New model designation of the T-37 from "A" to "B" becomes effective this month, and signals new navigation equipment and new 1,025 pound-thrust Continental J69-T-25 engines

Is This The Family Jet?

To find out if the popular trainer, Cessna's T-37, would make a good ship for AOPA'ers, a Board member tries it—and gives his views

by An AOPA Trustee

• *This fall, business aviation moved a step closer to the day of the all-round utility jet, when Cessna announced production of the new four-place Model 407. For a report on this aircraft, designed for the military, see page 59.*

It can make a good 400 m.p.h. It has two engines and flies well on one without need for rudder trim. It carries two persons side-by-side comfortably. Considering its high performance, it is easy to fly, and, thanks to the tricycle gear, it is easy to land. It can take off and land at less than 90 knots, and its standard climb, at least to the 14,000-foot oxygen limit, averages 2,000 f.p.m.

Sound impressive? There's more. The aircraft flies solidly, smoothly and steadily. The cockpit noise level is low. The pilot's view is good in most directions and adequate in all. There is plenty of leg room and head room. It is not hard to enter or leave. It burns cheaper, less dangerous fuel than gasoline.

With such a data sheet, why then isn't this the dream ship for AOPA-'ers?

Well, the price of this plane, Cessna's T-37, is a little high — say $250,000 might be the bargain price for civilians (each costs the Air Force about $280,000). But assuming one can be gotten for a song at surplus, *where* can it be used, *how* and *when* can it be used, and *who* can use it?

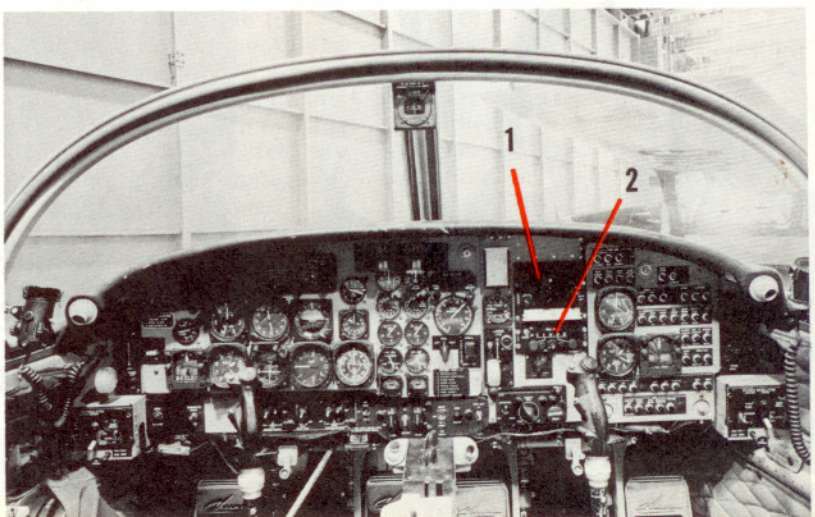
Normally, 2,500 feet of smooth-surfaced runway will be eaten up before this jet breaks ground. As is true of all jets, the Cessna twin doesn't get cooking for efficient climb until the indication is pretty high —in this case, *circa* 150 knots (173 m.p.h.). A lot of scenery is viewed intimately before this occurs, and certainly water towers, 120-foot Norfolk pines and radio towers should be absent for the next mile. If one engine fails, you may sink unless 110 knots (127 m.p.h.) or better is indicated, and you would have to add many thousand feet to the 2,500-foot runway to provide space to land and stop.

For family and business use this aircraft should normally operate on fields with runways well over a mile long. Remembering that this must be stretched on warm days or at altitude, you have one measure of

(Continued on page 59)

Cockpit view shows open canopy hinge and ejection seat
Photo by Ted B. Kiper, Tallahassee, Fla.

Cockpit is designed with complete dual controls; UHF communications equipment is at upper center (1); Collins VOR-101 (2) contains VHF receiver, VOR/LOC instrumentation unit and amplifier



Cessna has put a $202,500 price tag on this new utility jet designed for military

Cessna Ready With Utility Jet

If the Cessna twin, T-37, flown by an AOPA trustee (see page 30), runs short on room for briefcase and sample case, not so Cessna's newest utility jet. Just announced is a sleek, four-place utility jet aircraft, designed for the military and given model number 407. The aircraft looks like more good news for the increasing numbers of businessmen who "can hardly wait" for the business jet.

Cessna president Dwane L. Wallace says: "The Model 407 could foreseeably be the forerunner of a modern commercial fleet in the next five to ten years."

Here's what the military will get: an aircraft with gross weight of 9,300 pounds, cruising speeds of up to 465 m.p.h. and a range of 1,587 statute miles. The two Continental 356-9 jet engines produce 1,400 pounds thrust each and drive the 407 at a maximum level flight speed of 487 m.p.h.

Cessna says the $20,000 356-9 jet engine is the newest of Continental's J-69 series, which has been qualified up to 1,700 pounds thrust. Reduced thrust requirements for the 407 have resulted in lower turbine inlet temperatures and consequently longer engine life. Unlike the T-37 which requires an auxiliary power source, the 407's nickel cadmium battery takes care of power requirements for normal starting.

Access to the roomy cabin is through a large door on the right side of the fuselage—an easy step without need for ramps. The cabin itself is roomy, with provision for 160 pounds of baggage for four persons. The rear seats may be removed when it is desired to haul cargo. Pressure in the cabin is at 8,000 feet when the aircraft is flying at its normal cruising altitude of 35,000 feet. The 407 has a 46,400-foot service ceiling, and single-engine ceiling is in excess of 25,000 feet.

Cessna made use of T-37 tools, components and systems in the 407 and has been able to quote an initial price to the military of $202,500 based on expected sales of 300 aircraft over a three-year period. This price includes full radio and instrumentation.

Other performance figures show: rate of climb at gross weight, military RPM—3,680 f.p.m.; takeoff distance, over 50-foot obstacle at gross weight —2,850 feet; sea level landing distance, gross weight—3,050 feet; sea level stall speed, landing flap and idle RPM—97 m.p.h.; empty weight, 4,657 pounds; useful load including usable fuel, 4,643 pounds; maneuvering load factor, 5 G's (positive), 2.06 G's (negative). END

Roomy, four-place pressurized cockpit is comfortable for flight at 35,000 feet

Family Jet

(Continued from page 30)

"where" landing places are within takeoff requirements.

Other "where" measures are in the "beware" category. At idling, the engines whine at a pitch found to be harmful to ground personnel who are continuously exposed to the noise and not using ear guards. An unfriendly neighborhood might use this fact to stop the bird from flying in the vicinity. AOPA'ers must also assure themselves of such homely details as availability of jet fuel, jet maintenance know-how, and auxiliary power units for starting. The auxiliary unit is not needed for every start, but the battery won't last long without one, and that portion of the preflight check requiring power (about 15 items) would have to be relegated to post starting where 20-plus other items must be checked. So precious fuel would be consumed. Besides all this, the field should have warm-up pads and foreign object removers.

Enough "where"; now, "how" can this jet be used? It carries 300 gallons of fuel. A scientific pilot, cutting speed to 125 knots (144 m.p.h.) and using optimum procedures, might keep the bird aloft three hours and even a bit longer. However, like other jets, it will go over twice as far at 30,000 feet, as it will at 5,000. To put it differently, unless you climb about five miles or so at the most efficient settings, you won't stay up two hours at the normal 90%, or better, cruise. For example, if you wanted to fly in the uncontrolled airspace under 3,000 feet, two hours would be a safe limit, and if you should want to shoot landings, you had better make them all touch and go, or be sure not to persist at this over an hour. Thus you see, you should not plan to go over 1,000 miles in this aircraft in one hop, even under ideal conditions.

Now a problem must be faced. For several reasons it has been deemed unwise to fly this ship on instruments. The elevators and rudder are balanced and ice has jammed their front portion. The engine has a single fire bucket (unlike larger multi-bucket types) and flames out more easily. The present radio is too skimpy. On the other hand, the radio can be replaced, and the flame-out peril loses validity on this twin because of the aircraft's good single-engine characteristics. If the ship is not flown IFR, how often could it be used except locally for a limited time?

There is no space or allowance for baggage. Is there a fix? Cessna may know. The cabin is not pressurized. At efficient altitudes not only must oxygen be used, but oxygen masks must be worn by the occupants. The cockpit is sufficiently sealed, when the hatch is

down and locked, to capture smoke fumes and odors. Thus, it is wiser, despite the inconvenience and discomfort, to fasten your mask prior to closing the hatch and leave it on until opening the hatch after landing.

"When" can it be used? Not in bad weather unless modified. Unlike its predecessor trainer, the T-33, the Cessna T-37 eliminates the requirement of a limited landing load. It can be landed fully loaded. No fuel (or tip tank) need be jettisoned. Nor is any gymnastic ability required to see each control, placard and instrument or to reach all controls, buttons, switches, testing lights and similar items worked by the pilot.

Lastly, "who" can fly the bird? No problem here. The worst feature is probably the brakes, combined with the nose wheel steering. To engage the nose wheel, you keep a button depressed on the stick, with a spare finger (if any remains sufficiently strong). This finger must relax over about 60 knots (69 m.p.h.) and resume pressure below. It becomes definitely a "sixth" finger. Add the fact that the nose wheel control invariably has lag—widely effective at higher speeds. The brakes don't come on as a team. Gingerly you depress, regardless of the imminence of need, wondering which wheel will slow first.

This is definitely a check-list airplane. But your younger brothers and their multinational equivalents are using it for primary instruction and first solo with no sweat. Equally definite, it is a jet, and one re-learns power handling techniques. A principal problem is that jets don't resume power quickly. To insure successful go-around, 60% or more power is kept on at the threshold. But this bird has a thrust attenuator. You can forget it as it works automatically when your speed brake is down (on all normal approaches) and you have less than 70% power. It diverts the thrust, permitting speed reduction with power retention.

Reportedly the ship has an unorthodox spin. You will never know, as there is a transduced vane on the left wing tip, adjusted to sense a speed decrease to 15 knots (17 m.p.h.) over the stall and then to erect a spoiler above each wing fillet. Fifteen knots in advance of the stall, these spoilers set up a severe artificial buffeting, real enough to stimulate instant recovery!

Another jet bugaboo disappears with this aircraft. Fuel metering is provided which prevents dousing an engine, with consequent explosion or flame out, when the throttle is opened abruptly.

Should you hear aught derogatory of the Cessna twin jet, interpret the remark in terms of civilian values, remembering the craft is flown exclusively at Air Force primary schools where procedures are inflexible, patterns tight, fast and fighterwise; acrobatics, day and night formations are flown and instructors demonstrate the extremes in flight maneuvers and contingencies. Flying, as performed personally by the average AOPA'ers, is entirely feasible, pulling low positive "G's." AOPA'ers will find numerous rewards in a jet, such as, the absence of ignition noise in the radio, no prop adjustment or mixture control, power application absolutely smooth, if delayed, fast climb and efficient high altitude cruising with its attendant comfort and aesthetic delights!

Judge for yourselves. Has Cessna brought the jet age to the average AOPA'er or does it remain around a corner? Or two? Or three?

PERFORMANCE OF CESSNA JETS

	T-37A	T-37B (With T-25 engines)
Power plant	J69-T-9	J69-T-25
Engine thrust	920 lbs.	1,025 lbs.
Gross weight	6,400 lbs.	6,574 lbs.
Takeoff distance—50 ft. obstacle, gross wt., takeoff flaps	2,140 ft.	2,025 ft.
Rate of climb—sea level, gross wt., military RPM	2,350 f.p.m.	3,370 f.p.m.
Service ceiling—gross wt., Military RPM	33,400 ft.	38,700 ft.
Single engine service ceiling ½ fuel—military RPM	18,950 ft.	25,000 ft.
Max. level flight speed ½ fuel—military RPM	324 kts. (373 m.p.h.) (TAS) at 15,000 ft.	369 kts. (424 m.p.h.) (TAS) at 20,000 ft.
Range with Mil-C-5011A reserve	716 naut. mi. (823 statute mi.)	692 naut. mi. (796 statute mi.)
Cruise altitude	30,000 ft.	35,000 ft.
Cruise speed	240 kts. (276 m.p.h.) (TAS)	289 kts. (332 m.p.h.) (TAS)
Endurance	3.06 hrs.	2.49 hrs.
Max. Range with 5% reserve	810 naut. mi. (932 statute mi.)	809 naut. mi. (930 statute mi.)
Cruise altitude	30,000 ft.	35,000 ft.
Cruise speed	240 kts. (276 m.p.h.) (TAS)	289 kts. (332 m.p.h.) (TAS)
Endurance	3.45 hrs.	2.88 hrs.
Range normal RPM & 5% reserve	731 naut. mi. (841 statute mi.)	755 naut. mi. (868 statute mi.)
Cruise altitude	30,000 ft.	35,000 ft.
Cruise speed	286 kts. (329 m.p.h.) (TAS)	313 kts. (360 m.p.h.) (TAS)
Endurance	2.69 hrs.	2.81 hrs.
Landing distance—50 ft. obstacle		
Gross wt., sea level	2,480 ft.	2,600 ft.
Stall speed, gross wt., sea level	73 kts. (84 m.p.h.)	74 kts. (85 m.p.h.)