NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF AVIATION SAFETY
WASHINGTON, D.C.

April 30, 1997

MAINTENANCE RECORDS GROUP CHAIRMAN'S FACTUAL REPORT

A. ACCIDENT : DCA97MA017

LOCATION	:	Monroe, MI
DATE	:	January 9, 1997
TIME	:	1653 Eastern Standard Time (EST)
AIRCRAFT	:	Embraer EMB-120, N265CA, Operated by Comair Inc., as Flight 3272

B. MAINTENANCE RECORDS GROUP

Group Chairman	Ronald C. Price National Transportation Safety Board Washington, D.C.
Member	Stephen Marshall Air Line Pilots Association Florence, KY
Member	Robert Mattmann Comair Inc. Cincinnati, OH
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C. SUMMARY

On January 9, 1997, at 1653 EST, a Comair Embraer EMB-120, serial number (SN) 120257, operating as Flight 3272, crashed near Monroe, Michigan, during its approach to the Detroit Metro Wayne County International Airport. The flight crew of three and all 26 passengers were fatally injured.

The Maintenance Records Group documented the pertinent information regarding the airplane maintenance records. The group began its investigation on January 13, 1997 and concluded its examination of the records on January 14, 1997.

D. DETAILS OF THE INVESTIGATION

1.0 HISTORY

The accident aircraft was manufactured by Embraer SA, in Brazil, South America on December 12, 1991. The aircraft was issued a Brazilian Export Certificate of Airworthiness on December 20, 1991, and flown to Fort Lauderdale, Florida. The registration number (N265CA) was issued and applied to the aircraft when the aircraft arrived from Brazil. A Federal Aviation Administration (FAA) Designated Airworthiness Representative (DAR) issued its U.S. Standard Certificate of Airworthiness on February 20, 1992. Also on that date Comair placed the aircraft on its FAA-approved continuous maintenance inspection program and the Comair air carrier operating certificate, COMA005B. There were no other owners or operators.

1.1 AIRFRAME

The EMB-120 was maintained under Comair's continuous maintenance inspection program. The maintenance program is comprised of service checks, 400 flight hour interior checks, E-inspections, C-inspections, calendar inspections, and flight cycle inspections. A table depicting time, hour and cycle requirements of the maintenance program is in appendix A.

A service check is performed every 50 flight hours or 7 days, whichever occurs first. A 400 flight hour interior check is performed concurrently with each E-check and is limited to those interior inspections normally associated with wear and tear of the interior. There are 10 reoccurring E-checks at intervals of 400 hours. The E-checks are divided so as to be equal time of inspection requirements and numbered: E1 through E10 (A and B). A separate airworthiness release is signed by the maintenance department after each E check. There are three C checks at intervals of 4,000 flight hours each. The 1C check is accomplished at the 4,000 flight hour time in service and is comprised of 8 maintenance zones. The 2C check is accomplished at intervals not to exceed 8,000 flight hours and is comprised of 7 zones. The 4C check is accomplished every 16,000 flight hours and is comprised of 5 zones. At the conclusion of each C check a separate airworthiness release is signed. Calendar checks are done at 12 and 24 months and are repetitive. Flight cycle checks are done at intervals of 400, 800, 1,200, 2,000, 4,000, 8,000, 20,000lt., 20,000rt, 24,000, and 32,000 cycles (one takeoff and landing is a cycle). A special inspection is an inspection that may be repetitive and covers times or cycles that other checks would not conveniently cover.

According to Comair's records, N265CA had accumulated 12,746.6 flight hours and 12,730 cycles through January 9, 1997. The aircraft had flown three revenue flights after January 9, before its departure from Cincinnati on the accident flight. N265CA had flown 12,751.8 flight hours and 12,734 cycles at the time of the accident.

The aircraft had a 1C check performed at the Cincinnati maintenance base on November 20, 1996, at 12,413.0 flight hours and 12,379 cycles. During the 1C inspection, the records show that the rudder system, Angle-of-attack (AOA), and stall warning systems were included as part of the regularly scheduled inspectable items. The aircraft had an E1 inspection on December 27, 1996, at 12,662.5 flight hours and 12,651 cycles. During the E1 inspection, the records indicate that the autopilot was inspected as part of the scheduled inspection process. At the time of the crash there were no inspections due, nor were there any inspections scheduled within the next 7 days.

The records indicate that the last pitot-static check was performed on December 12, 1995. The left and right altimeters were operationally check during installation on April 24, 1996 (No. 1), and June 5, 1996 (No. 2), respectively. The last static system check of the triple indicator was shown to be November 1, 1996.

1.2 Left Engine

The No. 1 (left) engine, a Pratt and Whitney of Canada (PWC) PW-118, SN 115483, had accumulated a total flight time (TTSN) of 19,127.4 flight hours. The last inspection was a C1 inspection performed on December 20, 1996, at 12,413 aircraft flight hours, and 12,379 cycles. An E1 inspection had been completed at 12,662.5 flight hours and 12,651 cycles on December 27, 1996. There were no open items on the discrepancy list.

1.3 Right Engine

The No. 2 (right) engine, a PWC PW-118, SN 115576, had accumulated a total flight time (TTSN) of 11,745.5 flight hours. The last inspection was a C1 inspection performed on December 20, 1996, at 12,413 aircraft flight hours, and 12,379 cycles. An E1 inspection had been completed at 12,662.5 flight hours and 2,651 cycles on December 27, 1996. There were no open items on the discrepancy list. On January 4, 1997, the No. 2 engine was overhauled at Lufthansa A.E.R.O. in Germany. The engine had accumulated 35.7 flight hours and 32 cycles since overhaul.

1.4 Left Propeller

The records indicated that the left Hamilton-Standard model 14RF-9 propeller had SN 890323, TTSN 19127.7 hours, and CSN 20719. The blade SNs were: No.1- 887792, No.2- 887782, No.3- 887779, and No.4- 887784. The blades were all installed on August 2, 1996, with TSN 18,014.1 hours. There were no open items.

1.5 Right Propeller

The records indicated that the right Hamilton-Standard model 14RF-9 propeller had SN 910528, TTSN 8,378.2 hours, and CSN 9,023 and was installed on December 7, 1996. The blade SNs were: No.1- 872581, No.2- 868008, No.3- 860455, and No.4- 872093. The blades were all installed on June 13, 1996, with TSN 18014.1 hours. There were no open items.

1.6 Airworthiness Directives

Airframe

A review of pertinent Airworthiness Directives (AD) was made. The records indicated that all ADs that were applicable to this make, model, and serial numbered airframe were found to have been complied with.

Engines and Propellers

A similar review of ADs pertinent to the engines and propellers was made. The records indicated that all ADs had been complied with.

1.7 Discrepancies

A computer listing of the previous 90 days discrepancy reports revealed that all of the items except one had been cleared by maintenance personnel. The uncleared and deferred discrepancy was a small dent in the fuselage of .033 inch depth at fuselage station 2677.

The ice and rain protection system maintenance records were reviewed for trends, failures, and uncleared items. No uncleared items were found on the discrepancy report of ice and rain (ATA 3000) protection systems during the past three months. The records were reviewed for recurring problems or repeat discrepancies that maintenance personnel had cleared by inspection only; no trends were found. The records indicated numerous discrepancies noted by flightcrews and maintenance personnel during inspections. All of the items were shown as closed on the records review. On January 2, 1997, maintenance personnel noted that a boot patch was peeling off the right inboard leading edge wing deice boot. The discrepancy was cleared by removing and replacing the patch. The records indicated that on January 1, 1997, the flightcrew noted that the outboard leading edge ice protection failed at both timers 1 and 2 positions. Comair maintenance corrected the problem by removing and replacing the right pressure regulator and conducted an operational check of the system on the same day. On December 27, 1996, the records indicated that the maintenance department noted that operational checks of both left and right propeller heat systems were due. The discrepancy was cleared by performance of the required operational checks. On December 24, 1996, the airplanes discrepancy log indicated a failure of the leading edge ice protection systems. The records showed that the maintenance personnel replaced the outboard ejector valve but the operational check revealed holes in the deice boot. The records indicated that a new right wing deice boot was installed and a completed operational check performed. On November 3, 1996, maintenance personnel found that the right engine propeller deice brushes were worn. The discrepancy was corrected by replacing the brushes then accomplishing an operational check of the propeller deice system. Also on that date, maintenance noted that task 30-12 (cleaning of the deice pneumatic lines; due once each year) was due. The discrepancy was cleared by a Comair approved change permitting the inspection to be delayed. On November 1, 1996, the flightcrew reported that the right inboard wing deice boot failed in flight on

two occasions. Comair maintenance corrected the problem by removing and replacing the right forward ejector valve and conducted a successful operational check.

The records were further reviewed for flight control and structural discrepancies. One cowl flap item was found during an inspection on December 27, 1996, that indicated a crack in the left engine forward cowl flap door on the outboard side. The records indicated that the cowl flap door was removed and a serviceable door was installed in its place on the same day. No other discrepancies were found concerning the door. The autopilot system was found to be inoperative during a December 7, 1996, flight and the discrepancy noted by the flightcrew. The discrepancy was cleared by Comair's maintenance personnel on the same day by performing a full functional check of the system in accordance with the manufacturers maintenance manual (No. 22-10-00). The stall warning records were reviewed and revealed that during the previous 30 days, the stall warning system was reported to have discrepancies on 2 occasions. The first was on December 17, 1996, and was described by the flightcrew as the right stall warning will not test properly. The discrepancy was corrected by maintenance by centering the left and right angle-of-attack vanes and retesting the system. The second was on December 11, 1996, when the flightcrew noted that the right stall warning test will not clear after the test is complete. The discrepancy was cleared by resetting the right stall warning system then conducting an satisfactory operational check.

The records indicated that the slow/fast indicator is a sub-system of the electronic attitude indictor (EADI), the AOA, and the stall warning systems. The slow/fast indictor was not indicated as having any discrepancies. However, the EADI system was noted to have discrepancies on January 2, 1997, and December 18, 1996, that Comair maintenance cleared by replacing the attitude computer for the first discrepancy and replacing the first officer's EADI for the second.

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Ronald C. Price
Aerospace Engineer

5/5/97