National Transportation Safety Board
Aviation Incident Factual Report

Location:	Auburn, AL	**Incident Number:**	ATL04IA073
Date & Time:	02/03/2004, 1400 CST	**Registration:**	N125AR
Aircraft:	Cessna 208B	**Aircraft Damage:**	None
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General Aviation - Positioning		

On February 3, 2004, at 1400 central standard time, a Cessna 208B, N125AR, registered to and operated by Rushton Air, lost right rudder control shortly after takeoff from the Columbus Metro Airport in Columbus, Georgia. The repositioning flight was operated under the provisions of Title 14 CFR Part 91, and visual flight rules. Visual meteorological conditions prevailed and no flight plan was filed. The pilot and co-pilot were not injured, and the airplane was not damaged. The flight departed the Columbus Metro Airport, in Columbus, Georgia on February 3, 2004 at 1340, enroute to Auburn-Opelika Airport in Auburn, Alabama.

According to the flight crew, during the takeoff roll the co-pilot noticed that the right rudder was not responding. Due to the high traffic volume at Columbus, Georgia they elected to proceed to the Auburn-Opelika Airport in Auburn, Alabama. During the flight they began to diagnose the problem. They found that the rudder trim was not responding and full deflection of the right rudder pedal did not have any effect. Further examination found the right rudder cable broken. The crew contacted their Chief Pilot and Director of Maintenance, and found out that there was nothing that could be done in-flight. The pilot asked that emergency vehicles meet them on runway 36 just as a precaution. The pilot did not declare an emergency. The airplane landed uneventfully on runway 36 and the pilot performed a normal shutdown.

Examination of the rudder cable found it separated at the trailing end of its attaching clevis. The cable and clevice were sent to the NTSB Materials Laboratory in Washington, DC for further examination.

Examination of the rudder cable by the NTSB Materials Laboratory found that the wire rope portion of the cable was fractured just inside the clevis fitting at the forward end of the cable. The strands of the wire rope had separated from each other over a distance of more than 1 foot from the cable end. The individual wires in most of the strands had not separated from each other or were separated over a much shorter distance. Visual examination of the fractured wire ends with the aid of a bench binocular microscope revealed that the wire fractures were aligned with each other within about 0.02 inch, and were located about 0.05 inch inside the end of the clevis fitting. Nearly all of the fractures were on a flat transverse plane, with no apparent necking down deformation, features typical of fatigue cracking. A few of the wires were

fractured on a slant plane and did contain necking down deformation, features typical of overstress fracture; and a few of the wires had fractures with a mixture of fatigue and overstress features. Further examination of the clevis fitting revealed that the forward ends of the clevis tines were pinched together. The spacing between the tines was measured with calipers and found to be 0.18 inch near where the tines joined together and 0.13 inch near the tip. Visual examination of the inside surfaces of the tines of the clevis fitting revealed the presence of a dark rust-colored discoloration, typical of fretting or rubbing damage, adjacent to the tip of the tines. The exterior surface of the clevis fitting also contained imprint or rubbing marks from contact with the underside of the attachment bolt head and from the washer under the nut. On both sides of the clevis, the damage was found dominantly on the forward and aft of the attachment bolt hole (and much less on the upper and lower sides of the hole). The damage on this side was much more severe than on the other side.

According to Cessna Aircraft Company, as a result of this failure, Cessna is adding a spacer to the production process that will be placed between the rudder cable clevis and the rod end. This change will also be reflected in the Cessna Illustrated Parts Catalog.

Pilot Information

Certificate:	Flight Instructor; Commercial	**Age:**	28, 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 Single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	02/07/2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	01/16/2004
Flight Time:	3000 hours (Total, all aircraft), 2000 hours (Total, this make and model), 2500 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Flight Instructor; Commercial	**Age:**	28, 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):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	**Last FAA Medical Exam:**	10/13/2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	10/01/2003
Flight Time:	1300 hours (Total, all aircraft), 130 hours (Total, this make and model), 950 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N125AR
Model/Series:	208B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal; Transport	**Serial Number:**	2080925
Landing Gear Type:	Tricycle	**Seats:**	11
Date/Type of Last Inspection:	01/12/2003, AAIP	**Certified Max Gross Wt.:**	9000 lbs
Time Since Last Inspection:	50 Hours	**Engines:**	1 Turbo Prop
Airframe Total Time:	1547 Hours at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed, not activated	**Engine Model/Series:**	PT6-114A
Registered Owner:	Rushton Air	**Rated Power:**	675 hp
Operator:	Rushton Air	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	YRAA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	AUO, 640 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	1350 CDT	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / 12 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	280°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.18 inches Hg	**Temperature/Dew Point:**	15°C / -1°C
Precipitation and Obscuration:			
Departure Point:	Columbus, GA (CSG)	**Type of Flight Plan Filed:**	None
Destination:	Auburn, AL (AUO)	**Type of Clearance:**	None
Departure Time:	1340 CST	**Type of Airspace:**	Class D

Airport Information

Airport:	Auburn - Opelika (AUO)	**Runway Surface Type:**	Asphalt
Airport Elevation:	640 ft	**Runway Surface Condition:**	Dry
Runway Used:	36	**IFR Approach:**	None
Runway Length/Width:	5000 ft / 100 ft	**VFR Approach/Landing:**	Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	None
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	32.616667, -85.433333

Administrative Information

Investigator In Charge (IIC):	Butch Wilson
Additional Participating Persons:	Ricky Messer; Birmingham FSDO
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.ntsb.gov/pubdms/.