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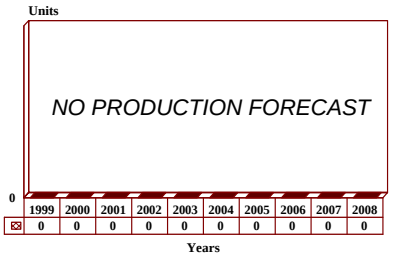
Piper Cheyenne Series - Archived 8/2000

Outlook

- Piper has decided not to resume Cheyenne production
- Piper had been evaluating a possible new Cheyenne derivative to compete at the low end of the corporate turboprop market

10 Year Unit Production Forecast
1999-2008



Orientation

Description. Pressurized, twin-turboprop-powered business/executive transport aircraft. Also used as airline trainer.

Sponsor. The New Piper Aircraft Inc; Vero Beach, Florida, USA. This company was formed in 1995 from the asset sale of the old Piper Aircraft Corp.

Contractors. Piper Aircraft Corp, Vero Beach, Florida, USA, developed and manufactured the Cheyenne series.

Licensees. Chincul, Buenos Aires, Argentina, produced Cheyenne series aircraft under license from Piper.

Status. Cheyenne production has been discontinued.

Total Produced. A total of approximately 1,018 aircraft in the Cheyenne series was produced over the life of the program, including prototypes. The last Cheyenne, a Cheyenne IIIA, was delivered in the first quarter of 1993.

Application. Short/medium-range business/executive passenger transportation. Additional applications include advanced, multi-engine commercial flight training.

Price Range. Cheyenne IIIA, $3.32 million in 1993 US dollars.

Technical Data

(Cheyenne IIIA/400)

Design Features. Cantilever low-wing monoplane. The T-tail employs a swept vertical stabilizer and unswept horizontal stabilizers. The wings are unswept with integral tip-mounted fuel tanks.

	Metric	US
Dimensions		
Length	13.23 m	43.39 ft

	Metric	US
Height	4.50/5.18 m	14.75/17.0 ft
Wingspan	14.53 m	47.67 ft
Cabin length	6.98 m	22.92 ft
Cabin width	1.30 m	4.25 ft
Cabin height	1.32/1.42 m	4.33/4.67 ft
Wing area	27.22 sq m	293.0 sq ft
Weight		
Standard empty weight	3,101/3,412 kg	6,837/7,522 lb
Max T-O weight	5,080/5,466 kg	11,200/12,050 lb
Max zero-fuel weight	4,241/4,536 kg	9,350/10,000 lb
Capacities		
Baggage compartment volume	1.66/1.36 cu m	58.45/48.0 cu ft
Usable fuel	2,120/2,158 liters	560/570 gal
Performance (Cheyenne IIIA)[a]		
Rate of climb at SL	725 m/m	2,380 ft/m
Cruise speed, TAS[b]	565 km/h	305 kt
Cruise range (560 gallons usable)[c]	4,204 km	2,270 nm
Performance (Cheyenne 400)[d]		
Rate of climb at SL[e]	1,071 m/m	3,514 ft/m
Cruise speed, TAS[f]	663 km/h	358 kt
Cruise range[g]	4,230 km	2,283 nm

Propulsion

Cheyenne IIIA	(2)	UTC Pratt & Whitney Canada PT6A-61 reverse flow, axial-centrifugal turboprop engines rated 537 kW (720 shp); each driving a Hartzell "Q-Tip" three-bladed, constant-speed, reversible pitch, fully feathering propeller.
Cheyenne 400	(2)	AlliedSignal Engines (Garrett) TPE 331-14 single-shaft, centrifugal flow turboprop engines flat-rated at 746 kW (1,000 shp); each driving a Hartzell or Dowty four-bladed constant-speed, reversible pitch propeller.

Seating

Cheyenne IIIA/400, up to 10 passengers.

[a] At maximum gross weight of 11,200 pounds (unless noted otherwise).
[b] At maximum cruise power, at mid-cruise weight of 9,100 pounds, and at 6,705 meters (22,000 feet).
[c] Long-range power at 35,000 feet. Range includes allowance for fuel used during starting, taxi, take-off, climb, cruise, and descent, and a 45-minute reserve at maximum range power and standard atmospheric conditions.
[d] Standard atmospheric conditions.
[e] At weight of 5,466 kilograms (12,050 pounds).
[f] At maximum cruise power, at mid-cruise weight of 10,000 pounds, and at 7,620 meters (25,000 feet).
[g] Equipped standard airplane (including 200-pound allowance for pilot in addition to passenger payload). Long-range power at 39,000 feet and with three passengers. Range includes allowance for fuel used during starting, taxi, take-off, climb, cruise, and descent, and a 45-minute reserve at maximum range power and standard atmospheric conditions.

Variants/Upgrades

Cheyenne III. The original Cheyenne III version was powered by Pratt & Whitney Canada PT6A-41 engines. Initial delivery occurred in 1980, soon after certification. Piper subsequently incorporated many

improvements to the Cheyenne III resulting in the much improved Cheyenne IIIA model in 1983. The electrical system was upgraded for increased capacity and reliability and reduced weight. The IIIA is powered by PT6A-61 engines. Standard avionics were provided by AlliedSignal (Bendix/King), and an optional Rockwell Collins avionics package was also available. The Cheyenne IIIA was certificated in March 1983, with deliveries starting in April of that year.

Cheyenne 400. Piper announced a Cheyenne IV just prior to the National Business Aircraft Association (NBAA) convention in 1982. Later known as the Cheyenne 400LS (while Lear Siegler Inc owned Piper), and subsequently renamed Cheyenne 400, the aircraft had extensive commonality with the Cheyenne III but also incorporated new engine nacelles, four-bladed Dowty propellers, a redesigned nose baggage compartment, and AlliedSignal (Garrett) TPE 331-14 engines. The latter were capable of 1,227 kW each, but were flat-rated to 746 kW. The standard avionics package was provided by AlliedSignal (Bendix/King), with an optional package provided by Rockwell Collins. In late 1989, Piper announced a new propeller fit for the 400. Hartzell supplied its advanced all-aluminum, four-bladed system which gave the Cheyenne 400 greater cruise speeds at all typical cruise altitudes.

Program Review

Background. Piper was a relatively late entry in the corporate turboprop market. Design and development of the firm's Cheyenne were initiated in 1965, but the aircraft was not actually introduced until mid-1974. The aircraft had received its initial certification in 1972 but, due to the slump in general aviation sales at that time, Piper was forced to delay introduction of its then-new high-performance aircraft.

Design Details. The original variant became known as the Cheyenne II following introduction in 1978 of the low-cost Cheyenne I. The Cheyenne II's design was based heavily upon that of the firm's Navajo piston twin, a well-proven airframe. The turboprop was structurally enhanced to permit higher speeds and g forces. An innovative feature at the time was use of a Stability Augmentation System, which also incorporated a Stall Margin Indicator. This system accepts airspeed, angle-of-attack, and CG inputs, and provides precise data for safe operating speed ranges.

The entry-level Cheyenne I, featuring less powerful engines than those of the Cheyenne II, was certificated in early 1978. This model was replaced five years later by the improved IA; both variants have been out of production since the mid-1980s. In 1981, Piper introduced the Cheyenne IIXL, which provides a 24-inch fuselage stretch over the standard Cheyenne II. The last IIXL was delivered in 1987.

Re-Emergence of Piper. Piper underwent some difficult financial times during the late 1980s and early 1990s. In July 1991, Piper voluntarily filed for Chapter 11 bankruptcy protection. The company was nearly destitute at the time, with only a skeleton staff. Since then, however, Piper has reestablished itself as one of the top single- and multi-engine, piston-powered aircraft manufacturers in the world.

In July 1995, the assets of Piper Aircraft Corp were purchased by a newly formed company called The New Piper Aircraft Inc. This new entity is a privately held company backed mainly by Allegheny Teledyne and the Philadelphia investment firm Dimeling, Schreiber and Park.

Timetable

Month	Year	Major Development
Late	1965	Initial design begins
May	1967	Prototype construction begins
Aug	1969	Prototype first flight
May	1972	Cheyenne certification obtained
Mar	1974	Initial Cheyenne II deliveries
Sep	1977	Cheyenne I and III models announced
Mar	1978	Cheyenne I certificated
Sep	1978	Redesign/stretch of Cheyenne III announced
	1980	Cheyenne III certificated
Feb	1981	Cheyenne IIXL certificated
Jun	1981	Initial Cheyenne IIXL deliveries

Month	Year	Major Development
Sep	1982	Cheyenne IV announced
Feb	1983	Cheyenne IV first flight
Aug	1983	First IIIA deliveries
Mar	1984	Piper acquired by Lear Siegler
Jul	1984	Cheyenne IV certification; First 400LS deliveries
May	1987	Piper acquired by Romeo Charlie Inc
Jul	1991	Piper files for Chapter 11 protection
Early	1993	Last Cheyenne delivery
Jul	1995	The New Piper Aircraft Inc formed

Worldwide Distribution

Not available.

Forecast Rationale

The last Cheyenne was delivered in 1993. Piper then discontinued production of the series, although the company did not rule out producing additional Cheyenne IIIAs and 400s if a relatively sizable order appeared. However, the chances of such an order materializing were only fair at best. Piper has now decided that it will never resume Cheyenne production.

The Cheyenne I and II were considered short-body Cheyennes, while the Cheyenne III and 400 were considered long-body Cheyennes. Piper had been evaluating the possibility of designing and developing a new short-body Cheyenne derivative, called the Cheyenne 1B, to compete at the low end of the corporate turboprop market against the entry-level Beech King Air C90SE. However, no definite plans to produce the 1B were ever established.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

			High Confidence Level				Good Confidence Level			Speculative			
Aircraft	(Engine)	thru 98	99	00	01	02	03	04	05	06	07	08	Total 99-08
PIPER													
CHEYENNE 400	TPE 331-14A/B	46	0	0	0	0	0	0	0	0	0	0	0
CHEYENNE I/IA/II	PT6A (VARIOUS)	725	0	0	0	0	0	0	0	0	0	0	0
CHEYENNE III (PA-42)	PT6A-41	90	0	0	0	0	0	0	0	0	0	0	0
CHEYENNE IIIA	PT6A-61	74	0	0	0	0	0	0	0	0	0	0	0
CHEYENNE IIXL	PT6A-135/135A	83	0	0	0	0	0	0	0	0	0	0	0
Total Production		1018	0	0	0	0	0	0	0	0	0	0	0