



National Transportation Safety Board Aviation Incident Final Report

Location:	Eufaula, AL	Incident Number:	ATL03IA073
Date & Time:	04/01/2003, 1030 CST	Registration:	N696SP
Aircraft:	Cessna 182P	Aircraft Damage:	Minor
Defining Event:		Injuries:	3 None

Flight Conducted Under: Part 91: General Aviation - Personal

Analysis

The purpose of the personal flight was undetermined. While in cruise flight at 5000 feet, the pilot noticed the elevators on the canard wings vibrating abnormally. The vibrations increased throughout the airplane and the left canard was observed hanging down. The pilot reported the airplane's condition to Columbus Approach Control, and requested radar vectors to the nearest airport, Weedon Field, Eufaula, Alabama. The flight landed without further incident. The airplane was a 1973 model Cessna 182P. It was refurbished in 1998 when the canard was added through STC #SA485SW. The pilot did report the airplane having a mechanical malfunction with the nose control assembly left hand canard elevator. The part had a total time of 453 hours on it. The post-landing examination of the airplane revealed a separation of the left canard elevator bell crank from the elevator. The bell crank fasteners were intact. Further examination of the airplane revealed the end rib for the left canard flap was fractured at the location where the left control rod attachment bracket was attached. Wear was observed on the left control rod end fitting. The fatigue features emanated from multiple origins at both the exterior and interior sides of the end rib, consistent with reverse-bending fatigue.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: Fatigue failure of end rib for the left canard flap.

Findings

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

Findings

1. (C) FLIGHT CONTROL,ELEVATOR ATTACHMENT - FATIGUE

Factual Information

On April 1, 2003 at 1030 central standard time, a Cessna 182P, N696SP, registered to and operated by a private pilot, sustained structural flight control damage while flying at cruise altitude near Eufaula, Alabama. The personal flight was operated under the provision of Title 14 CFR Part 91. Visual meteorological conditions prevailed, and an instrument flight plan was filed. The canard modified airplane sustained minor damages. The commercial pilot and passengers were not injured. The flight departed Tishomingo County Airport, Belmont, Mississippi, at 0900.

The purpose of the personal flight was undetermined, however the flight was enroute to Cook County Airport in Adel, Georgia. According to the pilot, while in cruise flight at 5000 feet, the he noticed the elevators on the canard wings vibrating abnormally. The vibrations increased throughout the airplane and the left canard was observed hanging down. The pilot reported the airplane's condition to Columbus Approach Control, and requested radar vectors to the nearest airport, Weedon Field, Eufaula, Alabama. The flight landed without further incident.

The airplane was a 1973 Cessna 182P. It was refurbished in 1998 when the canard was added through STC #SA485SW. The pilot did report the airplane having a mechanical malfunction with the nose control assembly left hand canard elevator. The part had a total time of 453 hours on it.

The examination of the airplane revealed a separation of the left canard elevator bell crank from the elevator. The bell crank fasteners were intact. Further examination of the airplane revealed the end rib for the left canard flap was fractured at the location where the left control rod attachment bracket was attached. Several cracks were observed in the attachment flange areas of the attachment frame. The left control rod was bent in the threaded region adjacent to the forward rod end fitting. Wear was observed on the left control rod end fitting. In many areas the fractures of the end rib corresponded to the profiles of the nut plates that were riveted to the internal side of the flap end rib. The fracture features included step fractures between planes and these features are consistent with fatigue. The fatigue features emanated from multiple origins at both the exterior and interior sides of the end rib, consistent with reverse-bending fatigue. The right control rod attachment bracket was removed and upon inspection, cracks were observed on the right canard flap end rib. Cracks around one of the nut plates were opened and had fatigue features similar to those observed on the left canard end rib extending across the thickness of the end rib.

Pilot Information

Certificate:	Commercial	Age:	45, Male
Airplane Rating(s):	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 2 With Waivers/Limitations	Last FAA Medical Exam:	10/01/2002
Occupational Pilot:		Last Flight Review or Equivalent:	12/01/2002
Flight Time:	951 hours (Total, all aircraft), 150 hours (Total, this make and model), 898 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N696SP
Model/Series:	182P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	18262144
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	04/14/2002, Annual	Certified Max Gross Wt.:	2950 lbs
Time Since Last Inspection:	68 Hours	Engines:	1 Reciprocating
Airframe Total Time:	2194 Hours at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-470-F27BR
Registered Owner:	Mike Stockton	Rated Power:	260 hp
Operator:	Mike Stockton	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	CSG, 397 ft msl	Distance from Accident Site:	50 Nautical Miles
Observation Time:	1053 CDT	Direction from Accident Site:	10°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	12 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	280°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.38 inches Hg	Temperature/Dew Point:	20° C / 5° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Belmont, MS (01M)	Type of Flight Plan Filed:	IFR
Destination:	Adel CookCounty, GA (15J)	Type of Clearance:	IFR
Departure Time:	0900 CST	Type of Airspace:	Class C; Class D

Airport Information

Airport:	Weedon Field (EUF)	Runway Surface Type:	Asphalt
Airport Elevation:	260 ft	Runway Surface Condition:	Dry
Runway Used:	18	IFR Approach:	None
Runway Length/Width:	5000 ft / 100 ft	VFR Approach/Landing:	Precautionary Landing

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Minor
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	31.951111, -85.128889

Administrative Information

Investigator In Charge (IIC):	Phil Powell	Report Date:	06/28/2006
Additional Participating Persons:	Edward DaSilva; Birmingham FSDO-09; Birmingham, AL		
Publish Date:	02/05/2013		
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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