Pre-Flight

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The Way Up

Again, as in the Jetliner, it was decided to stay as close as specifications would permit to conventional design in an attempt to shorten the length of time needed to get a successful prototype into the air. This meant the CF100 would have straight wings instead of swept wings or the more advanced delta shape. The CF-100 went into squadron service in 1953 while some of its contemporaries are still having teething troubles.

As Jim Floyd had with the Jetliner, Frost literally lived with his aeroplane. In the same manner, so did his associates.

Continued from September – October Issue

The company grew from 1,000 at the end of 1947 to nearly 2,000 at the end of 1949. New Orendas roared on the test beds. The Jetliner startled the continent with its performance. New machinery and equipment came in, new space allotments were made between the now crowding gas turbine and aircraft people, but the constant for the CF-100 team was their growing aircraft. The Rolls Royce Avons which hadn't been ready for the Jetliner were ready for this one, for although Orendas eventually would power the CF-100, a basic concept of aircraft development is to test new aircraft with proved engines, and vice versa, to narrow the search if anything goes wrong,

The Late Squadron Leader Bill Waterton at the age of 90, R.I.P.

Late in 1949 Bill Waterton, who would test the prototype, arrived. He was originally from Camrose, Alberta.

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AHFC

Aerospace Heritage Foundation of Canada

President's mailing address:
1951 Rathburn Rd., E.
Unit 199
Mississauga ON L4W 2N9
905-624-4909

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Aerospace Heritage Foundation of Canada
P.O. Box 246, Etobicoke D
Etobicoke ON M9A4X2
(416) 410-3350
www.ahfc.org

On behalf of my wife, Betty, myself and all members of the Board, may I wish you the very best of the Season. May each and every one of you have a Very Merry Christmas and a Happy, Healthy and Joyous New Year for 2016.

Nick has advised me the Robert Ostrander Memorial Library at Warren Field will be activated in a very short time. The Library will give visiting Pilots a chance to sit and view aviation books and magazines during their stop overs or when they are visiting Warren Field. Any member wishing to donate any magazines or books please contact me so I can make arrangements to have them picked up.

Frank Harvey

Continued from page 1

But he had been a squadron leader in the R.A.F. and was one of Britain's best test pilots --- big-moustached and ebullient.

He was clambering around the cockpit within half an hour after Edgar Atkin and Don Rogers met him at Malton airport. He moved into John Frost's office. For weeks he went over performance calculations, listened to the predictions of aerodynamicist Jim Chamberlin based on tunnel test results, made a few suggestions for changes in cockpit controls, and on January 17, 1950, took the aircraft out on taxi tests.

For John Frost, the situation now had reached the same pitch that Jim Floyd had faced five months earlier, the Orenda originals six months before that. Frost followed the taxiing aircraft by car, watched through binoculars. During one high speed taxiing test, with the nose off the ground, he caught one minor item which could have been troublesome. The nosewheel door, which opened backward toward the tail, was, as he said later, "trying to close." He had believed that the natural push of air would hold it open, but some capricious play of the airflow was sucking it shut, so that in the air the nosewheel would be trying to come up against a partially closed door. He and Edgar Atkin sketched on the back of an envelope the changes that would be necessary to make it lock open until the nosewheel came up. With this and other minor modifications out of the way, two days later, January 19, 1950, Bill Waterton took the CF-100 out for its first flight.

As he taxied out for take-off, many people watched. Among them were dozens of men from the team that had built the CF-100. Men in the plant left their machines and came to windows or doorways. Outside in that sunny, frosty day of many high hopes and more than a few deep-felt prayers, again were men whose careers and reputations rode with this aircraft. Defence Minister Claxton headed a group of government representatives.

Among several R.C.A.F. officers was Air Marshal W. A. Curtis, by then Chief of Air Staff. When the CF-100 jumped into the air in less than 500 yards, climbed, flew for 40 minutes through the mild assessment of controls and stability which usually characterize first

flight, and then came down and braked to a full stop within 450 yards of touchdown, if there was a man who felt that moment of success as deeply as John Frost he probably was Air Marshal Curtis. Less than eight years before, he had walked out of that Hurricane allocation conference knowing that to be sure of good aircraft we'd have to build them ourselves. That day in 1950 with the successful flight of the CF-100 he could know that no R.C.A.F. officer ever would have to face such frustration again.

There has been no intention in the foregoing to suggest that the moments of first flight for the Jetliner and CF-100, the moment of bursting life for the Chinook and Orenda were the end of achievement - or, indeed, of disappointment and dismay. These moments could better be characterized as the moment of birth. In fact, there would be times when the people who had built these aircraft and engines would look back like harried mothers to the days when the only problems were good old labor pains.

The Jetliner . . . There are people who, as long as they remember anything, will remember the high emotion of her launching, and the tension-smashing celebration that night at Jim Floyd's home. But a few days later Jim Floyd was hunched over a microphone in deep foreboding, the Jetliner in the air above with main undercarriage gear jammed. He has a tape recording now of his conversation with test pilot Jim Orrell during an hour when they put forth and tried and failed on every possibility for getting the wheels down. Word had gone through the plant like a cold gale that the Jetliner was in trouble. "I don't want to sound maudlin," one man said later, "but it hit every one of us as if we were somehow related to that airplane." Men left their machines and ran outside, and foremen gave up trying to stem the tide and followed. Finally, they had to stand there, as Jim Floyd was doing, and watch while Orrell brought her in with only the nose wheel down. There was a sigh as she hit the grass at the runway's end, and a shout of relief as she skidded to a stop only a dozen feet from the airport fence.

Even so, there was a bright side --- four bent jet pipes and a caved plating at the rear of the fuselage were the only damage and, as Jim Floyd said later, "it showed us another side of the safety of an aircraft which had no propellers to get in the way in an emergency such as this."

The Jetliner's only real tragedy was of another nature altogether --- that of high talent never fully used. In subsequent tests she did everything that was asked of her. With Don Rogers at the controls, the first jet transport captain on this continent, she flew from Toronto to Chicago in 91 minutes; New York to Toronto in 67 minutes; Winnipeg to Toronto in two hours and 33 minutes; Toronto to Tampa in two hours, 58 1/2 minutes; Miami to New York in two hours, 36 1/2 minutes. She did more for the Canadian aviation industry in those flights than any aircraft before or since, with headlines in Los Angeles, New York, Miami and points between. An editorial reprinted in many U. S. newspapers commenting on the first Toronto-New York jet air mail flight on April 18, 1950, grumbled, ". . . and where are we? On the drawing boards." The influential magazine Air Trails said, "What happened to the great American aircraft industry? In the race to get a jet liner into the air, Canada won, hands down . . . Our hat's off to the Canadians." In mid-1950 Jim Floyd was awarded the coveted Wright Brothers Medal for outstanding aeronautical achievement by the Society of Automotive Engineers. He is the only man of any nationality other than American to win that medal since it was struck in 1928.

With this public enthusiasm, prospects for the aircraft's success commercially seemed of the highest, even though TCA in the meantime had decided not to pioneer jet transport flight. A major U.S. airline was ready to order. The U. S. Air Force watched demonstrations and seemed interested. Then on June 25, 1950, war began in Korea. The Canadian government ordered the Jetliner shelved to concentrate on CF-100 and Orenda. When no one knew whether Korea would explode into another world conflict, this concentration on defence seemed natural enough. But it also allowed other countries to overtake our early jump. The Jetliner flies now, as steadily and speedily as ever, a company plane used in high speed photographic and test work in the development of CF-l00's, doing every job well --- "an aircraft," as Jim Floyd says now, "just born at the wrong time."

The CF-100 and the Orenda had much more nerve-wracking growing pains. On one flight Waterton, concentrating on his controls, neglected to put his wheels down. In all tests, a company car with direct radio contact to the aircraft stands by, watching through binoculars. As Waterton came in this time,

suddenly Jack Cudahy in the control car saw that he was going to land and yelled frantically into the radio, and Waterton put on full power, so low that the jets kicked up dust off the runway. Also, in progressively more demanding testing, the aircraft's center section was found to be too light. After one flight an ominous wrinkling of the metal skin where the wings met the center section told of excessive wing movement. The company acted quickly and forcefully to re-design the center section. Although no man experienced in aircraft design would expect an original to go through and into production without some such trouble, it was a bad time. The bright side was that from re-design to resumed production took only eight months-and that in all other respects, showed off in flight at Ottawa and Washington before some of the most important men in the world's air forces, the CF-100 looked like a champion.

The Orenda also had its normal allotment of new-product troubles. The first three experimental engines ran for a total of nearly 2,000 hours between them with no more than normal modifications. But the first production Orenda came off the test-bed with a cracked ninth stage compressor blade. In the experimental engines there'd been trouble with seventh and eighth stage blades, but never a ninth. That meant hard work. Although trouble with one blade out of nearly 2,000 in such an engine may seem trivial to a layman, there is no more intricate part of a turbojet. Engine blades are subject to specifications finer than those for a watch part. A variation of 1/1000 of an inch on one blade makes a noticeable difference in engine performance.

In 1949, when the industry was in the first flush of a general surprise that Canada had produced a top ranking engine so rapidly, arrangements were made to have an Orenda tested in an F-86 Sabre being built by North American Aviation. The Sabres were also to be built in Montreal by Canadair, under license, perhaps with Orenda engines. In 1950 an Orenda was taken down to the United States to test in a production line Sabre. At this time the Orenda had never been flight tested. To do this, a Lancaster was being modified to act as a flying test-bed, with two Orendas and two conventional engines. When the arrangements were almost complete for the Sabre test, Sir Roy Dobson put his foot down. "It must fly first in the Lancaster," he said. And almost that very day a forging failed. All high-speed testing had to be stopped and the engines pulled back from the U. S., while a forging technique which was found to have caused failure was modified to prevent a similar happening in the future.

But these were only growing pains. On July 13, 1950, the converted Lancaster --- dubbed the Flying Bedstead --- took off with Don Rogers at the controls and, using the Orendas, climbed like a Spitfire. In October, in California, the first Orenda-Sabre flight was a success. Later a U. S. pilot in a Sabre powered by an Orenda came from Minneapolis to Toronto in an hour. Mike Cooper-Slipper, a Battle of Britain veteran, now test pilot for Orenda, flew an Orenda Sabre from Toronto to Montreal at 665 miles an hour. Jacqueline Cochrane, using an Orenda-Sabre, broke five world records. In June, 1951, soon after steelwork began on a vast new Orenda plant, the first flight of a CF-100 using Orenda engines was made successfully, and on October 17 that year C. D. Howe was at A. V. Roe Canada to say:

"It is my privilege today to deliver to the Royal Canadian Air Force a CF-100 military aircraft equipped with twin Orenda engines. The airplane and its engines were designed, developed and built in Canada by Canadian workmen using Canadian materials. Not only is this the first aircraft to be completely designed, developed and produced in Canada, but the Orenda engine is the first airplane engine to be designed, developed and produced in this country.

"The aircraft as it stands before us is a notable Canadian achievement, marking as it does a new milestone in Canada's industrial advancement."

For some people, that must have seemed something like the end of a dream, and it was. But in another sense, it was establishment of the dream on a permanent basis. Two years ago, about the time that A. V. Roe Canada bought the engine plant, which it had built and had been operating for the government, Hawker Siddeley's Design Council met at Malton. It was the Council's first meeting outside of Britain, and so was a tribute. As Sir Frank Spriggs, managing director of Hawker Siddeley, said, "You have demonstrated beyond question that you can talk with any aircraft or engine design teams in the world."

(Continued January - February issue)