



National Transportation Safety Board Aviation Accident Data Summary

Location:	Fort Lauderdale, FL	Accident Number:	MIA05LA066
Date & Time:	03/02/2005, 1833 EST	Registration:	N88TN
Aircraft:	Cessna 402C	Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Ferry		

Analysis

The pilot stated the airplane was about 5 miles north of Fort Lauderdale Executive Airport (FXE) and at approximately 4,000 feet mean sea level, when the airplane pitched sharply nose down, with an uncontrollable back and forth oscillation of the control yoke, lasting about 5 seconds. A loud shearing noise was heard from the right rear of the aircraft before pitch control was regained. He looked toward the right rear of the airplane to see sheet metal flapping in the wind near the elevator section. He declared an emergency and he was cleared for immediate landing at FXE; the landing was uneventful. An examination by NTSB revealed a section of about 16 inches was missing from the right elevator's outboard area; which was later recovered about 5 miles north of FXE in a residential area. The remaining outboard of the elevator up to the inboard attaching hinge was peeled up and aft. The attaching hardware connecting the elevator trim tab horn to the elevator trim actuator push-rod was missing. No abnormality was observed to the areas and surfaces of the trim tab horn and the push-rod attaching area. The pilot was asked to demonstrate all the steps accomplished during the preflight prior to the accident flight and what type of nut was securing the trim tab horn to the trim tab push rod, a self locking nut or one that has a cotter pin? He did recall a nut however could not recall observing a cotter pin. The accident airplane had undergone inspections and maintenance on February 21, 2005, which included the overhaul of the elevator trim tab actuator. The mechanic, whom performed the tasks, stated that after the installation of the elevator trim tab actuator, he attached the elevator trim tab actuator push-rod to the elevator trim horn using a new bolt, washer, nut and cotter pin from the shop stock in accordance with the maintenance manual. Another mechanic stated that he was present and actually handed the cotter pin to the mechanic who performed the installation. An FAA inspector examined the maintenance facility and interviewed the mechanics that were involved in the tasks and stated that he did not observe any discrepancy with the bins of cotter pins. During the interview with the mechanic, the one mechanic stated that he remembers installing the cotter pin however he could not remember the exact cotter pin he installed and added the cotter pin was given to him by another mechanic. The FAA inspector instructed the other mechanic, who retrieved the cotter pin, to demonstrate where he got the cotter pin from. The mechanic went to the bin area and opened two bins. One of the bins had the proper cotter pin. The mechanic said he believed that he took the proper cotter pin. The pilot who test flew the accident airplane after maintenance stated that a preflight was accomplished and no irregularities were noted. The pilot added that he personally completed two test flights. The airplane owner's pilot completed a preflight of the accident airplane in the facility's hanger prior to signing the delivery receipt and a least two more times, prior to and during his en route flight to Florida.

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The improper installation and securing of the elevator trim tab push-rod attaching hardware by maintenance personal resulting in the rod disconnecting and a partial separation of the right elevator

in flight.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: DESCENT - NORMAL

Findings

1. FLT CONTROL SYST,ELEVATOR TRIM/TAB CONTROL - NOT SECURED
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. FLT CONTROL SYST,ELEVATOR TRIM/TAB CONTROL - DISCONNECTED
4. FLIGHT CONTROL,ELEVATOR - FAILURE,PARTIAL

Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	40
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Instrument Rating(s):	Airplane
Other Aircraft Rating(s):	None	Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane
Flight Time:	1980 hours (Total, all aircraft), 350 hours (Total, this make and model), 300 hours (Last 90 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Cessna	Registration:	N88TN
Model/Series:	402C	Engines:	2 Reciprocating
Operator:	Karl W. Doane III	Engine Manufacturer:	Continental
Air Carrier Operating Certificate:	None	Engine Model/Series:	TSIO520VB
Flight Conducted Under:	Part 91: General Aviation - Ferry		

Meteorological Information and Flight Plan

Observation Facility, Elevation:	FXE, 13 ft msl	Weather Information Source:	Weather Observation Facility
Conditions at Accident Site:	Visual Conditions	Lowest Ceiling:	None
Condition of Light:	Night	Wind Speed/Gusts, Direction:	16 knots, 300°
Temperature:	17°C / -12°C	Visibility	10 Miles
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Suffolk, VA (KSFQ)	Destination:	Fort Lauderdale, FL (FLL)

Airport Information

Airport:	Fort Lauderdale Executive (FXE)	Runway Surface Type:	
Runway Used:	NA	Runway Surface Condition:	
Runway Length/Width:			

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None

Administrative Information

Investigator In Charge (IIC):	Jose L Obregon	Adopted Date:	04/25/2006
Investigation Docket:	NTSB accident and incident docket 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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