


AVRO AIRCRAFT LIMITED

Inter-Departmental Memorandum

Ref No: 7283/16A/J
Date: April 9, 1958
To: S. E. Harper
From: T. Roberts
Subject: AIR CONDITIONING ENGINEERING TESTS - ARROW 1 AIRCRAFT 25205

Herewith R.F.T. No. 5030, 'Air Conditioning Engineering Tests', which specifies the Pre-Flight and Flight Testing required on Arrow 1 - Aircraft 25205.

AA*bb


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AVRO AIRCRAFT LIMITED

MALTON, ONTARIO

REQUISITION FOR FLIGHT TEST

R.F.T. NO. 5030SHEET NO. 1

OF

DATE: April 9, 1958

AIRCRAFT 25205

ASSIGNMENT NO. X73-384

WORK ORDER NO.

AIR CONDITIONING ENGINEERING TESTS1. OBJECT

To prove the operation of the Air Conditioning System, with Auxiliary system as installed in aircraft 25204 and 25205.

2. INSTRUMENTATION

All instrumentation as called for in section 6 of FAR/C105/2 Issue 2, is required for these tests. For convenience a copy of this list is attached to this R.F.T.

3. PROCEDURE

3.1 The Air Conditioning Pre-Flight tests on this aircraft should be completed as in R.T. No. 08-778, Addendum 1. This test comprises of a Flow Distribution check and a check during the engine run.

3.2 It is required to have continuous recording of the following quantities at all times throughout one or two flights. The measurement of these quantities will establish whether the air conditioning system is working efficiently or not. Should any problems arise it will be necessary to record all data as shown in the instrumentation list. (FAR/C105/2, Issue 2).

3.2.1. Engine bleed static pressure (port engine)

3.2.2. Engine bleed temperature (port engine)

3.2.3. Turbine inlet total pressure.

3.2.4. Turbine inlet temperature.

3.2.5. Turbine outlet static pressure.

3.2.6. Turbine outlet temperature.

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DATE FOR COMPLETION

PRIORITY

ESTIMATED COMPLETION
DATE:



AVRO AIRCRAFT LIMITED

MALTON, ONTARIO

REQUISITION FOR FLIGHT TEST

R.F.T. NO. 5030

SHEET NO. 2 OF

DATE: April 9, 1958

AIRCRAFT 25205

ASSIGNMENT NO. F73-384

WORK ORDER NO.

3.2.7. Turbine R.P.M.

3.2.8. Cabin Inlet Temperature.

3.2.9. Cabin outlet temperature.

3.2.10. Equipment inlet temperature.

3.3 When it has been established that the system is functioning correctly recordings of all data are required for three flight cases. The Flow Distribution measurements are of particular importance, as with the auxiliary system in operation they are necessary to check the theoretical calculations already made. The three flight cases are as follows:-

3.3.1. Subsonic cruise at 40,000 ft. $M = 0.92$.

3.3.2. Maximum speed at maximum altitude.

3.3.3. Cruise at sea level $M = 0.4$.

4. DATA REQUIRED

4.1 Record 10 items as under Procedure section 3.1.

4.2 Record from all instrumentation for Procedure section 3.2.

R.F.T. PREPARED BY:

APPROVED BY:

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DATE FOR COMPLETION

PRIORITY

ESTIMATED COMPLETION

DATE:

SECTION 6 AIR CONDITIONING SYSTEM

Owing to the decision to install auxiliary air conditioning equipment there is a requirement for more instrumentation than initially anticipated.

The following measurements will be necessary in each compartment which is serviced (including the cabin).

MEASUREMENT	RANGE	ACCURACY	ACCURACY % OF FULL RANGE	SAMPLING FREQUENCY
Inlet Temperature	-20°F to +130°F	± 5°F	± 3%	5/min.
Inlet Pressure	0 to 20 psia	± 0.2 psi	± 1%	5/min.
Mass Flow (4P)	0 to 1 psi	± 0.05 psi	± 5%	5/min.
Outlet Temperature	0°F to 200°F	± 5°F	± 3%	5/min.

In addition, the following measurements are required:-

Engine Bleed Temperature)	
Engine Bleed Pressure)	As in
Main Refrigerator Turbine)	FAR/C105/1
Inlet Temperature)	Part 6, Issue 8.
Inlet Pressure)	
Outlet Temperature)	
Outlet Pressure)	
R.P.M.)	
Auxiliary System Supply	Mass Flow	20 - 50 lb./min.
	Temperature	0 - 500°F
	Pressure	0 - 100 psia
Auxiliary System Outlet	Temperature	0 - 200°F
	Pressure	0 - 120 psia