S/L ARMSTRONG

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AVRO AIRCRAFT

Inter-Departmental Memorandum

Ref 2243/01/J
Date July 16, 1958
To S. E. Harper
From T. Roberts
Subject TESTING OF THE D-HG32A-1 AIR DATA COMPUTER

Herewith R.F.T. 07-5072 specifing the testing required on the above computer to be carried out on A/C 25204. This was discussed at a meeting with R.C.A. but has yet to receive their final approval.

T. Roberts

/b

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FLIGHT TEST

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FORM 1749 A

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO

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R.F.T. NO. 07-5072

SHEET NO. 1 OF 4

DATE: July 15, 1958

REQUISITION FOR FLIGHT TEST

AIRCRAFT 25204	ASSIGNMENT NO. X73-4146	WORK ORDER NO.

TESTING OF THE D-HG32A-1 AIR DATA COMPUTER

1. OBJECTIVE

The purpose of this test is to insure that the outputs of the ADC will be stable and continuous throughout the limited flight envelope of the Arrow available at the time of testing. The further purpose is to accomplish this testing before the ADC outputs are required for the Astra Development programme.

2. EQUIPMENT

A complete ADC system should be used including supporting rack, temperature probe and ADC. This will be the unit serial number 2 and will be available for the period October 1958 to March 1959. The unit should be mounted in its normal position, i.e. inverted, and preferably in its assigned position in the electronics bay.

3. INSTRUMENTATION

3.1 Oscillograph

3.1.1 Aircraft Inputs

1. Aircraft static pressure - full range
2. Aircraft static pressure - intermediate range
3. Aircraft static pressure - low range
4. Differential pressure - full range
5. Differential pressure - intermediate range
6. Differential pressure - low range.
7. Free air total temperature.
8. Roll rate
9. Pitch rate
10. Yaw rate
11. Longitudinal acceleration
12. Lateral acceleration
13. Normal acceleration

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DATE FOR COMPLETION	PRIORITY	ESTIMATED COMPLETION DATE:

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REQUISITION FOR FLIGHT TEST

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SHEET NO. 2 OF 4

DATE: July 15, 1958

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3.1.2 ADC Outputs

1. Mach number
2. Log of static pressure.
3. Altitude
4. Static pressure.
5. Air density
6. Total temperature
7. True airspeed
8. Angle of attack
9. Mach rate
10. Altitude rate

3.2 Photo Panel

1. Airspeed
2. Altitude
3. Mach number
4. Time

4. TEST PROCEDURE AND CONDITIONS

4.1 Test Procedure

Method 3 as given in RCA document AEL No.61 will be used, i.e. special ADC flights will be carried out on the above aircraft. Testing will consist of flying at the conditions listed in 4.2 for the specified manoeuvres and recording the items listed under section 3.

4.2 Test Conditions

4.2.1 At M = 0.7 at 20,000 ft.

4.2.1.1 Fly straight and level

4.2.1.2 Increase aircraft attitude in three distinct steps holding each attitude for approx 10 secs at M = 0.7, then return to initial test altitude.

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REQUISITION FOR FLIGHT TEST

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SHEET NO. 3 OF 4

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AIRCRAFT 25204	ASSIGNMENT NO. X73-4146	WORK ORDER NO.

4.2.1.3 Roll the aircraft to both port and stbd. and maintain 15°, 30° and 45° of roll for approx. 10 secs.

4.2.1.4 Carry out snap-up manoeuvre pulling up to +3 g until approx. 30° angle of climb is attained, then return to initial test altitude

4.2.1.5 Carry out pitch and roll oscillations, amplitude and frequency at pilot's discretion within any aircraft limitations that may exist at time of test.

4.2.1.6 Carry out constant 2 g turn, maintain constant g for approx. 30 seconds.

4.2.1.7 Repeat for constant 3 g turn.

4.2.1.8 Decelerate to minimum safe flying speed, approx. 150 kts. EAS, to obtain recordings at high values of angle of attack.

4.2.2 Accelerate to M = 0.92 and climb at constant Mach number to 36,000 ft.

4.2.3 Repeat tests 4.2.1.1 to 4.2.1.7 inclusive, where final conditions of 4.2.2. are initial test altitude.

4.2.4 Accelerate to M = 1.5 at 36,000 ft.

4.2.5 Repeat tests 4.2.1.1 to 4.2.1.6 inclusive, where final conditions of 4.2.4 are initial test altitude.

4.2.6 Climb at M = 1.5 const. to 50,000 ft.

4.2.7 Repeat tests 4.2.1.1 to 4.2.1.5 inclusive, where final conditions of 4.2.6 are intial test altitude.

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REQUISITION FOR FLIGHT TEST

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R.F.T. NO. 07-5072

SHEET NO. 4 OF 4

DATE: July 15, 1958

AIRCRAFT 25204	ASSIGNMENT NO. X73-4146	WORK ORDER NO.

4.2.7.1 Carry out constant g turn at M = 1.5 and 50,000 ft. at max power limited g, approx. 1.1 g.

4.2.7.2 Carry out constant 2 g turn maintaining constant altitude.

4.2.8 Descend to 40,000 ft. and decelerate to M = 0.92.

4.2.9 Decelerate and descend to circuit height.

4.2.10 Approach and land.

5. DATA

Continuous trace and film records of quantities listed under section 3 for all the test conditions of 4.2.1 to 4.2.10. At least two complete sets of recordings are required, one for Technical Design, the other for transmittal to R.C.A.

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