



National Transportation Safety Board Aviation Accident Final Report

Location:	DEPTFORD, NJ	Accident Number:	NYC88FA050
Date & Time:	12/05/1987, 0955 EST	Registration:	N319AU
Aircraft:	BOEING 737-2B7	Aircraft Damage:	Substantial
Defining Event:		Injuries:	67 None

Flight Conducted Under: Part 121: Air Carrier - Scheduled

Analysis

DRG TKOF, AS USAIR FLT 224 WAS CLBG THRU 4000', THE ACFT YAWED/ROLLED RGT. SIMULTANEOUSLY, THE CREW NOTICED THE #2 THROTTLE SLAM/LOCK TO THE IDLE PSN & A CONTINUOUS AIRFRAME BUFFET BEGAN. SOON THEREAFTER, THE #2 ENG SEPD FM THE ACFT & THE BUFFET STOPPED. THE ENG IMPACTED IN AN OPEN FLD, 6 MI FM THE ARPT. JUST BFR IT SEPD, A PAX SAW THE AFT END OF THE #2 ENG MOMENTARILY DROOP ABOUT 30 DEG. AFTER ENG SEPN, THE 'B' HYD SYS LOST PRES & THE TE FLAPS WOULD ONLY EXTD 10 DEG. THE ACFT WAS LNDD SAFELY AFTER AN EMERG GEAR EXTN & DIFFERENTIAL BRAKING WAS USED FOR STEERING. AN EXAM REVEALED THE AFT MOUNT CONE BOLT FOR THE #2 ENG HAD FAILED FM FATIGUE THRU THE THREAD RELIEF UNDERCUT RADIUS. FATIGUE CRACKS HAD INITIATED ON DIAMETRICALLY OPPOSITE SIDES OF THE RADIUS. SUBSEQUENTLY, THE FWD MOUNT CONE BOLTS & SECONDARY SUPPORT CABLE FAILED FROM OVERLOAD.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CLIMB - TO CRUISE

Findings

1. (C) ENGINE INSTALLATION, MOUNTING BOLT - FATIGUE

Occurrence #2: ENGINE TEARAWAY
Phase of Operation: CLIMB - TO CRUISE

Occurrence #3: MISCELLANEOUS/OTHER
Phase of Operation: LANDING

Findings

2. PRECAUTIONARY LANDING
3. HYDRAULIC SYSTEM - INOPERATIVE
4. FLIGHT CONTROL, FLAP - FAILURE, PARTIAL
5. LANDING GEAR, NORMAL RETRACTION/EXTENSION ASSEMBLY - INOPERATIVE
6. LANDING GEAR, STEERING SYSTEM - INOPERATIVE

Factual Information

Pilot Information

Certificate:	Airline Transport	Age:	33, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last Medical Exam:	09/10/1987
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	12000 hours (Total, all aircraft), 956 hours (Total, this make and model), 8633 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 70 hours (Last 30 days, all aircraft), 8 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	BOEING	Registration:	N319AU
Model/Series:	737-2B7 737-2B7	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	22887
Landing Gear Type:	Retractable - Tricycle	Seats:	120
Date/Type of Last Inspection:	12/05/1987, Unknown	Certified Max Gross Wt.:	117000 lbs
Time Since Last Inspection:	2 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	12845 Hours	Engine Manufacturer:	P&W
ELT:	Not installed	Engine Model/Series:	JT8D-15A
Registered Owner:	USAIR	Rated Power:	15500 hp
Operator:	USAIR	Air Carrier Operating Certificate:	Flag carrier (121)
Operator Does Business As:		Operator Designator Code:	USAA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PHL, 7 ft msl	Observation Time:	0952 EST
Distance from Accident Site:	0 Nautical Miles	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 3500 ft agl	Temperature/Dew Point:	2° C / -7° C
Lowest Ceiling:	Broken / 20000 ft agl	Visibility	15 Miles
Wind Speed/Gusts, Direction:	15 knots, 320°	Visibility (RVR):	0 ft
Altimeter Setting:	29 inches Hg	Visibility (RVV):	0 Miles
Precipitation and Obscuration:			
Departure Point:	(PHL)	Type of Flight Plan Filed:	IFR
Destination:	BOSTON, MA (BOS)	Type of Clearance:	IFR
Departure Time:	0945 EST	Type of Airspace:	Class E

Airport Information

Airport:	PHILADELPHIA INTL (PHL)	Runway Surface Type:	Asphalt
Airport Elevation:	0 ft	Runway Surface Condition:	
Runway Used:	27L	IFR Approach:	None
Runway Length/Width:	10499 ft / 200 ft	VFR Approach/Landing:	Precautionary Landing

Wreckage and Impact Information

Crew Injuries:	5 None	Aircraft Damage:	Substantial
Passenger Injuries:	62 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	67 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ROBERT L HANCOCK	Adopted Date:	02/24/1989
Additional Participating Persons:			
Publish Date:			
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/ .		

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