



National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Log 2152

Date: June 5, 1989

In reply refer to: A-89-31 and -32

Mr. Robert E. Whittington
Acting Administrator
Federal Aviation Administration
Washington, D.C. 20591

On December 27, 1987, at 2339 central standard time, a McDonnell Douglas DC-9-31, N8948E, operating as Eastern Air Lines flight 573 (EA573), was substantially damaged during a hard landing at the Pensacola Regional Airport, Pensacola, Florida. The scheduled passenger flight had departed Atlanta, Georgia, at 2245 on an instrument flight rules (IFR) flight plan. Instrument meteorological conditions prevailed at the time of the accident. No fire occurred, but the captain ordered an emergency evacuation after the airplane came to a stop on the runway. The airplane carried 107 people: 100 revenue passengers, 3 nonrevenue passengers (one of whom occupied the cockpit jumpseat), 2 flightcrew members, and 2 flight attendants. Four passengers sustained minor injuries during the emergency evacuation.¹

The surface weather observation at 2334 at Pensacola was as follows: ceiling measured 900 feet overcast; visibility 2 miles, moderate rain, fog; wind 300° at 8 knots; altimeter 30.05 inHg. No significant changes were noted in the 2350 observation which showed both the temperature and dewpoint to be 68° F. The wind gust recorder trace showed a maximum wind of 10 knots during the period 2330 to 2345. At about the time of the accident, a line of weak to strong weather echos was passing over the airport with the eastern edge of a moderate to strong weather echo at the approach end of runway 16. The approach and landing occurred in a moderate to heavy rain shower. The sound of the airplane's windshield wipers was recorded on the cockpit voice recorder.

During the investigation, the Safety Board found that the spring tension on the captain's windshield wiper arm was about 5 pounds, while that of the first officer's was about 9 pounds. Nominal tension is 10 pounds, plus or minus 1 pound. Inadequate windshield wiper arm spring tension during flight through rain can degrade rain removal capability and cause visual illusions. Although neither the

¹For more detailed information, read Aircraft Accident/Incident Summary Report--"McDonnell Douglas DC-9-31, N8948E, Operated by Eastern Air Lines, December 27, 1987, Pensacola, Florida" (NTSB/AAR-89/02/SUM).

captain nor the jumpseat occupant, an Eastern Air Lines DC-9 first officer, reported difficulty seeing the runway environment, the Safety Board was not able to resolve whether the lower- than-normal spring tension on the captain's windshield wiper arm affected his ability to clearly distinguish the runway environment.

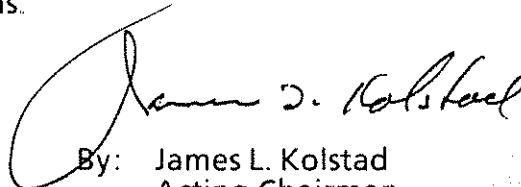
A review of the Eastern Air Lines maintenance program disclosed that verification of windshield wiper spring tension was not required during scheduled periodic inspections. Spring tension measurements were usually made when troubleshooting windshield wiper discrepancies reported by pilots. The daily log sheets for N8948E indicated that two adjustments to the captain's windshield wiper were made in the year preceding the accident, most recently on August 22, 1987, in response to pilot discrepancy reports. Because insufficient tension of the wiper can cause degraded rain removal capability, the Safety Board believes that Eastern Air Lines' practice of examining windshield wiper blade tension only after pilot discrepancy reports does not provide adequate assurance that wipers will perform effectively during adverse weather conditions, when their performance could be critical to flight safety. The Safety Board believes that periodic verification of proper windshield wiper spring tension should be performed by air carriers using similar windshield wiper equipment.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Review the design and service history of spring tension-type windshield wiper blades used on large air carrier aircraft to determine an appropriate inspection interval for verifying wiper spring tension. (Class II, Priority Action) (A-89-31)

Require operators of large air carrier aircraft equipped with spring tension-type windshield wiper blades to inspect and adjust windshield wiper blade tension at appropriate intervals. (Class II, Priority Action) (A-89-32)

KOLSTAD, Acting Chairman, BURNETT, LAUBER, NALL and DICKINSON, Members, concurred in these recommendations.


By: James L. Kolstad
Acting Chairman

Brief of Accident

File No. - 1505 12/27/87 PENSACOLA, FL A/C Reg. No. N8948E Time (Lcl) - 2339 CST

-----Basic Information-----

Type Operating Certificate-AIR CARRIER - FLAG/DOMESTIC Aircraft Damage
Name of Carrier - EASTERN AIR LINES SUBSTANTIAL
Type of Operation - SCHEDULED, DOMESTIC, PASSENGER Fire
Flight Conducted Under - 14 CFR 121 NONE
Accident Occurred During - LANDING

Fatal Injuries
0 Serious Minor None
Crew 0 0 0 4
Pass 0 0 4 99

-----Aircraft Information-----

Make/Model - MCDONNELL-DOUGLAS DC-9-31 Eng Make/Model - P&W JT8D-7B ELT Installed/Activated - NO -N/A
Landing Gear - TRICYCLE-RETRACTABLE Number Engines - 2 Stall Warning System - YES
Max Gross Wt - 105000 Engine Type - TURBOFAN
No. of Seats - 106 Rated Power - 14000 LBS THRUST

-----Environment/Operations Information-----

Weather Data
Wx: Briefing - COMPANY
Method - IN PERSON
Completion - FULL
Basic Weather - IMC
Wind Dir/Speed - 310/007 KTS
Visibility - 2.000 SM
Lowest Sky/Clouds - N/A
Lowest Ceiling - 900 FT OVFRCAST
Obstructions to Vision- FOG
Precipitation - RAIN
Condition of Light - NIGHT(DARK)

-----Itinerary-----

Last Departure Point
ATLANTA, GA
Destination
SAME AS ACC./INC

-----Airport Proximity-----

AN AIRPORT
Airport Data
PENSACOLA REGIONAL
Runway Ident - 16
Runway Lth/Wid - 7002/ 150
Runway Surface - ASPHALT
Runway Status - WFT

-----Personnel Information-----

Pilot-In-Command Age - 52
Certificate(s)/Rating(s) Biennial Flight Review
ATP, FLT ENG Current - YES
SE LAND, ME LAND Months Since - 4
HELICOPTER Aircraft Type - NC-9

-----Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT-----

Flight Time (Hours) Total Last 24 Hrs - 4
Make/Model - 4397 Last 30 Days - UNK/NR
Instrument - UNK/NR Last 90 Days - UNK/NR
Multi-Eng - UNK/NR Rotorcraft - UNK/NR

-----Instrument Rating(s) - AIRPLANE-----

-----Narrative-----

EASTERN FLT 573 CTCD APCH CTL AT 2323 CST, WAS ANZN TO EXFECT AN ILS RWY 14 APCH & WAS VECTORED ARND WX. AT 2330, THE CTLR ADZD THE ILS GLIDE SLOPE (G/S) HAD GOMF INTO "ALARM" BUT THE LOC APPEARED NML. AT 2333, THE WND SHIFTED TO 310 DEG AT 7 KTS. SINCE THE RC APCH TO RWY 34 WAS NOTAINED AS IRQP, THE CREW CONTD TO RWY 14, USING 50 DEG OF FLAPS. AT 2334, THEY TOLD THE CTLR, "IF YOU DON'T GET THE G/S UP, WE'LL DO A .LOC APCH." THEY RPTD RECEIVING THE G/S, BUT WERE ADZD THE G/S WAS STILL IN ALARM. THE ACFT BROKE OUT OF CLDS IN RAIN AT 900'; LCT THRC WAS ENCRD ON FINAL APCH. AT ABOUT 1 MILE OUT, THE F/O NOTED THE ACFT WAS HIGH AND ADVISED THE CAPT. THE CAPT PUSHED THE NOSE OVER AND REDUCED POWER, INCREASING SPEED AND RATE OF DESCENT. RECD ALT CALLOUTS WERE NOT MADE. F/O ADVISED CAPT TO FLARE, BUT FLARE WAS INADDT. THE ACFT TOUCHED DOWN HARD & THE FUSELAGE FAILED BTN STNS 813 & 756. ACFT WAS STOPPED WITH THE TAIL RESTING ON THE RWY. 4 FAX RECD MINOR INJURIES DRG EVAC. WX STUDY SHOWED A MOD TO STRONG (VIF LVL 2 TO 3) WX FCHO OVER THE APCH END OF RWY 14.

Brief of Accident (Continued)

File No. - 1505 12/27/87 PENSACOLA, FL A/C Reg. No. NR948E Time (Lcl) - 2339 CST

Occurrence #1 HARD LANDING
Phase of Operation LANDING - FLARE/TOUCHDOWN

Findings(s)

1. LIGHT CONDITION - NIGHT
2. WEATHER CONDITION - FOG
3. WEATHER CONDITION - RAIN
4. WEATHER CONDITION - TAILWIND
5. TERRAIN CONDITION - DOWNHILL
6. AIRPORT FACILITIES, VISUAL APCX SLOPE IND(VAS1) - UNAVAILABLE
7. PROPER DESCENT RATE - NOT MAINTAINED - PILOT IN COMMAND
8. MISSED APPROACH - NOT PERFORMED - PILOT IN COMMAND
9. CREW/GROUP COORDINATION - NOT PERFORMED -
10. FLIGHT AND NAVIGATION INSTRUMENTS - INATTENTIVE - PILOT IN COMMAND
11. FLARE - IMPROPER - PILOT IN COMMAND

-----Probable Cause-----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 7,8,11

Factor(s) relating to this accident is/are finding(s) 9,10