



National Transportation Safety Board Aviation Accident Final Report

Location:	Kinston, NC	Accident Number:	ATL03LA056
Date & Time:	03/08/2003, 1027 EST	Registration:	N712FE
Aircraft:	Fokker F.27MK 500	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 121: Air Carrier - Non-scheduled		

Analysis

According to the pilot, an unsafe right gear indication was received during the approach, and the control tower controller confirmed the right gear was not fully extended. On landing roll the right main landing gear collapsed and the airplane slid off of the runway. Examination of the right main landing gear revealed the drag brace was fractured. The fracture was located at the lower side of a transition from a smaller internal diameter on the upper piece to a larger internal diameter on the lower piece. The region of the fracture surface was flat and perpendicular to the tube longitudinal axis. The region had a smooth, curving boundary, also consistent with fatigue. The fatigue features emanated from multiple origins at the inner surface of the tube. The Federal Aviation Administration (FAA) issued an Airworthiness Directive (AD) requiring an inspections of main landing gear drag stay units. The AD was prompted by the fracture of a drag stay tube from fatigue cracking that initiated from an improperly machined transition radius at the inner surface of the tube. According to Fokker, the Fokker F27 Mark 500 airplanes (such as the incident airplane) were not equipped with drag stay units having part number 200261001, 200485001, or 200684001. One tube, part number 200259300, had a change in internal diameter (stepped bore), and the other tube, part number 200485300, had a straight internal bore. AD 97-04-08 required an ultrasonic inspection to determine if the installed tube had a straight or stepped bore. A review of maintenance records revealed that the failed drag stay tube had accumulated 28, 285 total cycles.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The fatigue failure of the main drag stay tube. A factor is no inspection procedure required.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: LANDING - ROLL

Findings

1. (C) LANDING GEAR,MAIN GEAR STRUT - FATIGUE

Occurrence #2: GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Factual Information

On March 8, 2003, at 1027 eastern standard time, a Fokker F-27MK 500, N712FE, registered to Federal Express Corporation and operated by Mountain Air Cargo Incorporated, right main landing gear collapse during an emergency landing at Kinston Regional Jetport, Kinston, North Carolina. The cargo flight was operated under the provision of Title 14 Part 121. Visual meteorological conditions prevailed at the time of the accident with an instrument flight plan filed. The airplane sustained substantial damage and the pilot and co-pilot were not injured. The flight departed Piedmont Triad International Airport, Greensboro, North Carolina, at 0816 on March 8, 2003. .

According to the pilot, an unsafe right gear indication was received during approach to Craven County Regional, New Bern, North Carolina. During a flyby the control tower controller confirmed the right gear was not fully extended. The pilot declared an emergency and diverted to Kinston Regional Jetport to conduct an emergency landing on runway 05. On landing roll the right main landing gear collapsed and the airplane slid off of the runway. Examination of the right main landing gear revealed the drag brace was fractured.

Examination of the drag stay tube revealed, the tube was fractured approximately 15.5 inches below the attachment clevis at the upper end. The fracture was located at the lower side of a transition from a smaller internal diameter on the upper piece to a larger internal diameter on the lower piece. The region of the fracture surface was flat and perpendicular to the tube longitudinal axis. The region had a smooth, curving boundary, also consistent with fatigue. The fatigue features emanated from multiple origins at the inner surface of the tube. The remainder of the fracture was matte gray and on slant angles, features consistent with overstress fracture. The mating fracture features on the upper piece were similar.

The Federal Aviation Administration (FAA) issued an Airworthiness Directive (AD) requiring an inspections of main landing gear drag stay units. The AD was prompted by the fracture of a drag stay tube from fatigue cracking that initiated from an improperly machined transition radius at the inner surface of the tube. According to Fokker ,the Fokker F27 Mark 500 airplanes (such as the incident airplane) were not equipped with drag stay units having part number 200261001, 200485001, or 200684001. One tube, part number 200259300, had a change in internal diameter (stepped bore), and the other tube, part number 200485300, had a straight internal bore. AD 97-04-08 required an ultrasonic inspection to determine if the installed tube had a straight or stepped bore. A review of maintenance records revealed that the failed drag stay tube had accumulated 28, 285 total cycles.

Pilot Information

Certificate:	Airline Transport	Age:	34, Male
Airplane Rating(s):	Multi-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:	10/15/2002
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	8130 hours (Total, all aircraft), 1450 hours (Total, this make and model)		

Co-Pilot Information

Certificate:	Commercial	Age:	38, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
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 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	09/04/2002
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	2911 hours (Total, all aircraft), 955 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Fokker	Registration:	N712FE
Model/Series:	F.27MK 500	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	10613
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	01/16/2003, Continuous Airworthiness	Certified Max Gross Wt.:	45000 lbs
Time Since Last Inspection:	118 Hours	Engines:	2 Turbo Prop
Airframe Total Time:	26665 Hours at time of accident	Engine Manufacturer:	Rolls-Royce
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	RDA 7 552-7R
Registered Owner:	Federal express Corp	Rated Power:	2167 hp
Operator:	MOUNTAIN AIR CARGO INC	Operating Certificate(s) Held:	Supplemental
Operator Does Business As:		Operator Designator Code:	MTNA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	ISO, 94 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	0950 EST	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered	Visibility	4 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	60°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.24 inches Hg	Temperature/Dew Point:	9° C / 2° C
Precipitation and Obscuration:			
Departure Point:	GREENSBORO, NC (GSO)	Type of Flight Plan Filed:	IFR
Destination:	Kingston, NC (ISO)	Type of Clearance:	IFR
Departure Time:	0816 EST	Type of Airspace:	Unknown

Airport Information

Airport:	Kinston Regional Jetport (ISO)	Runway Surface Type:	Asphalt
Airport Elevation:	94 ft	Runway Surface Condition:	Dry
Runway Used:	05	IFR Approach:	Unknown
Runway Length/Width:	11500 ft / 150 ft	VFR Approach/Landing:	Unknown

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	35.328056, -77.615278

Administrative Information

Investigator In Charge (IIC):	Phillip Powell	Report Date:	07/29/2004
Additional Participating Persons:	Hazen Rowe; Columbia FSDO; Columbia, SC		
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/ .		

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