



UNCLASSIFIED

Inter-Departmental Memorandum

Ref 3353/07/J
Date September 2, 1958
To Mr. S.E. Harper
From T. Roberts
Subject ARROW 1 - FLYING CONTROL DEVELOPMENT

*S/C Armatures
This doesn't leave
much for the F.T.
Section to do does
it. This is a play by
play of what is to be
done*

Rev

Herewith R.F.T. 07-5070, Add. 5, covering the testing required
on the eighth flight of A/C 25202 with three axes damping
activated.

T. Roberts

/b

T. Roberts
Technical Design Coordinator
FLIGHT TEST

C.C.
Messrs R.N. Lindley
J.A. Chamberlin
C.V. Lindow
F.H. Brame
F.P. Mitchell
D. Rogers
D. Scard
D. Wocley (6)
S. Whiteley
J. Ames
J. Lynch
J. Gale
S. Kwiatkowski
C. Marshall
J. Lucas
A. Thomann
R. Carley

W/C G. Waterman
W/C G. Waterman (2) AVRO T.S.D. RCAF
for transmittal to
S/L K. Owen, C.E.P.E.
Detachment.

Central Files

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO

REQUISITION FOR FLIGHT TEST

4401A 2811ED
R.F.T. NO. 07-5070 ASSIGNED

SHEET NO. 1 OF

DATE: September 2, 1958

AIRCRAFT 25203

ASSIGNMENT X73-383

WORK ORDER NO.

FLYING CONTROL DEVELOPMENT

The following testing is required on the eighth flight of A/C 25202 with three axes damping activated.

1. OBJECTIVES

- 1.1 Assess normal yaw damper.
- 1.2 Assess normal roll damper.
- 1.3 Assess normal pitch damper.
- 1.4 Extend flight envelope.
- 1.5 Carry out stick taps and rudder kicks.

2. INSTRUMENTATION

2.1 Telemetry

2.1.1 Stability and Control

1. Angle of sideslip.
2. Normal acceleration - near C.G.
3. Lateral acceleration - near C.G.
4. Roll rate.
5. Port elevator angle - full range.
6. Port aileron angle - full range.
7. Rudder angle - full range.
8. Port aileron differential servo position.
9. Port elevator differential servo position.

2.1.2 Structural Integrity

10. Rudder vibration pick-up accelerometer No 58.
11. Aileron vibration pick-up accelerometer No 42

R.F.T. PREPARED BY:

APPROVED BY:

AUTHORIZED BY:

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO

REQUISITION FOR FLIGHT TEST

R.F.T. NO. 07-5070 Add. 5

SHEET NO. 2

DATE: September 2, 1958

**UNCLASSIFIED
SECRET**

AIRCRAFT 25203

ASSIGNMENT

X73-383

WORK ORDER NO.

2.1.3 Basic Data

12. Range time.

Numbering of parameters is not meant to signify any order of allocation of telemetry channels

3. TEST PROCEDURE

3.1 Clean Aircraft

3.1.1 Carry out rudder kicks and allow aircraft oscillations to subside unassisted if practical.

3.1.2 Carry out stick taps and rudder kicks in order to record control surface vibration.

3.2 Yaw Axis Damper Only

3.2.1 Engage normal mode gear up and assess handling. Apply step input.

3.2.2 Engage emergency mode gear up and assess handling.

3.2.3 Carry out stick taps and rudder kicks in order to record control surface vibration.

3.3 Roll Axis Damper Only

3.3.1 Engage normal mode gear up and assess handling.

3.3.2 Apply step input.

3.3.3 Carry out steady commands, the angle of bank not to exceed 90°.

3.3.4 Trim aircraft for straight and level flight. Note corrections required to maintain this condition.

3.4 Pitch Axis Damper Only

3.4.1 Engage normal mode gear up and assess handling.

3.4.2 Apply step input.

3.4.3 Carry out steady commands.

3.4.4 Carry out trim checks similar to 3.3.4.

R.F.T. PREPARED BY:

APPROVED BY:

AUTHORIZED BY:

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO

REQUISITION FOR FLIGHT TEST

R.F.T. NO. 07-5070 Add. 5

SHEET NO. 3 OF

DATE: September 2, 1958

UNCLASSIFIED

AIRCRAFT 25202

ASSIGNMENT X73-383

WORK ORDER NO.

3.5 Three Axes Damping

3.5.1 Engage normal mode gear up for all three axes and assess handling.

3.5.2 Apply step input for each axis individually allowing aircraft to return to neutral position before proceeding with the next axis.

3.5.3 Carry out steady commands one axis at a time.

3.5.4 Carry out trim checks.

4. TEST CONDITIONS

4.1 Take-off, accelerate and climb to 0.7 TMN at 20,000 ft. with dampers off.

4.2 At 0.7 TMN and 20,000 ft. carry out tests 3.2 to 3.5 inclusive, omitting test 3.2.3.

4.3 Climb at approx. 0.9 TMN to 36,000 ft., at which altitude accelerate to 1.3 TMN Damper Configuration to be stipulated by Operations Controller dependent upon results of tests 4.2.

4.4 At 36,000 ft. and 1.3 TMN, (approx. 460 kts. IAS), carry out tests 3.1.1., and 3.1.2 and 3.2.1., then continue acceleration to 500 kts. IAS, (approx. 1.4 TMN).

4.5 At 36,000 ft. and 500 kts. IAS carry out tests 3.2.1 and 3.2.3.

4.6 Climb at 500 kts. IAS until 1.8 TMN is attained, (approx 48,000 ft). During climb at constant IAS carry out tests 3.2.1 and 3.2.3 at 1.5, 1.6, 1.7 and 1.8 TMN.

4.7 Decelerate to 1.4 TMN at 48,000 ft. and carry out tests 3.3. to 3.5 inclusive on instructions from Operations Controller.

NOTE:- Normal yaw damper gear up mode is to be engaged at all times above 1.3 TMN.

R.F.T. PREPARED BY:

APPROVED BY:

AUTHORIZED BY:

AVRO AIRCRAFT LIMITED

MALTON, ONTARIO

REQUISITION FOR FLIGHT TEST

R.F.T. NO. 07-5070 Add. 5

SHEET NO. 4 OF

DATE: September 2, 1958

UNCLASSIFIED

AIRCRAFT 25202

ASSIGNMENT X73-383

WORK ORDER NO.

5. DATA

5.1 Sanborn records of parameters listed in 2.

* 5.2 Analogue record of Data Tape parameters.

5.3 Pilot's comments.

- * It is appreciated that the data of 5.2 is for system development, nevertheless any useful data thus acquired should be utilized by Technical Design. - 36 parameters, 10 of which are monitored by telemetry.
- all CM data.
 - system not properly calibrated for this flight, but data still good for incremental values (as opposed to absolute values).

- M.S.

R.F.T. PREPARED BY:

APPROVED BY:

AUTHORIZED BY: