10,000 feet, one engine	245 fpm
Max level speed, 20,000 feet	212 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption, total)	
@ 75% power, best economy 10,000 ft	186 kt/4.9 hr (26.3 gph/158 pph)
@ 75% power, best economy 20,000 ft	205 kt/4.8 hr (26.5 gph/159 pph)
@ 65% power, best economy 10,000 ft	177 kt/5.6 hr (23.3 gph/140 pph)
@ 65% power, best economy 20,000 ft	192 kt/5.6 hr (23.3 gph/140 pph)
Service ceiling	20,000 ft
Landing distance over 50-ft obstacle	1,675 ft
Landing distance, ground roll	795 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	69 KIAS
V_Y (best rate of climb)	95 KIAS
V_{YSE} (best single-engine rate of climb)	89 KIAS
V_A (design maneuvering)	139 KIAS
V_{FE} (max flap extended, one-third flaps)	165 KIAS
V_{FE} (max flap extended, full)	110 KIAS
V_{NO} (max structural cruising)	169 KIAS
V_{NE} (never exceed)	205 KIAS
V_{S1} (stall, clean)	65 KIAS
V_{SO} (stall, in landing configuration)	60 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.

three "two-suiters," according to Cessna.) Really, the 337 is a marvelously comfortable four-person airplane with room and payload for baggage.

From the cabin, two items stand out as examples of the best and worst traits of the 337. Excellent visibility from the front row of seats is the high point; because the wing is well aft and the windows are large, the pilot and copilot have an almost unobstructed view of the outside. The low point is noise. Engines attached to each end of the cabin create quite a racket at high power settings. Reducing engine speed helps tremendously, but you'll still want to have comfortable, quiet headsets aboard.

Useful load on the various models runs from 1,500 pounds up to about 1,700 pounds on the early airplanes. It's only when you load the later, large-tank airplanes full of fuel (888 pounds worth), that you really have to watch the weight and balance. The center-of-gravity range is generous.

Most Skymasters have pretty good range, too, with long-range tanks available from the start. Airplanes through the 1972 models had 92 gallons usable standard, with 128 gallons optional. In the long-range airplanes, fuel was carried in two interconnected main tanks in each wing, plus an auxiliary tank between the cabin and booms; the pilot has to switch between the main and auxiliary tanks. Starting in 1973, the auxiliary tanks were plumbed in with the mains, eliminating the need to switch tanks except to turn the fuel off or to crossfeed. Standard tanks for the 1973 and 1974 models remained 92 gallons usable, with a long-range option totaling 118 gallons; in 1975, the extended-range tankage was increased to 148 gallons usable in four interconnected wing tanks a side. Finally, starting in 1976, the standard tanks were reduced in capacity to 88 gallons usable, while the long-range option stayed at 148 gallons.

The fuel system merits discussion because it seems to be the source of the 337's most common accidents. According to a study compiled by the AOPA Air Safety Foundation, during the period of 1982 to 1989, fuel starvation or exhaustion accounted for the largest single category, with 15 accidents. These ran the gamut from fail-

MAJOR ACCIDENT CAUSES

According to the AOPA Air Safety Foundation's *General Aviation Accident Analysis Book—For the Years 1982–1989*, the Cessna 337 series had a total of 79 accidents, resulting in 63 major injuries and 33 aircraft destroyed; 56 of those accidents were determined to be pilot-related. Most accidents occurred in the cruise phase of flight, 39.3 percent; of those, 21.4 percent were caused by fuel exhaustion (an additional 3.6 percent from fuel mismanagement), and 12.5 percent were weather related. Landing-phase accidents accounted for 21.4 percent, with 7.1 percent attributed to failure of the pilot to lower the landing gear, 5.4 percent were hard landings, and 3.6 percent were overshoots. A total of 8.9 percent of the accidents were related to approaches gone awry, 3.6 percent in VFR conditions and 5.4 percent in IFR conditions. Mechanical mayhem was the primary cause in 10 accidents; two 337s came to grief after engine failures, five from landing gear or brake problems, and three from fuel system maladies. The accident cause for an additional 13 is unknown. □

ure to change tanks to simply running out of fuel before reaching the destination. Two additional accidents stemmed from fuel system malfunctions, one a fuel leak and the other a jammed selector valve. On paper, the 337's fuel system is not particularly complex and far simpler than, say, a 310's or a 340's.

And while the 337's fuel system has at least been reliable, such praise cannot be lavished upon its engines. Early on, the IO-360s gained a reputation as hot-running, crack-prone powerplants. Before the B-suffix engines were introduced in the late 1970s, there were numerous reports of broken crankshafts and connecting rods. Even today, service difficulty reports point to cracking cases, sheared crankshafts, head-to-barrel separations, and general engine mayhem. The normally aspirated IO-360s have a published time between overhaul of 1,500 hours, but don't bet big money on it. Most operators report needing top-end work enroute to TBO.

Maintenance matters get worse with the turbocharged or pressurized airplanes. The early, 210-hp turbo airplanes do better than the later 225-hp

The 337's cabin has stretch-out room and good visibility; noise and lack of baggage space are low points.

models (which get that power from 37 inches manifold pressure and 2,800 rpm), but neither powerplant will win any longevity awards. Continental lists the TSIO-360s' TBO as 1,400 hours, but once again, savvy owners will not bank on getting to that number without at least some interim top-end ministrations.

Another systems headache, according to owners and service difficulty reports, is the gear system. All 337s have full gear doors, and the hydraulic system has been the bane of many a mechanic. We're told, however, by the Cessna Pilots Association, which maintains the P337 photographed for this report, that with proper maintenance, the 337 gear can be reliable and not terribly expensive to maintain. The trick is to get the system debugged first; this is a prime shopping point for any 337 purchaser. Don't even consider putting money down on a Skymaster unless you've had the gear and engines gone through thoroughly, and even then, be sure to budget liberally for the first year's ownership. We are told, also, that the later model years are better as Cessna replaced the engine-driven hydraulic pump with an electric power pack.

The bottom line seems to be that the basic 337 airframe is the strong, simple type, but the airplane's engines and systems can really hog out a checking account. Joining the Cessna Pilots Association or a 337 club can give you the knowledge to make maintenance matters more reasonable.

Still, maintenance problems don't seem to matter much to those individuals who have spent the time and effort to debug their airplanes. For them, the 337 represents a reasonably economical, safe multiengine airplane. They truly seem to love the Skymaster—and will shoot daggers at those nonbelievers who dare call it anything other than three-three-seven. □