



National Transportation Safety Board Aviation Incident Final Report

Location:	GREENSBORO, NC	Incident Number:	ATL89IA187
Date & Time:	08/02/1989, 1055 EDT	Registration:	N413US
Aircraft:	BOEING 737-400	Aircraft Damage:	Minor
Defining Event:		Injuries:	106 None

Flight Conducted Under: Part 121: Air Carrier - Scheduled

Analysis

DURING APPROACH TO CHARLOTTE, THE MAIN GEAR WOULD NOT EXTEND. THE FLT DIVERTED TO GREENSBORO. THE RIGHT GEAR EVENTUALLY EXTENDED AFTER APPLYING EXTENSIVE G-FORCES, BUT THE LEFT GEAR WOULD NOT. AFTER LANDING, A 29-INCH WHEEL CHOCK WAS FOUND WEDGED BETWEEN THE RADIUS OF THE LEFT WHEEL WELL AND THE INBOARD WHEEL WHICH PREVENTED THE LEFT GEAR FROM FALLING DOWN. THE AIRPLANE HAD BEEN POSITIONED SEVERAL TIMES THE NIGHT BEFORE, AND THE MECHANICS RECALLED PLACING THE CHOCKS IN THE WHEEL WELL. AN A-CHECK, AND A WALK-AROUND INSPECTION, HAD BEEN COMPLETED PRIOR TO THE FLIGHT'S DEPARTURE FROM WASHINGTON. EACH INSPECTION REQUIRED AN INSPECTION OF THE WHEEL WELL AREA. THE FIRST OFFICER STATED THAT HE DIDN'T SEE THE CHOCK WHICH WAS MARKED WITH YELLOW REFLECTIVE TAPE. A FLASHLIGHT WAS USED DURING THE INSPECTION.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: FAILURE OF THE LINE MECHANIC, A CHECK MECHANIC, AND FIRST OFFICER TO IDENTIFY AND REMOVE THE WHEEL CHOCK FROM THE WHEEL WELL DURING THE REQUIRED INSPECTIONS.

Findings

Occurrence #1: GEAR NOT EXTENDED

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

1. (C) LANDING GEAR,NORMAL RETRACTION/EXTENSION ASSEMBLY - FOREIGN OBJECT
2. (C) LANDING GEAR,NORMAL RETRACTION/EXTENSION ASSEMBLY - JAMMED
3. (C) MAINTENANCE,INSPECTION - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
4. (C) AIRCRAFT PREFLIGHT - INADEQUATE - COPILOT/SECOND PILOT

Factual Information

Pilot Information

Certificate:	Airline Transport	Age:	48, 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):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	03/15/1989
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	14019 hours (Total, all aircraft), 7944 hours (Total, this make and model), 189 hours (Last 90 days, all aircraft), 89 hours (Last 30 days, all aircraft), 10 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BOEING	Registration:	N413US
Model/Series:	737-400 737-400	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	23882
Landing Gear Type:	Retractable - Tricycle	Seats:	154
Date/Type of Last Inspection:	06/29/1989, Continuous Airworthiness	Certified Max Gross Wt.:	142500 lbs
Time Since Last Inspection:	354 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	2193 Hours	Engine Manufacturer:	GE
ELT:	Not installed	Engine Model/Series:	56-382
Registered Owner:	WILMINGTON TRUST CO.	Rated Power:	22100 lbs
Operator:	PIEDMONT AIRLINES	Operating Certificate(s) Held:	Flag carrier (121)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	GSO, 0 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1052 EDT	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 0 ft agl	Visibility	4 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	340°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	27° C / 20° C
Precipitation and Obscuration:			
Departure Point:	WASHINGTON, DC	Type of Flight Plan Filed:	IFR
Destination:	CHARLOTTE, NC	Type of Clearance:	VFR
Departure Time:	0820 EDT	Type of Airspace:	Class D

Airport Information

Airport:	GREENSBORO (GSO)	Runway Surface Type:	Concrete
Airport Elevation:	883 ft	Runway Surface Condition:	Dry
Runway Used:	23	IFR Approach:	None
Runway Length/Width:	10001 ft / 150 ft	VFR Approach/Landing:	Straight-in

Wreckage and Impact Information

Crew Injuries:	6 None	Aircraft Damage:	Minor
Passenger Injuries:	100 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	106 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	PHILLIP POWELL	Report Date:	09/11/1992
Additional Participating Persons:	FRED WOMACK; GREENSBORO, NC PAUL MCCORMICK		
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 pubinquiry@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. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).