



Aviation Investigation Final Report

Location:	MANCHESTER, New Hampshire	Accident Number:	BF093LA020
Date & Time:	January 10, 1993, 13:25 Local	Registration:	N245RP
Aircraft:	DORNIER DO-228-202	Aircraft Damage:	Substantial
Defining Event:		Injuries:	5 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Scheduled		

Analysis

DURING THE INITIAL CLIMB AFTER TAKEOFF, THE PILOT REPORTED THAT WHEN THE GEAR WAS RETRACTED, THERE WAS AN UNSAFE GEAR WARNING. AFTER SEVERAL UNSUCCESSFUL ATTEMPTS TO CORRECT THE CONDITION, INCLUDING RECYCLING THE GEAR FOUR TIMES, THE FLIGHT DIVERTED. ALTHOUGH THE PILOT HAD DOWN AND LOCK INDICATION FOR THE THREE GEAR DURING THE RECYCLING, AFTER THE FOURTH CYCLE, THERE WAS NO GEAR INDICATION, DESPITE ATTEMPTS TO EXTEND IT USING THE EMERGENCY GEAR EXTENSION SYSTEM. THE PILOT DID A LOW PASS OVER THE AIRPORT WHERE AIR TRAFFIC CONTROL PERSONNEL CONFIRMED THE NOSE GEAR WAS NOT EXTENDED. THE PILOT SUBSEQUENTLY LANDED NOSE GEAR UP. EXAMINATION OF THE NOSE GEAR ASSEMBLY REVEALED THE NOSE GEAR SHOCK STRUT WAS COLLAPSED ABOUT THREE QUARTERS OF AN INCH FROM FULL EXTENSION, WHICH PREVENTED THE STRUT FROM ENGAGING THE UPLOCK DURING RETRACTION, AND PREVENT THE DEACTIVATION OF THE UNSAFE WARNING DURING EXTENSION. IT WAS ALSO DETERMINED THAT THE PARTIALLY EXTENDED STRUT COULD IMPROPERLY CONTACT THE UPLOCK, RESTRICTING THE MOVEMENT OF THE STRUT. FURTHER DISASSEMBLY CONFIRMED THE INCORRECT INSTALLATION OF THE TWO INTERNAL SEALS, WHICH WOULD PREVENT THE STRUT FROM EXTENDING FULLY.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: INCORRECT INSTALLATION OF THE SEALS IN THE NOSE GEAR ASSEMBLY, WHICH PREVENTED THE NOSE GEAR FROM LOCKING IN THE DOWN POSITION.

Findings

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

Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. LANDING GEAR,GEAR WARNING SYSTEM - INOPERATIVE
2. (C) LANDING GEAR,GEAR LOCKING MECHANISM - NOT ENGAGED
3. (C) INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL

Occurrence #2: GEAR NOT EXTENDED

Phase of Operation: LANDING - ROLL

Findings

4. LANDING GEAR,NOSE GEAR ASSEMBLY - JAMMED

Factual Information

Pilot Information

Certificate:	Airline transport	Age:	30, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
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:	October 19, 1992
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	3700 hours (Total, all aircraft), 2650 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	DORNIER	Registration:	N245RP
Model/Series:	DO-228-202 DO-228-202	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	8125
Landing Gear Type:	Retractable - Tricycle	Seats:	21
Date/Type of Last Inspection:	January 8, 1993 Continuous airworthiness	Certified Max Gross Wt.:	13688 lbs
Time Since Last Inspection:	7 Hrs	Engines:	2 Turbo prop
Airframe Total Time:	8202 Hrs	Engine Manufacturer:	GARRETT
ELT:	Installed, not activated	Engine Model/Series:	TPE331 5252D
Registered Owner:	DEUTSCHE CREDIT CORPORATION	Rated Power:	715 Horsepower
Operator:	PRECISION AIRLINES	Operating Certificate(s) Held:	Commuter air carrier (135)
Operator Does Business As:		Operator Designator Code:	PREA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	MHT ,234 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	14:25 Local	Direction from Accident Site:	1°
Lowest Cloud Condition:	Clear	Visibility	25 miles
Lowest Ceiling:	Broken / 10000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	30°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	-8°C / -17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	BOSTON , MA (BOS)	Type of Flight Plan Filed:	IFR
Destination:	(MHT)	Type of Clearance:	IFR
Departure Time:	12:10 Local	Type of Airspace:	Class D;Class E

Airport Information

Airport:	MANCHESTER MHT	Runway Surface Type:	Asphalt
Airport Elevation:	234 ft msl	Runway Surface Condition:	Dry
Runway Used:	35	IFR Approach:	None
Runway Length/Width:	7001 ft / 250 ft	VFR Approach/Landing:	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	3 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	Johnson, Beverley
Additional Participating Persons:	JOHN F WOOD; PORTLAND , ME
Original Publish Date:	October 13, 1993
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=11893

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).