The Jetliner, the first jet transport produced in North America, was an advanced, medium-range, 450 mph plane that first flew an amazing eight years before Boeing's 707. This extraordinary achievement is all the more remarkable considering that it was the first product of a new company in a country not dominant in the development or construction of aircraft. The design, developed by A.V. Roe Canada (Avro), was conspicuously ahead of any competitive transport.

Robert Rummel
Chief Engineer of Trans-World Airlines

Following the close of World War Two, civilian airlines were intrigued by the commercial possibilities of jet aircraft that were developed during the war. The C-102 Jetliner began as a 1946 proposal from Avro to the crown corporation of Trans Canada Airlines (TCA – forerunner of Air Canada) for a new civilian transport. The aircraft was to be a short-to-medium range, transcontinental, 30 passenger transport, powered by twin Rolls Royce AJ-65 Avon engines being developed in Britain at that time.

As development commenced, TCA remained cautious about committing to the C-102. Their letter-of-intent expressing interest in the plane was so full of conditions that it would later be viewed as "an invitation [for Avro] to commit financial suicide." The major stumbling block was TCA's requirement for a fixed price on the aircraft. Avro could not provide a fixed price because the field of civilian jet transport was so new there were no precedents to draw on in determining the final price tag.

TCA Backs Out

By March 1947, Avro was in a position to provide TCA with a reasonable quotation on the Jetliner--$325,000 per aircraft for 100 planes, not including engines (Rolls Royce has yet to provide Avro with a price on the Avons) or the electronic and navigation equipment TCA had specified. The price and the 100-plane minimum were both too much for TCA; they withdrew their support for the project.

Without a buyer for the Jetliner, C. D. Howe (Minister of the Department of Reconstruction and Supply, and the government official that leased A. V. Roe Canada the production facilities of the war-era crown corporation Victory Aircraft) suggested the project be cancelled. Fred Smye, Avro's assistant general manager, insisted cancellation would ruin of the company—their other projects (the CF-100 jet fighter for the RCAF and the Orenda engine) were not sufficiently advanced to be able to absorb staff committed to the C-102. The possible collapse of A. V. Roe put Howe in a difficult political position; he had staked his reputation in sponsoring this effort to establish industrial design and development capability in Canada. He arranged a $1.5 million allocation to permit development of the Jetliner to continue. Hawker-Siddeley, A. V. Roe Canada's parent company, also contributed $530,000 towards the Jetliner's continued development.

Engine Trouble - "Meteor"-ic Solution!

By spring 1947 the Avon engines were still classified as military secrets, and Avro was informed that would not be ready for civilian use "for many years." An extensive redesign of the Jetliner replaced the two Avons with four Derwent 5 turbine engines. Although this caused considerable delay in aircraft's development, this redesign proved advantageous. Not only would the C-102 benefit from being equipped with one of the most reliable jet engines of the day (the Derwents had over 100,000 hours of operation time in Gloster Meteor fighter planes), the four-engine design would be much safer in the event of an engine failure.

Development continued to follow TCA's specifications, in the belief that the airline could still be convinced to buy the Jetliner. This hope was again dashed when TCA's new president announced in April 1948 that TCA was not interested in being the first North American carrier to employ jet transports.

Avro's enthusiasm for the Jetliner remained high, as employees knew they were developing a world-class aircraft. Promotional efforts were stepped up to find new buyers for the plane, as the Jetliner prepared for its first flight in summer 1949.

Stolen Thunder

On 27 July 1949, as the Jetliner was in its final preparations for its first flight, the British de Haviland Comet made a hop of a few feet off its runway, becoming the world's first jet transport to fly. Frustrations over getting the C-102 into the air mounted, as the highest temperatures of the year (in excess of 38° C, or 100° F) undermined engine reliability, and unscheduled construction at the Malton airport restricted the Jetliner's high-speed taxi trials to the airport's shortest runway. Test pilot Jimmy Orrell tried several times to make a short hop take-off, only to abort at the last second for fear that he did not have enough runway to bring the Jetliner safely down again.

"...The Perfect Lady"

On August 1949, Jimmy Orrell decided to abandon attempts at a short hop take-off in favour of a true flight. This would effectively double runway space, as the plane would have the full length of the runway available for take-off, and the full length to land on again. The craft became airborne flawlessly, conducted some low and high level tests (reaching an altitude of 13,000 feet), and returned to earth just under an hour after taking off. This extended flight was unscheduled; as such, it took place when most Avro employees were on vacation. In an article written to inform absent personnel of the Jetliner's performance on this first flight, Orrell recalled that "she was the perfect lady."

An Unplanned Test

The C-102's second flight proved to be more dramatic that its first. The landing gear had failed to come down, forcing Orrell to land the plane on its belly. As he flew around to use up extra fuel, a large crowd gathered as concerned Avro employees left their work stations to watch, and the media got news of the crisis. The plane touched down, skidded 1,500 feet and stopped 50 ft short of the highway fence where these witnesses were standing.

> ***"This episode served to highlight the inherent safety of an aircraft with no propellers to get in the way in an emergency such as this, and at least we had one test under our belt that no manufacturer would dare to carry out at this stage in the life of a prototype aircraft."***
>
> Jim Floyd
> Designer of the C-102 Jetliner

Fortunately, the Jetliner suffered only minimal damage. With more test flights underway, it was clear that the C-102 was ready to be on the market. It was thought the best way to sell the plane it was to let the airlines see it and let their pilots fly it. Many airlines such as Trans World Airlines (TWA) and Eastern Airlines were interested in the aircraft and the Jetliner made many impressive inter-city trips around the U. S. and Canada. On 18 April 1950, the C-102 carried the world's first jet airmail from Toronto to New York in 76 minutes, half the time required by propeller-driven aircraft.

Faint Hopes

In June 1950, the U. S. company National Airlines approached Avro with a letter of intent to purchase four Jetliners, with an option for six more. This letter, once again not a firm contract, required a fixed price and required a performance guarantee. This time Sir Roy Dobson (president of A. V. Roe Canada) stepped in, opposing the contract on the basis that stating a set price was too risky in light of possible rising production costs. No one had time to defend the National Airlines agreement. The Korean War had started and at A.V. Roe production on the Jetliner was stopped. C. D. Howe demanded all available employees focus on getting the CF-100 Canuck fighter plane out of its testing phase and into the war.

Several further attempts were made to market the Jetliner, and Fred Smye recalled that "[Howard] Hughes begged me to build [him] thirty Jetliners, but I had to tell him sorry, we wouldn't do it." Avro did not have the ability to perfect and produce the CF-100 and the C-102 both.

The Jetliner continued to make appearances at airshows, and served a valuable function as an in-flight, high speed platform from which to photograph CF-100 test flights.

"Chop her up."

Lack of spare parts and personnel to maintain the prototype, the only C-102 ever built, led to the ultimate abandonment of the Jetliner. Jim Floyd, the Jetliner's designer, tried desperately to preserve the plane intact, but neither the Canadian National Aeronautical Collection nor the American Smithsonian Institution could accept such a large aircraft. Charlie Batchelor, a former Avro employee, later recalled a day in December, 1956;

> ***We were standing in the hangar when Jim Floyd walked up to us. He'd just left the management meeting on what to do with the Jetliner and he was visibly upset. He stared at us, then at the plane; then he paused and said quietly, "Chop her up."***

The nose section is preserved and on display in the National Aviation Museum in Ottawa.

Why is the Jetliner so special to us? Why?

It is special to all the people who worked on the airplane because the Jetliner represented so many firsts.

- ***It was the first jet transport designed, built and flown in North America.***
- ***It was the first dedicated regional jet to fly anywhere in the world.***
- ***It was the first jet passenger plane on this continent to fly over 500 mph.***
- ***It was the first jet passenger plane to fly into the United States…and it carried the first jet airmail.***

Jim Floyd in his speech August 7, 1999 at "Jetliner 99 – 50th Anniversary"

Jim Floyd, chief design engineer on the Jetliner, as featured with a model of the Jetliner on the cover of the April 1951 edition of "Avro News." Floyd won the Wright Brothers Medal for his work on the Jetliner and for "meritorious contribution to aeronautical engineering." He was the first non-American to win the award.

Envelope bearing the stamp of the First Official Jet Airmail, carried by the Jetliner from Toronto to New York, 18 April 1950.