

AVRO AIRCRAFT LIMITED

INTERDEPARTMENTAL MEMORANDUM

SECRET

Ref: 8506/20/J
Date: November 22, 1958
To: Mr. F. Brame, Chief of Technical Design
From: J.H. Lucas, Chief of Performance Evaluation
Subject: PERFORMANCE ANALYSIS OF FLIGHTS PRIOR TO PHASE 2 PERFORMANCE TESTING

Attached herewith please find Appendix I to report 71/FAR-32 on Performance Analysis of Flights Prior to Phase 2 Performance Testing, containing the following sections:-

Section VII Subsonic Cruise Fuel Consumption Check, Aircraft 25201, Flight 9
Section VIII Asymmetric Flight, U/C Down, Aircraft 25204, Flight 1
Section IX High Mach Number Performance, Aircraft 25202, Flight 22
Section X Crash Landing Analysis, Aircraft 25202, Flight 22

Summary of results are as follows:-

- 1) A prolonged subsonic cruise test at 35,000 feet, using standard cockpit gauges to determine fuel rate, showed range performance of N.A.M.P.P. agreeing with previously determined values and therefore considerably better than original estimates.
- 2) Analyzing one of the flights simulating single engine (military + idling power), U/C down, approach conditions (at 7,000 and 8,000 feet) showing rates of descent approx. 400 fpm dive brakes in and 1300 fpm dive brakes out resulted in apparent drag reductions over estimates of approximately 15% and 9% respectively and yielded a positive rate of climb when "extrapolated" to sea level with one engine windmilling.
- 3) From the level flight at $M = 1.90$ at 50,000 feet and the dive to $M = 1.95$ at 47,000 feet data (under very near standard temperature conditions) it was determined that apparent aircraft drag at $M = 1.90$ is at least 20.5% better than original estimates and at $M = 1.95$ is 11.9% better than original estimates.
- 4) Analysis of the crash landing of aircraft 25202, using available data, showed the touchdown speed to be 181 ± 6 knots and the initial deceleration without drag chute to be $6.9 \pm .7 \text{ fps}^2$. Overall distance from touchdown to stop was 7,143 feet.


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