



National Transportation Safety Board Aviation Accident Final Report

Location:	CROSS KEYS, NJ	Accident Number:	NYC01LA047
Date & Time:	12/02/2000, 1132 EST	Registration:	N757RR
Aircraft:	Cessna 152	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None

Flight Conducted Under: Part 91: General Aviation - Personal

Analysis

The airplane lifted off the runway at about 70 knots, 3/4 down the length of the 3,500-foot long runway. The pilot/owner was flying the airplane from the right seat. As the airplane reached an altitude of 20-25 feet, the right control wheel broke off in the pilot's hands. The pilot reduced the power to idle, the airplane rolled to the right, impacted a tree, and came to rest inverted on the ground. Examination of the fracture surface on the shaft of the control wheel revealed features typical of an overstress separation. No evidence of fatigue cracking or other type of preexisting cracking or deterioration was noted. The upper portion of the fracture intersected the upper hole approximately at a 45-degree angle, indicative of torsional loading of the shaft (with the handle portion of the wheel turning to the left - counterclockwise) as the shaft fractured. According to the pilot/owner and the pilot-rated passenger (seated in the left seat), the control lock had been installed in the control wheel, and was removed during the preflight.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The overstress separation of the control yoke from the control column.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF

Findings

1. (C) FLT CONTROL SYST, YOKE/CONTROL STICK - SEPARATION

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings

2. OBJECT - TREE(S)

Factual Information

On December 2, 2000, approximately 1132 Eastern Standard Time, a Cessna 152, N757RR, was substantially damaged during takeoff at the Cross Keys Airport (17N), Cross Keys, New Jersey. The certificated commercial pilot/owner and the pilot rated passenger were uninjured. Visual meteorological conditions prevailed and no flight plan was filed for the personal local flight conducted under 14 CFR Part 91.

In a written statement the pilot said:

"I broke ground with 10 degrees of flaps and leveled off to pick up speed. My throttle was in at full power. Upon resuming climb, I felt a snap in the control yoke, followed by a second snap. With this second snap, was a complete loss of control. This was verified by turning the yoke fully to one side and then the other with no response. The yoke felt loose, as if there was nothing connected. At this time, I throttled back all the way to idle. I was still over the runway (towards the right side). Altitude cannot be determined, but believed to be near treetop level. Unable to correct for drift, aircraft hit trees on right side of runway. Aircraft landed in an inverted position in a wooded area, just past end of runway. The yoke was found snapped off at the gust lock hole."

In a subsequent telephone interview, the pilot reported that before the accident flight, he "locked" the ailerons using "external locks" which connected to the flaps, and a Cessna control wheel lock on the control column. He performed a preflight inspection on the day of the accident and removed the control lock from the left control column. The pilot additionally stated that the control lock is designed to fit into only the left control column.

According to the pilot-rated passenger, during the takeoff the airplane lifted off the ground at 70 mph, about 3/4 down the length of the runway. As the airplane reached an altitude of 20-25 feet, the right control wheel broke off in the pilot's hands. The pilot pulled the throttle back, the airplane rolled to the right, impacted a tree, and came to rest inverted on the ground. The passenger reported that a control wheel lock had been installed in the left control column previous to the accident flight. He stated that the pilot performed an extensive preflight inspection of the airplane before they departed. During the inspection, the control wheel lock was removed from the control column and placed it in its compartment on the backside of the pilot's seat.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed it came to rest inverted on a heading of 300 degrees. The right wing was folded against the fuselage and the left wing was intact and attached to the fuselage. The vertical and horizontal stabilizer displayed severe impact damage. The right control wheel was broken off the control column at the gust lock hole.

The control wheel and lock were examined at the National Transportation Safety Board Materials Laboratory, Washington D.C., on February 2, 2001. According to the Materials Laboratory Factual Report:

"Examination of the fracture surface on the shaft of the control wheel revealed features typical of an overstress separation. No evidence of fatigue cracking or other type of preexisting cracking or deterioration was noted. The upper portion of the fracture intersected the upper hole approximately at a 45 degree angle, indicative of torsional loading of the shaft (with the handle portion of the wheel turning to the left - counterclockwise) as the shaft fractured. Post-

fracture damage was noted on the exterior of the shaft adjacent to the lower hole and on the fracture surface adjacent to the lower hole. The shaft of the control wheel appeared to be constructed from an aluminum material."

"Examination of the lock showed the presence of what appeared to be long term wear on portions of the pin, but no evidence of severe recent loading. The lock pin appeared to be constructed from a steel material."

According to the Cessna 152 Pilot's Operating Handbook, the second item on the PREFLIGHT INSPECTION checklist is to remove the control wheel lock from the control yoke. Additionally, the third item on the BEFORE TAKEOFF checklist is to assure the flight controls are "free and correct."

The pilot reported 5,618 hours of total flight experience, 3,000 of which were in the accident airplane.

Pilot Information

Certificate:	Commercial	Age:	73, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	09/09/1999
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	5618 hours (Total, all aircraft), 3000 hours (Total, this make and model), 5513 hours (Pilot In Command, all aircraft), 26 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N757RR
Model/Series:	152 152	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Utility	Serial Number:	15279948
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	09/13/2000, Annual	Certified Max Gross Wt.:	1670 lbs
Time Since Last Inspection:	24 Hours	Engines:	1 Reciprocating
Airframe Total Time:	3170 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-235
Registered Owner:	CLAUDE PAOLINELLI	Rated Power:	110 hp
Operator:	CLAUDE PAOLINELLI	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PHL, 22 ft msl	Distance from Accident Site:	14 Nautical Miles
Observation Time:	1115 EST	Direction from Accident Site:	300°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	14 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	30°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	36°C / 12°C
Precipitation and Obscuration:			
Departure Point:	(17N)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1130 EST	Type of Airspace:	Class G

Airport Information

Airport:	CROSS KEYS AIRPORT (17N)	Runway Surface Type:	Asphalt
Airport Elevation:	162 ft	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	None
Runway Length/Width:	3500 ft / 50 ft	VFR Approach/Landing:	

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	JILL ANDREWS	Report Date:	09/26/2001
Additional Participating Persons:	MIKE PLANTZ; PHILADELPHIA, PA		
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 pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).