

CF-105 SERVICE DATA

50
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ANALYZED

FILE IN VAULT

ELECTRICAL SYSTEM

Classification cancelled / Changed to UNCLASS

By authority of AVES

Date 22 Sept 86

RADOME DE-ICING

Signature [Signature]

Unit / Rank / Appointment AVES

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NRC - CISTI
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BRANCH

MAY 24 1995

ANNEXE
J. H. PARKIN
CNRC - ICIST

CF-105 SERVICE DATA

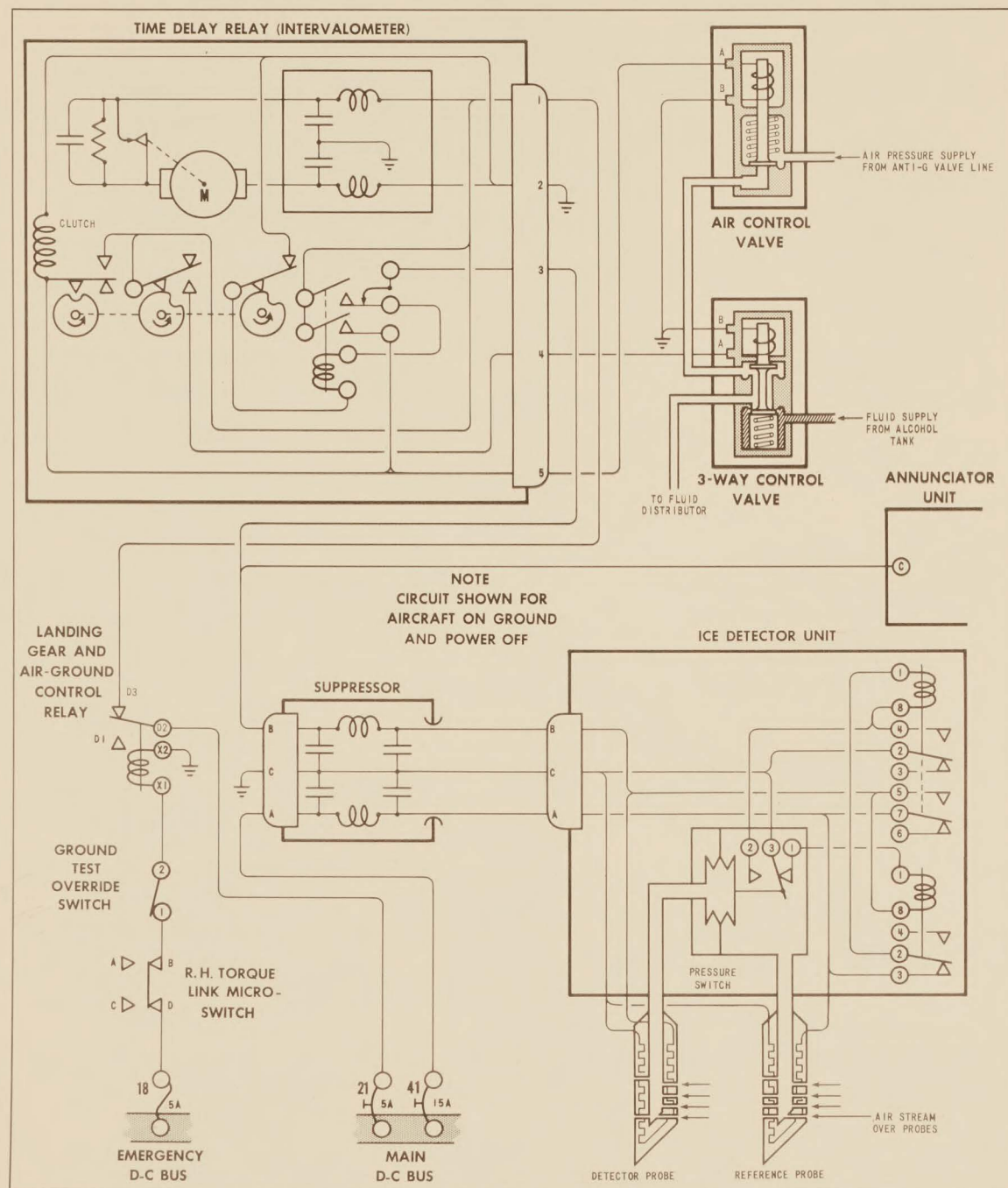


FIG. 1 RADOME DE-ICING SCHEMATIC

CF-105 SERVICE DATA

SYSTEM DATA SHEET

SYSTEM	SUB-SYSTEM	AIRCRAFT EFFTY	REF. NO.
ELECTRICAL	RADOME DE-ICING	25201	11-7

DESCRIPTION

General

1. An ice detection system and an alcohol de-icing system are fitted to prevent icing of the radome.
2. Icing conditions are detected by an ice detector fitted on the underside of the radar nose. The detector transmits a signal to a time delay relay which energizes the system, and alcohol is then fed via a system of valves and tubes to a distributor nozzle ring around the nose boom.
3. If the system has been in operation during flight, an annunciator indicates to the ground crew that the alcohol should be replenished.
4. A noise suppressor is fitted in the circuit to prevent interference with the radio systems.

Ice Detection

5. The ice detector is fitted with a control probe and a reference probe each of which has a number of holes in its forward and aft faces. The reference probe is continuously heated from the main d-c bus, and the control probe is heated intermittently during icing conditions.
6. The control and reference probes are connected to opposite sides of a pressure switch. During ice free conditions the airflow through the holes of both probes creates a pressure on both sides of the pressure switch which keeps the switch contacts open.
7. When icing conditions are encountered, formation of ice on the forward holes of the control probe decreases the pressure on the control probe side of the pressure switch and the switch contacts close. This sends a signal impulse to the time delay relay and also completes a 28V d-c supply to the heating element in the control probe.
8. When the heating element has melted the ice on the control probe the pressure switch contacts open and cut off the supply to the heating element and to the time delay relay.
9. This cycle is repeated until icing conditions cease.

Time Delay Relay

10. When the time delay relay receives a signal pulse from the ice detector, it supplies 28V d-c from the main bus to the solenoids of a shut-off valve and a 3-way control valve. The shut-off valve opens the L.P. air line to the 3-way control valve.

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The 3-way control valve opens the alcohol line to a fluid distributor in the radome, which fills with alcohol. After a timed interval, the time delay relay de-energizes the solenoid of the 3-way control valve which then feeds the L.P. air supply to the distributor to spray the alcohol over the radome.

11. One pulse from the detector motors the time delay relay for 25 seconds. The shut-off valve is energized to open, for the full 25 seconds. The 3-way control valve is energized for one second for the alcohol feed and de-energized for 24 seconds for the air supply.

12. This cycle is repeated until icing conditions cease.

13. The alcohol and pneumatic components of the system are described in the service data for Radome De-icing - Ref. 20-1.

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COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM RADOME DE-ICING	COMPONENT Ice Detector	REF. NO. 11-7-1
AVRO PART NO. 7-2055-27	MANUFACTURER PSC Applied Research	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours			
FUNCTION To detect icing conditions. To signal the presence of icing conditions in the form of electrical impulses to a time delay relay.			
LOCATION Underside of the radar nose at station 116.10.			
ACCESS			MEN X MINUTES
Remove the access panel on the underside of the radar nose at station 108.45 to 114.24 - 16 x 10/32 inch screws.			
REPLACEMENT PROCEDURE			MEN X MINUTES
Fit and secure the ice detector to the structure - four screws. Connect and secure the electrical connector from the noise filter.			

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INSPECTION		MEN X MINUTES	
<p>Check that the holes on the leading and sheltered sides of the probes are clear. Check that the unit is securely mounted. Check that the electrical connector is properly and securely fitted.</p>			
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM RADOME DE-ICING	COMPONENT Noise Filter	REF. NO. 11-7-2
AVRO PART NO. 7-2055-105	MANUFACTURER PSC Applied Research	MAN'FR'S PART NO.	AIRCRAFT EFFECTIVITY 25201
OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours			
FUNCTION To filter electrical interference originated by the ice detector.			
LOCATION Underside of the radar nose at station 111.96, adjacent to the ice detector.			
ACCESS Remove the access panel on the underside of the radar nose at station 108.45 to 114.24 - 16 x 10/32 inch screws.			MEN X MINUTES
REPLACEMENT PROCEDURE Fit and secure the noise filter to the structure - four bolts. Re-connect the circuit connector to the ice detector. Fit and secure the circuit wiring to the suppressor.			MEN X MINUTES

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INSPECTION		MEN X MINUTES	
<p>Check the panel for security and cleanliness.</p> <p>Check the warning lights by operating the "Press-to-Test" switch and the DAY/NIGHT switch.</p> <p>Function test by a test box installed at the Master Warning Control Box.</p> <p>Lift the panel and check the wiring and hardware for security and damage.</p>			
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
<p>Test Box to introduce signals into the master warning control box.</p>			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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COMPONENT DATA SHEET

SYSTEM ELECTRICAL	SUB-SYSTEM RADOME DE-ICING	COMPONENT Time Delay Relay	REF. NO. 11-7-3		
AVRO PART NO. 7-1151-13	MANUFACTURER A.W. Haydon Company	MAN'FR'S PART NO. B-7839	AIRCRAFT EFFECTIVITY 25201		
OVERHAUL LIFE: KNOWN-		ESTIMATED- 1500 hours			
FUNCTION When operated by a signal from the ice detector, controls the position of the 3-way solenoid valve and the shut-off valve, and supplies a signal to the annunciator unit.					
LOCATION Topside of the radar nose at station 72.0.					
ACCESS Remove the de-icing equipment access panel on the topside of the radar nose at station 68.5 to 84.25.			MEN X MINUTES <table border="1"> <tr><td></td><td></td></tr> </table>		
REPLACEMENT PROCEDURE Fit and secure the unit to its mounting - four bolts. Fit and secure the circuit wiring to the unit.			MEN X MINUTES <table border="1"> <tr><td></td><td></td></tr> </table>		

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INSPECTION		MEN X MINUTES	
<p>Check that the circuit wiring is securely and properly fitted. Check that the unit is securely mounted.</p>			
FUNCTIONAL CHECKS		MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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