



TURBINEPILOT

A SPECIAL SECTION FOR THE TURBINE OWNER-PILOT



New beginnings

PiperJet repositions a legendary company

BY THOMAS B. HAINES

The PiperJet represents a new beginning for 71-year-old Piper Aircraft, according to company officials. The single-engine very light jet (VLJ) is Piper's first turboprop product, and interest in the unusual design has spurred new attention for the entire product line. Piper President and CEO James Bass notes that although total piston aircraft sales were down 16 percent across the industry in the first three quarters of the year, Piper's deliveries of piston airplanes were up 18 percent. "We are a new company fueled by a venerable heritage," Bass said at a ceremony this fall shortly after the jet's first flight. "We truly are the inheritors of a great legacy, and we are inspired by the knowledge that our best days are ahead of us."



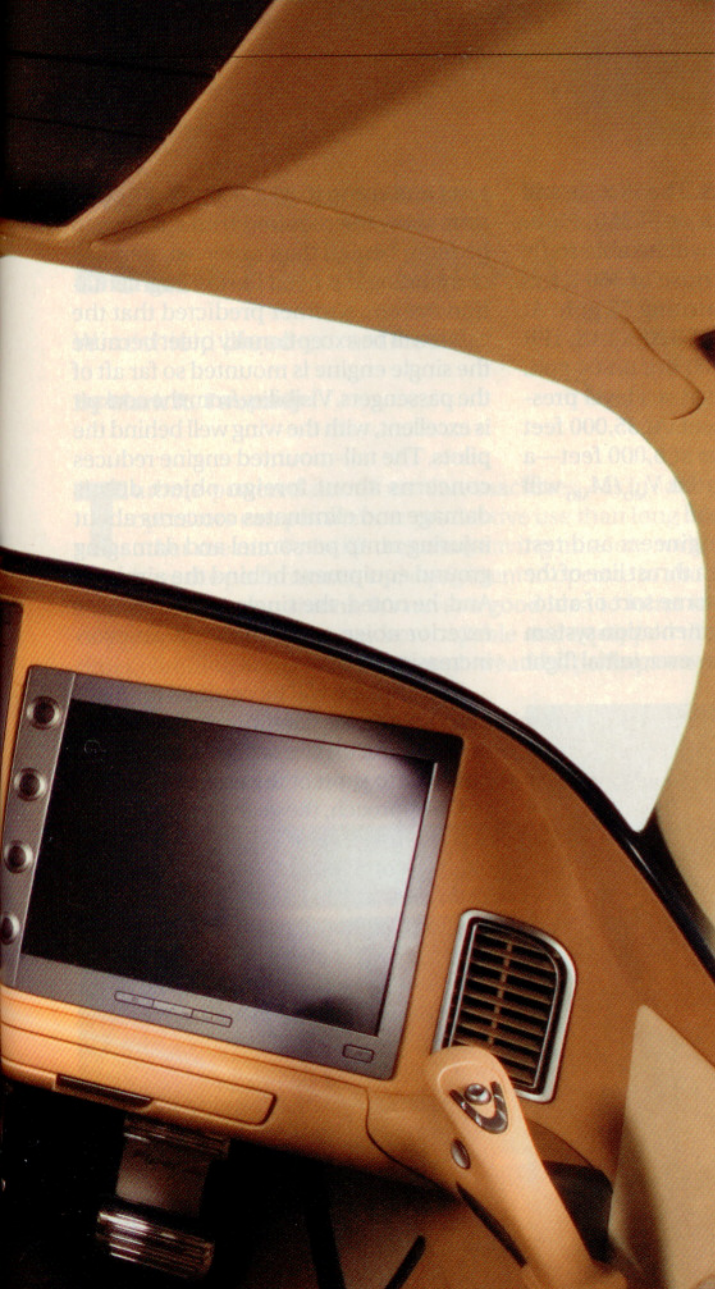
With its 44-foot wingspan, including winglets, and single tail-mounted Williams FJ44-3AP engine, the PiperJet is unlike anything Piper has ever built—yet from a profile view you can see the heritage of the Aerostar, Cheyenne, Meridian, and Navajo product lines in the square windows and fuselage shape. With its projected 360-knot cruise speed, the PiperJet will be among the fastest in the VLJ category. Although the Cirrus and Diamond single-engine VLJs will be certified to 25,000 feet, the PiperJet will be certified to 35,000 feet. Eclipse plans

to certify its Model 400 to 41,000 feet.

The PiperJet proof-of-concept (POC) airplane made its first flight in late July. Two conforming flight test airplanes will join the certification effort starting in about a year, along with a static test airframe and a fatigue test article. Piper expects to certify the airplane and begin deliveries in late 2011 or early 2012, about a year later than the original schedule announced in 2006. Bass said the company has funded the \$25 million program so far with working capital, deposits, and private investment. All in

all, Piper will need about \$100 million to complete the project, some of which will come from outside investors.

The company has 200 orders for the \$2.199 million jet, 50 of which have been retailed by dealers. Bass said he believes there is a market for about 400 VLJs per year and that Piper should be able to hold a 25-percent market share. Its business plan calls for between 75 and 100 PiperJets per year—all of them to the owner-flown market. "If other types of ownership occur, that's great," Bass said. Already speculating on future



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products, Bass said the PiperJet is designed to be modular, meaning that it can grow or contract.

It flies

Vice President of Sales Bob Kromer described how a flight might go: The pilot starts the Williams engine with the push of a button, allowing the full-authority digital engine controls to bring the engine online. The engine is capable of 3,000 pounds of thrust, but Piper will de-rate it to 2,490 lbst, providing extra climb performance at high altitudes. The proof-of-concept airplane has a direct-link nosegear steering system and straight main gear. Production airplanes will have trailing-link main gear, which should please pilots and passengers. The cabin can be configured with four passenger seats in a club configuration and a large aft baggage compartment; space just behind the cockpit and opposite the airstair door is reserved for storage, an optional forward-facing seventh seat, or an optional enclosable lavatory. The integrated cockpit will house Garmin products. Piper has not yet announced details of the Garmin system, but it will likely be an outgrowth

The PiperJet mockup showcases the VLJ's airy interior (below), which includes a baggage compartment behind the aft seats. The panel (left) will feature Garmin avionics, sidestick controls, a single-lever power control, and a less-is-more approach to ergonomics.



of the current G1000 system. Flight control is through a sidestick, freeing space in front of the pilot. An autothrottle system will be optional.

Maximum takeoff weight is projected to be 7,250 pounds with a standard empty weight of 4,100 pounds. Piper is guaranteeing a full-fuel payload for a standard-equipped airplane of 800 pounds, a maximum range of 1,300 nm, and a 360-knot maximum cruise speed.

A typical takeoff will use 15 degrees of flaps with a rotation speed of 80 knots. Initial climb rates exceed 3,400 feet per minute on the POC airplane. Best angle and best rate of climb speeds will be 160 and 180 KIAS, respectively. Nor-

mal climb is 200 KIAS. The POC is still climbing at 1,000 fpm at FL350. Piper projects the airplane will be able to fly 1,000 nm at its max cruise of 360 KTAS with IFR reserves—burning 77 gph. At a long-range cruise of 320 KTAS, IFR range stretches to 1,300 nm on 64 gph. The cabin will remain at sea level pressure through 18,000 feet. At 35,000 feet the cabin will settle in at 8,000 feet—a 7.45-psi cabin differential. V_{MO}/M_{MO} will be 250 KIAS/Mach 0.65.

Kromer said the engineers and test pilots predicted the high thrust line of the engine might require some sort of automatic elevator trim augmentation system with thrust changes. However, initial flight

tests and more than 1,000 wind tunnel tests show the required trim changes to be more benign than expected, perhaps eliminating the need for the augmentation system. Kromer predicted that the cabin will be exceptionally quiet because the single engine is mounted so far aft of the passengers. Visibility from the cockpit is excellent, with the wing well behind the pilots. The tail-mounted engine reduces concerns about foreign object debris damage and eliminates concerns about injuring ramp personnel and damaging ground equipment behind the airplane. And, he noted, the single engine reduces exterior noise and emissions, an ever-increasing concern.

The airplane will be certified for flight into known icing conditions, using pneumatic boots on the wings and tail and bleed air to protect the engine inlet.

On approach, the gear and initial flaps can be lowered at 200 KIAS. Flaps 20 degrees come out at 160 KIAS and flaps 36 degrees at 130 KIAS. V_{REF} for a typical landing weight will be 80 to 85 KIAS with a touchdown at about 70 knots. The PiperJet will meet the mandatory 61-knot stall speed. Landing distance at typical weights will be about 2,500 feet. Antiskid brakes will be optional.

Piper plans to develop a pilot training program with an outside partner to be named later.

After months of considering various alternatives, Piper plans to build the airplane at its Vero Beach, Florida, headquarters. The natural laminar flow wing is assembled using the latest metal bonding techniques, giving it a smooth, nearly rivetless surface.

Bass describes the PiperJet's look as "distinctive." Others have described it as resembling a mini-McDonnell Douglas MD-11 because of the straight, tail-mounted engine. It is unique in GA. When one shows up on your ramp in a couple of years, you will have no doubt that it is a PiperJet—an airplane that "marks the beginning of a new era for Piper Aircraft," according to Bass. **ACRA**

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When the PiperJet with its large, distinctive tail-mounted engine taxis up, you'll have no trouble distinguishing it from the rest of the jet set. The production airplane will sport trailing-link main landing gear.

