



National Transportation Safety Board

Aviation Incident Data Summary

Location:	Chicago, IL	Incident Number:	CHI03IA097
Date & Time:	04/01/2003, 1115 CST	Registration:	N175UA
Aircraft:	Boeing 747-422	Injuries:	319 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

While in normal cruise flight, the crew experienced lateral control problems. An emergency was declared. The aircraft landed safely at the intended destination. Evidence of a water leak was identified by the cabin crew approximately 5 hours from the destination. Efforts to control the leak were effective, however it was not completely stopped. Water was reported coming from the upper deck and flowing through the main deck ceiling. The flight was subsequently directed by air traffic control to make an enroute course change. However, when this command was entered in the Flight Management Computer (FMC) the aircraft began a shallow left turn instead of a right turn as required. Initial attempts to disconnect the autopilot were not successful and the autopilot was manually overridden. The relief first officer at the controls stated the controls "felt unusual" and "stiff." The captain reported elevator and rudder were normal, but bank angle was limited. The landing was accomplished smoothly and safely according to the captain, and the aircraft was taxied to the gate without incident. After landing, the captain noted the controls felt normal. Ramp personnel reported a significant amount of water draining from the fuselage and the drain masts at the gate. A post-incident examination of the aircraft revealed that areas of the main deck carpeting was saturated. The canted pressure deck overboard drains were not obstructed. A 6-inch long by 0.125-inch wide gap was located along the outboard edge of the canted pressure bulkhead on the right side of the aircraft. The seam was not sealed as required. Immediately aft of the canted pressure bulkhead were aileron and flight spoiler control cables. Four (4) circuit breakers common to the external drain line heaters were found open. The external drain lines route wastewater from the cabin overboard. The breakers were pulled in conjunction with routine cleaning of the drain lines prior to departure. Ground functional testing of the aileron controls, the aileron trim and the autopilot did not find any anomalies. A flight test was completed to verify in-flight operation of the flight controls and potable water system. No anomalies were noted. Airline procedures related to the routine inspection and cleaning of the external drains were reviewed. Resetting of the drain heater circuit breakers was the last item. A service bulletin had been issued which recommended testing, cleaning and inspection of the canted pressure deck drainage system (overboard drains), general visual inspection of the deck structure a pressurization test. Service bulletin instructions included a visual inspection for loose, missing or cracked sealant. The airline was in the process of incorporating the service bulletin into its maintenance program. As a result, the initial service bulletin procedures had not been completed prior to the incident. An airworthiness directive (AD) which required cleaning of "the cavity aft of the wing center section" and verification that all drains were open and clean was in effect at the time of the incident and had been complied with. A new AD was issued following the incident which mandated full compliance with the existing service bulletin.

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this incident to be: Failure of company maintenance personnel to fully comply with published maintenance/inspection procedures, as well as the resulting inoperative drain heaters and restricted movement of the aileron

control cables. Contributing factors were the impeded waste water drain system due to the inoperative heaters and the reduced aileron control due to restricted movement of the control cables.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: CRUISE - NORMAL

Findings

1. (C) MAINTENANCE,INSPECTION - NOT COMPLIED WITH - COMPANY MAINTENANCE PERSONNEL
2. (C) ANTI-ICE/DEICE SYSTEM - INOPERATIVE
3. (F) WATER AND WASTE SYSTEM - IMPEDED
4. (C) FLT CONTROL SYST,AILERON CONTROL CABLE/ROD - MOVEMENT RESTRICTED
5. (F) FLT CONTROL SYST,AILERON CONTROL - REDUCED

Pilot Information

Certificate:	Airline Transport; Flight Engineer	Age:	55
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Instrument Rating(s):	Airplane; Helicopter
Other Aircraft Rating(s):	Helicopter	Instructor Rating(s):	None
Flight Time:	7747 hours (Total, all aircraft), 848 hours (Total, this make and model), 7747 hours (Pilot In Command, all aircraft), 140 hours (Last 90 days, all aircraft), 45 hours (Last 30 days, all aircraft), 12 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport; Flight Engineer	Age:	45
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Instrument Rating(s):	Airplane
Other Aircraft Rating(s):	None	Instructor Rating(s):	None
Flight Time:	5145 hours (Total, all aircraft), 3501 hours (Total, this make and model), 162 hours (Last 90 days, all aircraft), 70 hours (Last 30 days, all aircraft), 12 hours (Last 24 hours, all aircraft)		

Other Flight Crew Information

Certificate:	Airline Transport	Age:	
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Instrument Rating(s):	Airplane
Other Aircraft Rating(s):	None	Instructor Rating(s):	None
Flight Time:	5291 hours (Total, all aircraft), 12 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport; Flight Engineer	Age:	
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Instrument Rating(s):	Airplane
Other Aircraft Rating(s):	None	Instructor Rating(s):	None
Flight Time:	5920 hours (Total, all aircraft), 12 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Boeing	Registration:	N175UA
Model/Series:	747-422	Engines:	4 Turbo Jet
Operator:	United Airlines Inc	Engine Manufacturer:	Pratt & Whitney
Operating Certificate(s) Held:	Flag carrier (121)	Engine Model/Series:	PW4056
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	ORD, 668 ft msl	Weather Information Source:	Weather Observation Facility
Lowest Ceiling:	Broken / 25000 ft agl	Wind Speed/Gusts, Direction:	10 knots / , 240°
Temperature:	21 °C	Visibility	10 Miles
Precipitation and Obscuration:			
Departure Point:	Hong Kong (HKG)	Destination:	Chicago (ORD)

Airport Information

Airport:	Chicago O'Hare Intl (ORD)	Runway Surface Type:	Concrete
Runway Used:	14R	Runway Surface Condition:	Dry
Runway Length/Width:	13000 ft / 200 ft		

Wreckage and Impact Information

Crew Injuries:	20 None	Aircraft Damage:	None
Passenger Injuries:	299 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Latitude, Longitude:	41.979722, -87.904444		

Administrative Information

Investigator In Charge (IIC):	Tim Sorensen	Adopted Date:	09/30/2003
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.