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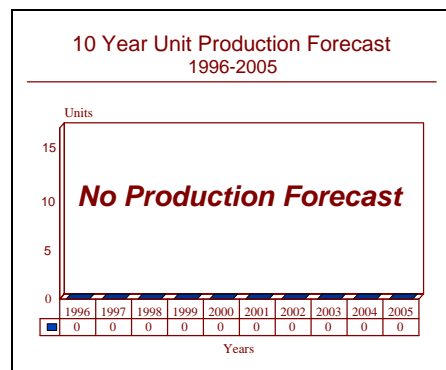
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EMBRAER/AMC CBA-123 Vector - Archived 8/97

Outlook

- CBA-123 development has been terminated.
- A total of three flyable prototypes were built.



Orientation

Description. Pressurized, 19-passenger, twin-turboprop regional/commuter/executive transport aircraft.

Sponsor. The CBA-123 was sponsored by EMBRAER and AMC.

Contractors. Empresa Brasileira de Aeronautica SA (EMBRAER), Sao Jose dos Campos, SP, Brazil; and Area de Material Cordoba (AMC), Fabrica Militar de Aviones SA (FMA), Cordoba, Argentina.

Status. The CBA-123 program has been terminated. Prototype first flight occurred in July 1990.

Total Produced. EMBRAER and AMC produced three flyable prototypes.

Application. Short-haul regional/commuter passenger transportation. Additional applications include corporate/executive transport and various military duties including VIP transportation, medical evacuation, and calibration.

Price Range. Estimated at \$6.0 million in 1993 US dollars.

Technical Data

(Commuter Only)

Design Features. Cantilever low wing monoplane with T-tail section and retractable tricycle type landing gear. Engines are mounted on the empennage in pusher turboprop configuration. The supercritical wing is slightly swept (six degrees) and has an aspect ratio of 11.5. The fuselage is a shortened version of that used on the EMB-120 Brasilia.

Dimensions

Length overall

Metric

18.09 m

US

59.35 ft

Height	5.97 m	19.59 ft
Wingspan	17.72 m	58.14 ft

Weights

Max T-O weight	9,500 kg	20,944 lb
Basic operating weight empty	6,230 kg	13,735 lb
Max payload	2,270 kg	5,004 lb

Performance^(a)

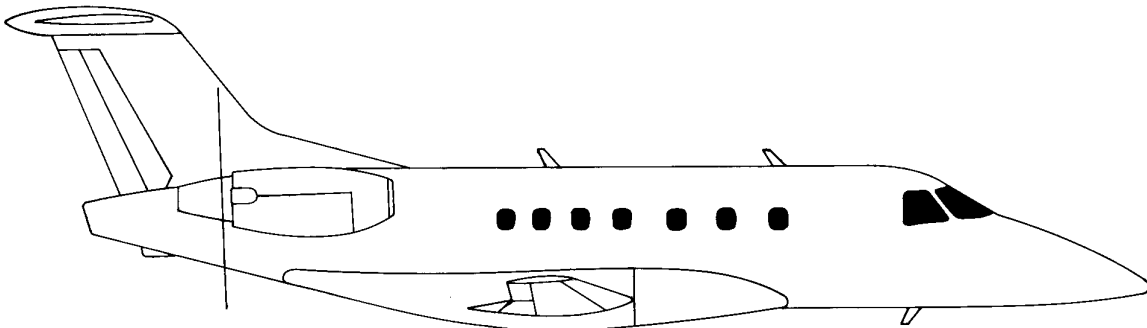
Max cruise speed at 24,000 ft	594 km/h	321 kt
Service ceiling	10,670 m	35,000 ft
Range, max cruise speed (ISA), 19 passengers, reserves	1,852 km	1,000 nm

Seating. Standard commuter configuration for 19 passengers; 2 + 1 across, single aisle with 31-inch (79-centimeter) pitch.

Propulsion

CBA-123 (2) AlliedSignal Engines TPF 351-20 or -20A centrifugal flow turboprop engines thermodynamically rated 1,492 kW (2,000 shp) and derated to 970 kW (1,300 shp); each driving Hartzell six-bladed constant speed, reversible-pitch, fully-feathering, composite propellers.

^(a) At maximum takeoff weight, unless indicated otherwise.



EMBRAER/AMC CBA-123

Source: Forecast International

Variants/Upgrades

Executive/Corporate Version. EMBRAER and AMC had planned to offer an optional executive/corporate version of the Vector. The second prototype was reconfigured to an executive interior in 1992. At one point, the two companies had garnered as many as 33 options for the Vector from corporate customers. Typical seating would have been 8-12 passengers with provisions for extra fuel. Range could have been up to 4,450 kilometers.

Program Review

Background. EMBRAER launched development of what was originally known as the EMB-123 in mid 1985 as a private venture. In 1986, the company announced plans for a new-generation, 19-passenger turboprop transport, called the EMB-123, which was to replace the successful EMB-110 Bandeirante in EMBRAER production lines. Production of the new aircraft was to begin in 1990.

At the government level, Brazil and Argentina had engaged in discussions aimed at increasing trade, technical, and cultural exchanges between the two countries. These discussions resulted, in early 1986, in the two South American nations signing several cooperation treaties. In pursuit of the goals expressed in these treaties, EMBRAER approached Argentine aeronautical authorities to discuss the feasibility of the local Argentine industry joining development of the new EMB-123.

Joint Program Established. An agreement was finalized in May 1987, through which AMC joined EMBRAER in the effort to develop, manufacture, and market the EMB-123. Both partners would obviously benefit from such an arrangement in that EMB-123 development costs would be divided, while the risks of the program would be reduced through the creation of a larger initial demand for the aircraft.

The EMB-123 aircraft was subsequently redesignated CBA-123, with the acronym CBA standing for Cooperation Brazil Argentina. Under terms of the agreement, EMBRAER and AMC would split workshare and costs, including tooling, 70 percent and 30 percent, respectively. Since that time, however, AMC reduced its stake in the program to 20 percent, due to economic problems in Argentina. Total development cost of the CBA-123 was estimated at \$300 million.

AMC's production responsibility would have included center and rear fuselage sections, the tail unit, the tail cone and undertail bumper, and engine pylons. EMBRAER would have been responsible for the remainder, including the aircraft wings.

The first two prototypes, Aircraft 801 and 802, were EMBRAER-built aircraft. Both were used for flight testing, and together accumulated over 975 flight hours. The initial AMC-built aircraft, Aircraft 803, has apparently never flown. It was assigned the functional reliability testing portion of the development program. Aircraft 804 was an airframe used for structural testing, while Aircraft 805 was the fatigue test article.

Advanced Technology. The CBA-123 features a shortened EMB-120 Brasilia fuselage mated to a new supercritical wing and a sweptback T-tail. It accommodates 19 passengers in a mostly three-abreast layout. Power is provided by a pair of empennage-mounted AlliedSignal (Garrett) TPF 351-20 turboprops thermodynamically rated at 2,000 shp each but derated to 1,300 shp. Each AlliedSignal engine drives a Hartzell six-bladed, swept propeller in a pusher configuration. The CBA-123 has a range at maximum cruising speed (ISA), with 19 passengers and reserves, of 1,000 nautical miles. Over the life of the program, maximum takeoff weight had grown from an estimated 7,800 kilograms (17,196 pounds) to the present 9,500 kilograms (20,944 pounds). Maximum payload (commuter version) had also grown, from 2,070 kilograms (4,563 pounds) to the current 2,270 kilograms (5,004 pounds). Rockwell Collins provided the aircraft's avionics, which consist of a four-tube EFIS and a three-tube EICAS with built-in automatic diagnostic capability.

Market Demand. In 1990, EMBRAER projected worldwide demand for approximately 2,000 19-passenger aircraft to the year 2005. The company's goal was a 30 percent share, or about 600 aircraft.

Military Potential. EMBRAER and AMC proposed in 1992 that the Brazilian and Argentine governments buy a total of 60 CBA-123 aircraft: 40 aircraft for the Brazilian Air Force and 20 for the Argentine Air Force. However, such a buy never materialized.

Funding

EMBRAER had estimated development costs of the CBA-123 at \$300 million. Approximately \$180 million had been expended as of late 1992.

Timetable

	1985	EMBRAER began EMB-123 development
	1986	EMBRAER offered program collaboration to Argentina
May	1987	EMBRAER and AMC finalized joint agreement
Jul	1990	First flight of initial prototype

Mar	1991	Roll-out and first flight of second prototype
Late	1994	CBA-123 program terminated

Worldwide Distribution

Three flyable prototypes were produced: two in Brazil and one in Argentina.

Forecast Rationale

No resumption of the CBA-123 program is planned, and the chances of a resumption of the effort ever occurring are slim. This joint Brazilian/Argentine program was severely impacted by a combination of factors, not the least being the uncertainty in the 19-seat transport market. Another factor was the unwillingness of either the Brazilian Government or the Argentine Government to provide financial support for the effort. Although EMBRAER and AMC had previously hoped that the two governments would purchase 60 CBA-123s (40 for Brazil and 20 for Argentina) for use by their air forces, it had become clear by mid-1993 that such a buy was doubtful. Both governments have been undertaking major economic reforms and little, if any, funding is available for a CBA-123 purchase. Even should such a sale occur, it remains to be seen whether this would generate sufficient credibility among regional carriers for them to place firm orders for what would promise to be a relatively expensive machine.

In July 1995, Lockheed Aircraft Argentina SA (LAASA) assumed management control of the FMA plant in Cordoba under a concession agreement that is to last 25

years. LAASA is a subsidiary of Lockheed Martin Corp. Although participation of Lockheed Martin in the CBA-123 program could mean an injection of new capital for the effort, the US company may not want to pursue a program that has such uncertain market prospects.

If the CBA-123 program does resume, and the aircraft enters production, the price of the CBA-123 would have to be competitive with current 19-seaters. In addition, the 19-seat market may not be sufficiently robust over the next few years to generate enough orders to justify a production go-ahead for the aircraft.

In 1992, then-EMBRAER President Ozires Silva said that two unspecified companies had requested that the CBA-123 fuselage design be released for use in their own aircraft designs. EMBRAER and possibly AMC would have still manufactured the fuselages. Though such a deal was never finalized, an arrangement similar to this could represent perhaps the best hope for the CBA-123 effort. The original partners could hope to at least gain back their initial investment through the sale of the design plus participation in the production program.

Ten-Year Outlook

No forecast.

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