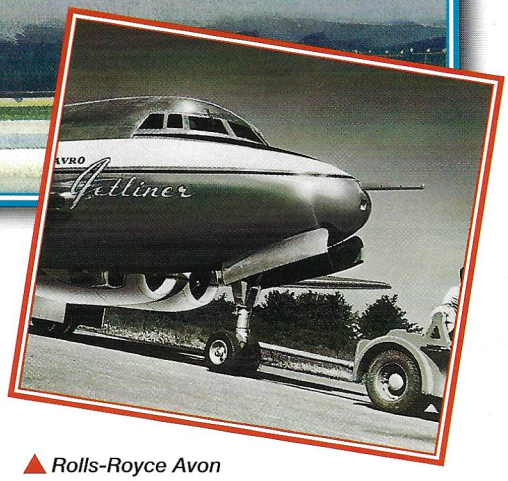
C-102 JETLINER

● Jetliner prototype ● Rolls-Royce engines ● Only one built



Flown for the first time in August 1949, just two weeks after de Havilland's Comet, the C-102 was an audacious attempt by A.V. Roe Canada Limited to build a jet transport with a cruising speed twice that of contemporary piston-engine types. Canadian and American airlines showed interest in the new aircraft—one came close to placing an order—but the outbreak of war in Korea and the Canadian government's demand for CF-100 fighters killed the project.

▲ *Rolls-Royce Avon development delays and the British reluctance to release the engine for civil use badly affected a Jetliner program reliant on the new engine.*

Canada's first and only jetliner

In the end, only one C-102 was flown, though a second was close to completion when the program was canceled. This aircraft, registered CF-EJD-X, first flew on August 10, 1949, powered by four Rolls-Royce Derwent 5 turbojet engines.

However, these were not the engines originally intended for the new airliner. Avro Canada had hoped to install a pair of Rolls-Royce's new AJ 65 Avon turbojets, but the British government was not prepared to release them for civil use.

Intended to carry 30 to 50 passengers, the C-102 would have covered routes of around 1,085 miles. After an early landing accident, the prototype was repaired, demonstrated extensively, and later re-engined with more powerful Derwent 8s and 9s (two of each). On one occasion the aircraft flew the 400-plus miles between Toronto and New York in 59 minutes with a cargo of mail.

The C-102's launch customer was to be Trans-Canada Air Lines, though U.S. firms were also impressed enough to propose a production order.

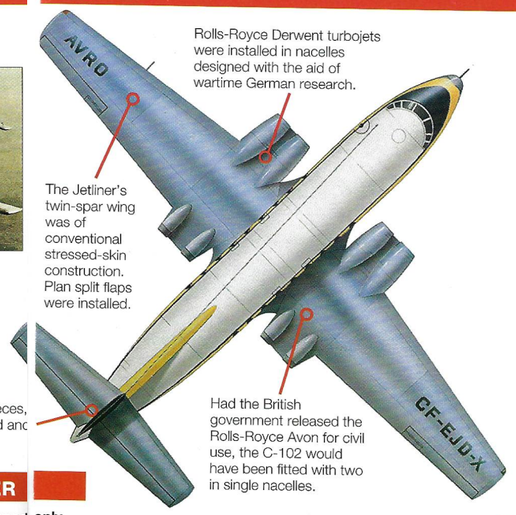
The RCAF and USAF also tested the aircraft, but ultimately performance shortcomings and the Canadian government's request that Avro concentrate on the CF-100 fighter led to cancellation in 1951.

Had development continued, the C-102 could have been the world's second jet airliner in service, an honor left to the Soviet Tupolev Tu-104.

The elevators and rudder were in two pieces, the rear portions were manually operated and the front section power-assisted.

C-102 JETLINER

Though two prototypes were planned only CF-EJD-X was completed and flown. The tail legend reads: Designed and built by A. V. Roe Canada Limited, Malton, Ontario



Rolls-Royce Derwent turbojets were installed in nacelles designed with the aid of wartime German research.

The Jetliner's twin-spar wing was of conventional stressed-skin construction. Plan split flaps were installed.

Had the British government released the Rolls-Royce Avon for civil use, the C-102 would have been fitted with two in single nacelles.

SPECIFICATIONS
C-102 Jetliner

Type: Medium-range civil transport.

Powerplant: Four 3,600-lb.-thrust Rolls-Royce Derwent 5/17 turbojets.

Maximum speed: 498 m.p.h. at 30,000 ft.

Cruising speed: 429 m.p.h. at 30,000 ft.

Initial climb rate: 1,840 f.p.m.

Range: 1,250 mi.

Service ceiling: 37,300 ft.

Weights: Empty 33,110 lb.; max takeoff 64,922 lb.

Accommodation: Proposed, 2 flight crewmembers; plus 30 to 50 passengers in various seating configurations.

Dimensions:

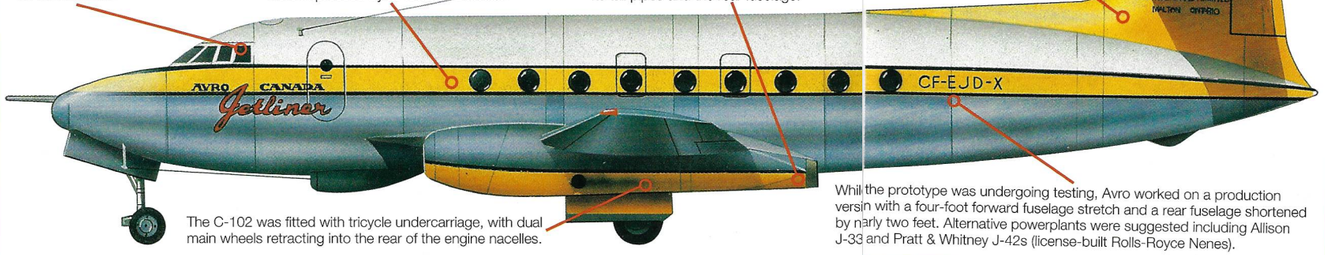
Span	98 ft.
Length	80 ft. 9 in.
Height	26 ft. 5 in.
Wing area	1,156 sq. ft.

The Jetliner's flight deck was of conventional layout with dual controls and seating for two pilots, plus a jump seat between for an observer.

Pressurization was a feature of the C-102's 10-foot diameter fuselage. Seating arrangements for between 30 and 50 passengers were proposed. During demonstration flights passengers were impressed by its low noise levels.

After its second flight the C-102 was unable to lower its main undercarriage and was forced to make a belly landing, coming to rest on its extended nose gear, the ends of its tail pipes and the rear fuselage.

Unswept vertical tail surfaces were a feature of many early jets. Later, aerodynamic research showed the benefits of a swept tail.

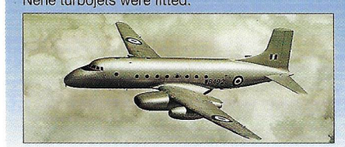


The C-102 was fitted with tricycle undercarriage, with dual main wheels retracting into the rear of the engine nacelles.

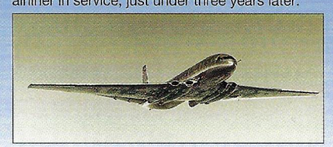
While the prototype was undergoing testing, Avro worked on a production version with a four-foot forward fuselage stretch and a rear fuselage shortened by nearly two feet. Alternative powerplants were suggested including Allison J-33 and Pratt & Whitney J-42s (license-built Rolls-Royce Nenes).

British jet transport prototypes

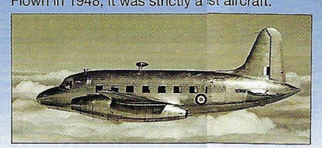
AVRO 706 ASHTON: Six of these large aircraft were built for the Ministry of Supply for research into jet operations. Four Rolls-Royce Nene turbojets were fitted.



DE HAVILLAND DH.106 COMET: First flown in July 1949, the de Havilland Ghost-powered Comet was to be the world's first jet airliner in service, just under three years later.



VICKERS NENE-VIKING: Rolls-Royce Nene turbojets were installed in a Viking airliner to create the world's first pure-jet transport aircraft. Flown in 1948, it was strictly a test aircraft.

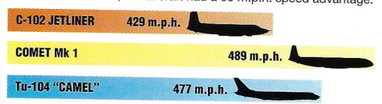


VICKERS VISCOUNT 663: The second Viscount turboprop airliner prototype was rebuilt in 1950 as a flying engine testbed with two Rolls-Royce Tay turbojets.

ACTION DATA

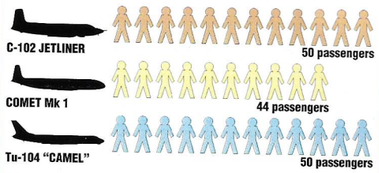
SPEED

De Havilland's Comet flew two weeks before the Jetliner and was destined to be the first jet airliner to enter service. Powered by four de Havilland Ghosts, the aircraft had a 60 m.p.h. speed advantage.



ACCOMMODATION

All three of these jetliners were of similar capacity, though with 50 passengers aboard, the C-102 was at the outer limits of its cabin capacity. The Comet was later stretched to increase seating.



RANGE

In prototype form the C-102 demonstrated a range of just over 1,250 miles. With four Derwent engines, the Jetliner's fuel capacity was reduced and extra tankage was necessary in order to maintain range; payload capability therefore suffered. Both the Comet and Tu-104 were larger aircraft, the latter with two engines.

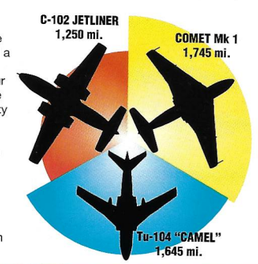
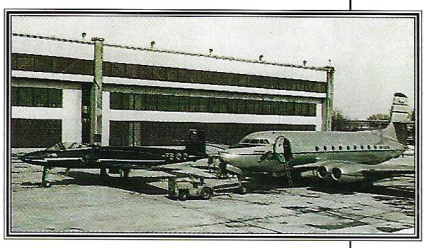


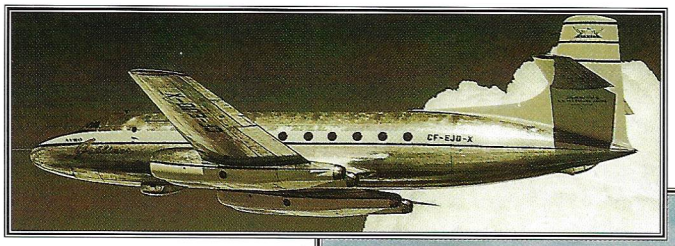
PHOTO FILE

AVRO CANADA C-102 JETLINER

◀ Conservative lines
Though a clean design, the C-102 retained the somewhat dated look of a piston-engine aircraft.

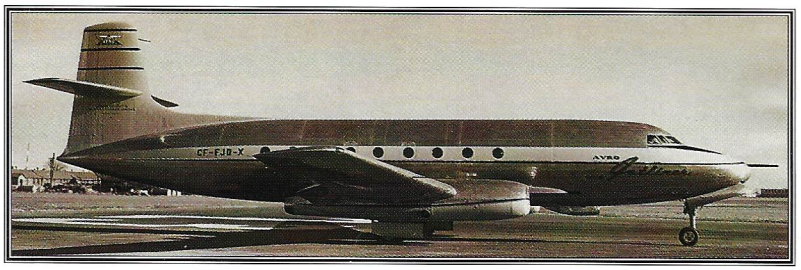


▼ Observation ship
After cancellation, the Jetliner spent a short time in the U.S. before returning to Canada for use as an observation aircraft during CF-100 tests. These included gun-pack firing and ejection-seat activation.



▲ Avro Canada products
The prototype C-102 poses with the CF-100 jet fighter prototype. The Canadian government cancelled the C-102 in favor of accelerated CF-100 development.

▼ Trans-Canada Air Lines
After the powerplant change, TCA was released from its commitment to purchase the C-102. The re-engined aircraft needed to carry more fuel, which reduced payload.



▲ First flight
Upon its first flight on August 10, 1949, the C-102 had become the first jet transport in North America to take to the air. The Boeing 707 prototype did not fly until 1954.

FACTS AND FIGURES

- After testing by the USAF, Avro Canada proposed a trainer variant for the service with four Allison J-33 engines.
- Construction of a second C-102 prototype began, but was not completed.
- After cancellation, the C-102 was used as an observation platform for CF-100 tests.
- Flown for the last time on November 23, 1956, CF-EJD-X was scrapped in December, having flown about 425 hours.
- After flying the aircraft in 1952, Howard Hughes considered building the C-102.
- The C-102's nose is presently in Canada's National Aeronautical Collection.