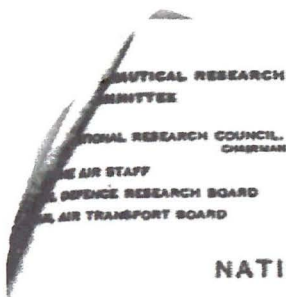


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NAE est Arrow 53: Jpg



IN YOUR REPLY PLEASE QUOTE
FILE NO. BM49-7-12
YOUR FILE NO. S1038-16
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NATIONAL AERONAUTICAL ESTABLISHMENT
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SECRET

28 September, 1953

Air Vice Marshal D.M. Smith,
Air Member for Technical Services,
Royal Canadian Air Force Headquarters,
Ottawa, Ontario.

Dear Air Vice Marshal Smith:

A.V. Roe C/105 Design Study

In reply to your letters of 15 July and 18 September, 1953, and Group Captain Footitt's request on Thursday, September 22, we have not yet finished our assessment of the C/105 design proposal, but our preliminary comments on the Cornell wind tunnel tests are:

Although the measurements extended only to a Mach number of 1.2, and although we disagree with the claim that shock wave reflections are entirely cancelled at the wind tunnel walls, we consider that the tests were well done and that, within their range, they bear out the A.V. Roe estimates of most of the Aerodynamic parameters affecting the aircraft performance. It is important that wind tunnel measurements be extended to higher Mach numbers as soon as possible.

For Mach numbers above 1.2, we have extrapolated the Cornell data using the A.V. Roe estimates as a guide. With RB-106 engines, the attainable sustained load factor at $M = 1.5$ and 50,000 ft. altitude under combat conditions with half fuel gone is found to be very close to the required value of 2.0. (Actually it was found to be 2.05 using the A.V. Roe estimate for minimum drag coefficient and 1.85 for the corresponding NAE estimate, which was 20 percent higher at this Mach number). The calculations show that the load factor is extremely sensitive to the elevator effectiveness

Suggests the later joint letter on their visit to NACA Langley, which was much more negative towards Avro's projections, was influenced negatively by NACA Langley staff, including the legendary Dr. Richard Whitcomb.

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