BLOODY GOOD TRAINER

A sportster named Firefly

Late this year Slingsby Aviation will decide whether to offer the general public the Firefly, which has gained a strong foothold around the world as a military trainer in the past decade. The first civilian aircraft, probably powered by the same Lycoming AEIO-540 used by the U.S. Air Force, would be available in 1996 if the decision is positive. The price has not been determined.

Several transient civilian pilots visiting Hondo Municipal Airport, Texas, have toured the Firefly assembly facility just 100 yards from the Air Force Flight Screening Program building. Most have begged to be put on a waiting list, even after learning the Air Force's cost of $302,000. But employees of Northrop Grumman, Slingsby's partner in the Air Force contract for 113 aircraft, aren't taking any names. Not yet.

Why would anyone want to pay that kind of money for a relatively slow two-seater? Because it can do it all: It can teach pilots not only to fly, but to roll, loop, spin, hammerhead—all the basic maneuvers (or manoeuvres, as it says on cabin placards). To find out what the Firefly can do, *Pilot* decided to kick the tyres (again, a British placard) and literally take it for a spin.

Rebel 15 approaches the runway at Hondo, Texas, after flying a tight pattern.

Spins and stalls were not permitted on the day of the flight, pending an accident investigation at the Air Force Academy. A student and instructor, killed in a Firefly two weeks before *Pilot* visited Hondo, were thought to have been practicing stalls or spins just before the accident. Ceilings were from 1,800 to 2,300 feet on the day of our demonstration flight. Training is strictly VFR, so "Rebel 15," the aircraft assigned, became the weather ship for the squadron. Reports from our aircraft by Capt. Dave Kelly resulted in restricting all trainers to the pattern that day. The end result was a 60-mile tour of the training area and demonstrations of steep turns and military procedures in the pattern.

There is no question of the aircraft's value as a trainer. The Firefly literally flies loops around the non-aerobatic T–41 (Cessna 172) it replaced. The T–41s have all gone to happy retirements at Air Force aero clubs from Texas to Japan. But would those interested in formal aerobatic competition be interested in a Firefly? Perhaps not those above the "basic" beginner level.

During the flight the roll rate seemed slower than the Bellanca Decathlon I had recently flown. Slingsby officials said the roll rate—as determined by FAA testing criteria—is only 60 degrees per second. "But you can flick roll [snap roll] it at 120 degrees per second," a Slingsby official in England said. Those in Hondo who know the airplane well agree that the faster rate is possible. "If the wings were just a little bit shorter, it would roll better," said one. Fins on the ailerons add stability, especially at slower speeds, such as when landing—just the sort of stability needed by a flight trainer but not by an aerobatic trainer. The Firefly is a good compromise between the two missions. For now, those close to the Firefly claim only "graceful" aerobatics, not snappy ones. Tail slides and vertical spins are prohibited.

But how about normal spins? Beginning aerobatic students must not only spin during formal competition, but spin to a heading. Therein lies the problem with the Firefly. Some Firefly pilots in Hondo said it could be spun but not stopped on a heading. "Rubbish," said a Slingsby official in England. "The aircraft is used by flying clubs here and has won the national standard [beginner] title." An Air Force pilot who helps supervise the training program, the Slingsby official claimed, can spin it to within a few degrees of a desired heading.

It took a few more interviews, however, to discover why there is disagreement on that point. The Firefly doesn't enter a fully developed spin for one to two turns. Pilots who say they come out on a heading actually fly it out during the first one or two turns, without using anti-spin control positions. Those who spin the aircraft for more than two turns can bring it out easily enough but say they have no idea what the final heading will be.

As a cross-country airplane, the Firefly is, well, a trainer. Instructors who are allowed to take it cross-country on weekends to maintain their proficiency say they flight plan for 130 knots. Visibility is unequaled, an especially important trait for an Air Force trainer that may share the pattern with 10 other aircraft (and 10 more using the parallel runway). The pilot has a feeling of being "outdoors," with visibility limited only by the twisting ability of the human neck.

Issuance of earplugs by the Air Force prior to the demonstration flight at first appeared to be overly cautious, especially since each aircraft is equipped with headsets. Those who spend several hours a day in them say they are as noisy as a Cessna 172, at least in the cabin.

The strongest selling point is the

Students sit on the right, so the throttle and flaps can be operated with the left hand.

aircraft's power, the marriage of the 260-horsepower engine to the all-composite airframe (or glass-reinforced plastic, as Slingsby calls it). One student spoke admiringly of blasting through a thin cloud layer in a vertical climb. (Watch it. The operating handbook says zero-G maneuvers, vertical climbs, and knife-edge flight are limited to 10 seconds.) It feels like a jet, and that makes it fun to fly.

The second-strongest point is the non-corrosive, tough airframe. One of the aircraft at Hondo returned from an aerobatic training flight with 8 Gs registered on the G meter. The aircraft, which is placarded for six positive and three negative Gs, was inspected and found to have no damage. Circulating in Hondo are reports of pilots in England who intentionally exceed the 195-knot V_{NE} speed by 30 or 40 knots for better control during aerobatic flight, with no damage to the airframe—at least for now. The aircraft is G-limited when the structural temperature, read on a cockpit instrument from sensors in the left and right wing roots, reaches 131 degrees Fahrenheit.

Maintenance problems appear to be minor. There were problems with engine cooling last summer, but engine baffling mods made by Sierra Industries of Uvalde, Texas, may be the cure. Engines were overheating, causing vapor lock and stoppage of the engine during taxi. Also, at least a half-dozen fixed rudder trim tabs have fallen off in flight, but mechanics merely glue new ones on. Rudder pedal stops come off frequently, because there is no metal frame on the cabin floor to hold them properly. Flap handles were brazed, not welded, and one broke off. The Air Force is welding them. "Those were pretty much growing pains, and we have eliminated those now," Kelly said. But those are minor problems, and student said they like the aircraft.

What an advantage it would be for those who dream of an Air Force career to rent the very same aircraft at their local airport. For now, the only way to ride in one is to call your friendly Air Force recruiter. —*AKM*

Slingsby Aviation T67M260 Firefly (T–3A)
Base price: $302,000

Specifications

Powerplant	Lycoming AEIO-540-D4A5, 260 hp
Propeller	Hoffmann three-blade, constant speed, 71-in diameter
Length	24 ft 9 in
Wingspan	35 ft 2 in
Wing area	136 sq ft
Wing loading	18.6 lb/sq ft
Power loading	9.71 lb/hp
Seats	2
Gross weight	2,525 lb
Payload w/full fuel	527 lb
Fuel capacity	42.54 gal (41.54 gal usable)

Performance

Load limits	Plus 6 and minus 3 Gs
Roll rate	60 deg/sec
Takeoff distance, ground roll	913 ft
Max demonstrated crosswind component	25 kt
Rate of climb, sea level	1,380 fpm
Cruise speed/endurance w/30-min rsv, std fuel (fuel consumption)	
@ Max power, 8,000 ft	145 kt/2.5 hr (16.5 gph)
Landing distance, ground roll	1,226 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	75 KIAS
V_Y (best rate of climb)	90 KIAS
V_{NE} (never exceed)	195 KIAS
V_{S1} (stall, clean)	62 KIAS
V_{SO} (stall, in landing configuration)	55 KIAS

For more information, contact Slingsby Aviation Limited, Kirkbymoorside, York, Great Britain YO6 6EZ, telephone (from U.S.) 011 44 751 432474. All specifications are based on manufacturer's calculations.