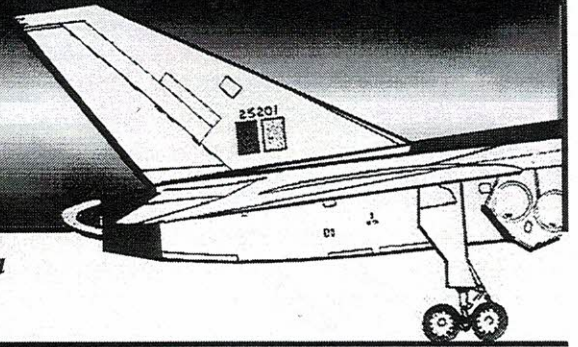


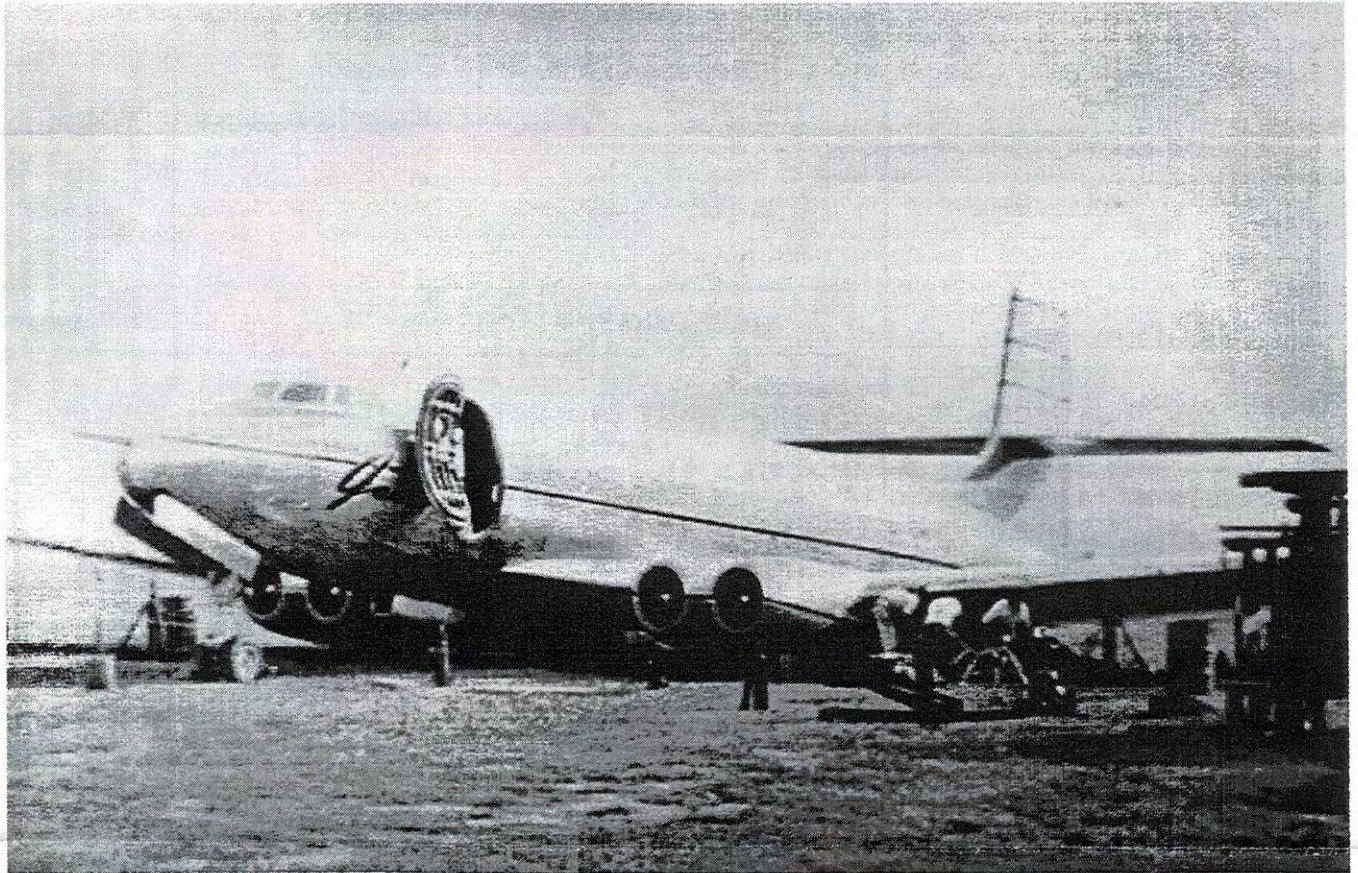
Pre-Flight

*A Publication of the Aerospace Heritage Foundation of Canada
P.O. Box 246, Etobicoke "D", Etobicoke ON M9A 4X2*



Vol. 18, No. 1

January - February 2007



The life of a professional test pilot can range from calculated first taxi runs, definite commitment, moments of terror to the elation of a test series successfully completed. People have the image of the intrepid test pilot, with ever-present kneepad clipped tight, face cool and calm, hands firm on the control wheel and throttles. Yet there is much more to this iconic image, valid though it may be. Here is an excerpt of the first impressions of such a professional, J. H. Orrell, on the first flight of C-102, the Avro Jetliner, back in 1959. Orrell's notes reflect the detailed procedures necessary to learn as much as possible from each minute in the aircraft. It also offers additional appreciation of the truly great flying machine that the Jetliner really was, and those who made it possible. The following articles are from the files of Bill. Baker



J. H. Orrell

Founded 1989

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From the President

Firstly, I would like to wish all members and their families a very Happy New Year. May it bring you joy and contentment in the months to come.

I recently attended the funeral service for Stan Haswell who passed away on December 13th. Stan piloted the Avro Anson company aircraft, and the DC3 which Avro purchased after the crash of the Anson. It's noteworthy that Stan tested all production CF-100s from 1952! He also was one of the few pilots to fly the Avrocar.

It is because of your support that our Foundation is able to continue documenting the innovative contributions of those dedicated professionals at Avro, on the ground and in the air. They lived in an exciting, though short-lived era in Canadian aerospace. We continue to honour them in *Pre-Flight*, our newsletter.

Once again, Happy New Year for 2007!

Frank

A. V. ROE CANADA LIMITED

Malton, Ontario

C-102 FIRST FLIGHT IMPRESSIONS

— J. H. Orrell

Prior to this flight, during taxiing, fast runs and near hops it was considered that the elevator control was adequate in effect and easily handled. There was only, a slight indication of rudder effect at the highest speed obtained at the coarsest angles. The ailerons continued to be light on control lest effectiveness could not be checked due to restricted runs at Malton.

After various discussions on expected control effect and those experienced, it was apparent that the maximum had been felt and appreciated in the local restricted conditions.

As all controls had remained light and manageable and the general behaviour of the aircraft was good in all, these tests, flight was considered a reasonably safe proposition.

With the cross-wind, the rudder proved insufficient to keep the aircraft straight on the take-off run and remained so until near airborne speed. It was necessary to use a little left brake to keep straight.

When airborne, the elevator proved rather too light but was giving effective control at this low speed (approximately 120-150 mph).

The rudder was giving good effect at about this same speed and footload was of a moderate order.

Aileron control proved to be veal comfortable at all speeds with the power assistor "ON", the system was not checked assistor "OFF".

For this flight, the rudder assistor and power elevator were not operated.

Orrell, cont'd.

Zero trim settings and 25 degree flap were suitable for the take-off, the retraction of undercarriage and flaps gave a very small change of trim and required small adjustment for trimmed climb at approximately 220 mph.

In level flight at 250 mph. 5 degrees nose down trim was required with an aft C.G. loading (27% SMC), the aircraft was slightly left wing low on ailerons requiring about 21/2 % starboard trim. In this condition the aircraft could be comfortably maneuvered in normal turns from 160 to 264 mph. and could be flown straight and level without effort. There was an indication that the elevator may be rather light.

Control was checked at the lower speeds with undercarriage and flaps down. With both fully down slight left rudder was required to maintain straight flight. At 100 - 105 mph. the rudder effect was very low and had less effect to the left, due to the initial amount used. Naturally this was going to affect the cross-wind landing with the wind from the starboard.

Weather conditions were rather rough for the approach but the aircraft handled very well and answered to the controls precisely.

On the ground run, the aircraft was kept rolling straight until the nose-wheel dropped at about 70 mph. when slight left brake was required to counteract weather-cocking. The complete ground run was about 3,500 ft. with practically no braking.

All in all considering the cross-wind on the runway, 30 knots at 40 degrees, and the rough air from ground to cloud base, the aircraft behaved magnificently.

The points of observation are:

1. Rudder control, lacking at low speed.
2. Elevator control" rather light but effective.
3. Flap droop many not be even, so requiring slight left rudder to obviate uneven drag.
4. Nose wheel steering, too abrupt for small angle steering.
5. Radio! Very noisy on A.D.F.s making communication rather difficult on H.F.

(Signed) J. H. Orrell

(Typed August 16/49)

Copies to: Mr. W. N. Deisher
Mr. F. T. Smye
Mr. E. H. Atkin
Mr. J. C. Floyd
Mr. D. Rogers
Mr. M. Pesando
Mr. A. Caggie
Mr. H. Garside
Mr. J. A. Morley
Mr. W. Boyd
Mr. P. B. Dilworth

A.V. ROE CANADA LIMITED Malton, Ontario

August 16, 1949

C-102 UNDERCARRIAGE FAILURE

After the take-off the undercarriage was retracted in the normal manner and took about the same time to complete cycle as previous flight.

After a circuit, the aircraft was climbed to 13,000 ft. with the object of checking stalling speeds with undercarriage and flaps "up" and "down".

The check was made in the "All up" condition first down to 100 mph. It was then decided to check the "All down" stall speed. (Added, in pencil, at the end of the line: "Lots of warning - no stall.")

On selection of undercarriage down, the nose wheel release did not seem so severe as previous releases and it was assumed that the mechanism was becoming easier.

The right wheel came down and locked with the nose wheel but the port leg indicator still showed as locked "up".

Then it was decided to retract and repeat but Baker found it impossible to operate the button, making several tries to push, then finally used the undercarriage safety switch and selected "up". The undercarriage retracted and locked "up".

Twice the undercarriage was selected down but on each occasion only the nose wheel locked "down", the starboard unlocked and the port remained locked "up". All pressures normal.

The Emergency Power Pack (secondary hydraulics) was then operated but proved of no avail.

Pressures still normal, but tank level was slightly low.

Two cases were then tried using the hand pump. First with emergency system under pressure, secondly with normal system under pressure. All pressures still normal.

It was thought that the "up" locks were jamming and after conversation with the ground control the only further action was manual release of the main undercarriage "up" locks.

The first attempt to release felt normal and undercarriage was expected to drop, but this proved a failure. Further attempts to pull release gave a feeling of tightness towards the end of cable travel and final effort on lever broke the cable at the turnbuckle. At this point the starboard red light indicated unlocked but the wheel did not drop.

From that point onwards, all suggestions from the ground were carried out systematically - which included electrical circuits - to no avail.

Meanwhile the system pressures were falling slowly, and the tank became empty.

Mr. Rogers and Mr. Baker then went to the cabin to make a combined effort on the emergency release with negative and positive "G" applied to the aircraft, this action gave no result.

Orrell, cont'd

The nose would not unlock from the down position, the starboard indicated unlocked but ground observer stated wheel still up, port wheel still indicated locked "up".

The aileron booster then failed and the lever was put to closed.

On the attempt to land, flaps did not operate and this proved a great disadvantage.

It took three shots at the aerodrome to get into a favourable position for the landing due to the lack of drag and the inability to lose speed.

On the final approach the engines were cut outside the aerodrome at 145 mph. and the nose raised to decrease speed with final resort to yawing, the aircraft did not touch down until a late spot on the aerodrome at a very low speed and the resultant run was very short and surprisingly smooth.

The aircraft and the aerodrome have suffered very slight damage considering the circumstances.

(Signed) **J.H. Orrell**

NOTE

On taxiing out for take-off at the 05 end the aircraft sank slightly into the runway a fair amount of power had to be used to get away. Suggest runway be inspected for amount of sink.

PROGRAM FOR OFFICIAL FLIGHT

Tuesday, October 4, 1949

1. Responsibility for the various functions has been accepted by the following personnel:
 - (a) Setting up parking facilities and supervision of parking lot - Mr. J. H. Spicer.
 - (b) Transportation from Royal York to plant by busses - Mr. J. W. Macdonald.
 - (c) Setting up marquee, tables and chairs under marquee - Mr. J. W. Macdonald.
 - (d) Setting up P.A. system and platform, and arranging chairs on tarmac in front of P.A. - Mr. H. Garside.
 - (e) Arranging for food for guests - Mr. J. H. Spicer.
 - (f) Movement of aircraft before and after flight- Mr. H. Garside
2. Mr. I. Liss will be in charge of the radio and P.A. system during afternoon activities. Mr. King-White of Cookfield Brown is to coordinate radio station representatives and work with Mr. Liss in supplying requirements to these people.
3. Prior to arrival of visitors the aircraft is to be placed on the tarmac downwind of marquee, and to be roped off with guards established. No aircraft will be allowed into the plant after "Jetliner" has been placed in position, and visiting aircraft will be advised to park at T.C.A.
4. Invitations indicate that activities are to commence at 2.00 p.m. and it is anticipated that the visitors will start arriving anywhere after 1.00 p.m.

5. Schedule of Events

2.00 p.m.

Announcement over P.A. that the "Jetliner" may be photographed, but will not be open for inspection until after the flight (Mr. Willar).

2.15 p.m.

Mr. Deisher will mount platform to welcome visitors. He will then give a short address (approximately 10 minutes) and lead up to the introduction of the Rt. Hon. C.D. Howe.

2.30 p.m.

Mr. Howe will mount platform and Mr. Deisher will remain on platform. Speech by Mr. Howe - 15 minutes.

2.45 p.m.

At completion of Mr. Howe's speech, Mr. Deisher introduces Mr. Smye "who will outline our program from here on".

Mr. Smye takes over microphone and introduces the following Avro personnel Messrs. J. H. Orrell, D. H. Rogers, A. W. Baker, E.H. Atkin, J.C. Floyd, A. Caggie, H. Garside.

2.45 p.m.

The above personnel to be close to platform prior to introduction. After introduction, above personnel move off platform and crew of aircraft proceeds immediately to aircraft to prepare for take-off. Mr. Smye will then outline the movement of the aircraft and the flying program.

After outlining the flying program, the following points to be covered:

"We are going to endeavor to bring to you the conversation between the Avro Tower and the aircraft during these manoeuvres, and during the flight Byng Whitteker of the C.B.C., who is located in our own Tower, will be contacting and interviewing our Chief Test Pilot, Don Rogers. After the aircraft lands it will be returned and opened for inspection. At that time refreshments will be served under the marquee."

2.50 p.m.

At the completion of Mr. Smye's speech, ground crew immediately carry out precision drill and aircraft is started and taxied under own power for take-off.

Public address system is switched to tower.

3.30 p.m.

Aircraft lands and taxis up to disembarkation point, arriving at approximately 3.30 p.m.

NOTE: Cowlings to be unfastened on outboard engines. Radio rack and accessory panels to be removed. Double gangway to be moved into position. Interior of aircraft to be roped off and guides set up for controlling flow of visitors.

4.00 p.m.

Final announces by Mr. F. T. Smye. "Busses will be leaving at 4.25 p.m. Will those who arrived by bus ensure they are on the bus before this time.

For those who have arrived by car, we would like to point out that our plant shuts down at 4.45 p.m., and that vehicle traffic is very heavy until about 5.30. We would recommend that you avoid this rush by leaving before 4.45 p.m.

6. In the event that the weather prevents flying on Tuesday, our recommendation is that we advise by telephone all those whom we can that the official flight has been postponed until Wednesday, Oct. 5th.

M. D. Willar, Sales and Service. Dept.