

NTSB Recommendation A-83-047

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Rec #: A-83-047

NTSB Status: Closed - Acceptable Alternate Action

Issue date: 7/19/1983

Accident Date: 6/2/1983

Source Event: ACCIDENT

Location: CINCINNATI Ohio

Mode: AVIATION

Most Wanted List: No

Closed date: 11/17/1986

Report Number: AAR-84-09

Accident ID: DCA83AA028

Background Synopsis:

ON JUNE 2, 1983, AN IN-FLIGHT FIRE OCCURRED ON BOARD AIR CANADA FLIGHT 797, AND FOLLOWING AN EMERGENCY LANDING AT THE GREATER CINCINNATI AIRPORT, THE CABIN INTERIOR OF THE MCDONNELL DOUGLAS DC-9-32 CONTINUED TO BURN. FIVE CREWMEMBERS AND 18 PASSENGERS WERE ABLE TO EVACUATE THE BURNING CABIN; THE REMAINING 23 PASSENGERS DIED IN THE FIRE.

Recommendation:

THE NTSB RECOMMENDS THAT THE FEDERAL AVIATION ADMINISTRATION: ISSUE AN AIRWORTHINESS DIRECTIVE (1) TO REQUIRE AN IMMEDIATE INSPECTION OF THE LAVATORY FLUSHING PUMP MOTOR AND THE ASSOCIATED WIRING HARNESSSES BETWEEN THE TIMING COMPONENTS AND THE MOTOR IN THE LAVATORIES OF TRANSPORT CATEGORY AIRPLANES FOR EVIDENCE OF MOISTURE-INDUCED CORROSION OR DETERIORATED INSULATION AND TO REQUIRE THAT FLUSHING PUMP MOTORS OR WIRING HARNESSSES WHICH EXHIBIT SUCH CONDITIONS BE REPLACED, AND (2) TO ESTABLISH APPROPRIATE PERIODIC INTERVALS FOR REPETITION OF THESE INSPECTIONS.

Correspondence:

Response Date: 10/21/1983 From: Addressee

Response:

The FAA has witnessed component testing of lavatory flushing pump motors, including test conditions in which the motors were intentionally overheated. Both new and used pump motor units were tested. The results indicated that overheating of the motors is not sufficient to generate a fire, although smoke does develop. The smoke is the product of burned windings. Numerous transport category airplanes were inspected in the area of the lavatories with special emphasis on the flushing pump motor and associated electrical wiring and circuitry. From these inspections and the lack of further data presented to determine the fire source on Air Canada Flight 797, the FAA has determined that the present maintenance programs being conducted by operators of transport category airplanes are sufficient for detecting deteriorated or corrosion-damaged conditions.

Response Date: 6/12/1984 From: NTSB

Response:

The Safety Board notes that the FAA has witnessed tests and inspections associated with potential failures of flushing pump motor wiring assemblies and circuitry, and that it plans no further action. However, the Safety Board's investigation of the Air Canada in-flight fire

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accident of June 2, 1983, is not completed. Therefore, since new or supplemental information from this investigation may affect these recommendations, the Safety Board will delay evaluating your efforts until the investigation has been completed.

Response Date: 11/17/1986 From: Addressee

Response:

THE FAA HAS WITNESSED COMPONENT TESTING OF LAVATORY FLUSHING PUMP MOTORS, INCLUDING TEST CONDITIONS IN WHICH THE MOTORS WERE INTENTIONALLY OVERHEATED. BOTH NEW AND USED MOTOR UNITS WERE TESTED. THE RESULTS INDICATED THAT OVERHEATING OF THE MOTORS IS NOT SUFFICIENT TO GENERATE A FIRE, ALTHOUGH SMOKE DOES DEVELOP. THE SMOKE IS THE PRODUCT OF BURNED WINDINGS. NUMEROUS TRANSPORT CATEGORY AIRPLANES WERE INSPECTED IN THE AREA OF THE LAVATORIES WITH SPECIAL EMPHASIS ON THE FLUSHING PUMP MOTOR AND ASSOCIATED WITH (2) ELECTRICAL WIRING AND CIRCUITRY. FROM THESE INSPECTIONS AND THE LACK OF FURTHER DATA PRESENTED TO DETERMINE THE FIRE SOURCE ON AIR CANADA FLIGHT 797, THE FAA HAS DETERMINED THAT THE TRANSPORT CATEGORY AIRPLANES ARE SUFFICIENT FOR DETECTING DETERIORATED OR CORROSION-DAMAGE CONDITIONS. (3) ACCUMULATION OF FLUIDS WHICH CAN CAUSE CORROSION OF WIRE HARNESSSES AND OTHER ELECTRICAL COMPONENTS. ADDITIONALLY, IN RESPONSE TO SAFETY RECOMMENDATION A-83-73, WHICH ALSO RESULTED FROM THE BOARD'S INVESTIGATION OF THE AIR CANADA INFLIGHT FIRE, THE FAA INFORMED THE BOARD THAT IT HAD PERFORMED A DETAILED EVALUATION OF THE LAVATORY PUMP MOTOR SYSTEMS OF TRANSPORT CATEGORY AIRPLANES. THIS EVALUATION LEAD TO THE DEVELOPMENT OF TOILET FLUSH MOTOR POWER WIRE HARNESSSES ON CERTAIN MODELS OF MCDONNELL DOUGLAS DC-9 AIRPLANES.

Response Date: 11/17/1986 From: NTSB

Response:

In its letter to the Safety Board of October 21, 1983, the FAA informed the Board that it had tested both new and used lavatory pump motor units and found that an overheated unit would not produce sufficient heat to generate a fire. Additionally, while the FAA's inspections of numerous transport category aircraft did not disclose any maintenance or cleaning problems, the FAA issued a General Notice (GENOT 8320.283) which requested that the principal inspectors assure that assigned operators have adequate programs to inspect areas susceptible to the accumulation of waste materials or the accumulation of fluids which can cause corrosion of wire harnesses and other electrical components. In our letter of June 12, 1984, the Board informed the FAA that it would withhold comment on the FAA's actions pending completion of our investigation of the subject accident. In response to Safety Recommendation A-83-73, which also resulted from the Board's investigation of the Air Canada inflight fire, the FAA informed the Board that it had performed a detailed evaluation of the lavatory pump motor systems of transport category airplanes. This evaluation led to the

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development of an Airworthiness Directive which required the modification of toilet flush motor power wire harnesses on certain models of McDonnell Douglas DC-9 airplanes. The Safety Board has considered the FAA's actions with regard to the lavatory flushing pump motor and its associated electrical components and wiring harness, and finds that these actions comply with the intent of the above recommendations. Therefore, Safety Recommendations A-83-47 and A-83-48 have been classified as "Closed--Acceptable Alternate Action." Your efforts to improve aviation safety are appreciated.