



National Transportation Safety Board Aviation Accident Final Report

Location:	CUT AND SHOOT, TX	Accident Number:	FTW96FA262
Date & Time:	06/20/1996, 1408 CDT	Registration:	N23WT
Aircraft:	Douglas DC3A	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Minor

Flight Conducted Under: Part 91: General Aviation - Instructional

Analysis

During initial takeoff climb the copilot who was manipulating the controls called for METO (maximum except takeoff) power. After the pilot-in-command set METO power, the left engine lost power. The PIC took the controls from the copilot and called for him to feather the left propeller. The copilot did not hear the call to feather the left propeller. Maintaining an indicated airspeed of 90 knots and wings level attitude, the airplane descended into trees and impacted a rural residential paved street. The cockpit area and main fuselage were consumed by a post crash fire. Examination of the throttle quadrant revealed the propeller control levers were forward, the mixture control levers were autorich, the throttle for the right engine was forward, and the throttle for the left engine was at idle. According to a FAA operations inspector maintaining 90 knots with the propeller not feathered would result in the aircraft descending. The pilot and copilot had not completed a proficiency check or flight check for the DC3 type aircraft within the previous 24 months. Examination of the left engine did not disclose any preexisting anomalies.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The flight instructor's failure to use the single engine best angle of climb airspeed resulting in a loss of control of the aircraft. Factors were the loss of power to the left engine for undetermined reasons, the flight instructor not being qualified to be pilot-in-command in the DC3, his lack of recent experience in the DC3, and the lack of suitable terrain for the forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. 1 ENGINE
2. (F) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND(CFI)
4. PROPELLER FEATHERING - NOT PERFORMED - PILOT IN COMMAND(CFI)
5. (C) AIRSPEED(VXSE) - NOT USED - PILOT IN COMMAND(CFI)
6. (F) QUALIFICATION - PILOT IN COMMAND(CFI)
7. (F) LACK OF RECENT EXPERIENCE IN TYPE OF AIRCRAFT - PILOT IN COMMAND(CFI)

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings

8. OBJECT - TREE(S)

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

9. (F) TERRAIN CONDITION - NONE SUITABLE
10. TERRAIN CONDITION - RESIDENTIAL AREA

Factual Information

HISTORY OF FLIGHT

On June 20, 1996, at 1408 central daylight time, a Douglas DC3A, N23WT, registered to and operated by Loren Davis Ministries, was destroyed by a post crash fire following a loss of control during takeoff near Cut And Shoot, Texas. The airline transport rated flight instructor, airline transport rated copilot, and passenger sustained minor injuries. Visual meteorological conditions prevailed for the Title 14 CFR Part 91 instructional flight. A flight plan was not filed for the local flight. The flight was originating from Montgomery County Airport, located in Conroe, Texas, at the time of the accident.

The airline transport rated flight instructor, who was acting as pilot-in-command (PIC), reported the following information to the investigator-in-charge. The copilot was updating his currency in the DC-3, and was designated to fly the aircraft from the copilot's seat (right seat). The preflight and engine runup were normal, and the copilot briefed the takeoff. As the copilot advanced the throttles, the engines responded normally, and the aircraft accelerated normally. About 40 knots the tail lifted off from the runway. Approximately 90 knots the copilot applied back pressure on the yoke and the aircraft became airborne. After attaining a positive rate of climb, the landing gear was retracted. The copilot then called for METO (maximum except takeoff) power, at which time he set approximately 42 inches MAP (manifold pressure) and 2550 RPM. After setting the power he observed the aircraft yaw to the left. The aircraft began to turn left and descend. He took the controls from the copilot, stopped the roll to the left, leveled the wings, and attempted to maintain altitude. He made the determination that the left engine had a loss of power. After confirming the "fuel selector was in the proper position [main], the engine mixture controls were full rich, and the throttles and propellers controls were full forward," he called for the copilot to "feather the left engine." Maintaining an indicated airspeed of 90 knots and wings level, the airplane descended into trees and impacted a rural residential paved street.

The copilot reported the following information during an interview with the investigator-in-charge. During takeoff from runway 14, at about 40 knots, the tail lifted off the runway. After the aircraft lifted off, at 100 feet AGL, he called for gear up, and then METO power. At 300 feet the aircraft yawed left, and began to descend. The PIC took the controls. He saw the PIC "check to see if the throttles and mixtures were up." He did not hear the PIC call for the feathering of the left engine.

A witness who observed the takeoff at the Montgomery County Airport reported to a FAA inspector that the aircraft "took off as soon as the tail came up and they were too slow and stalled into the trees." The witness, who is an A&P mechanic and is familiar with radial engines, did not report hearing any engine sounds out of the ordinary.

PERSONNEL INFORMATION

The airline transport rated flight instructor had flown the DC3 airplane during the Vietnam Conflict. He has accumulated a total of 707 flight hours in the airplane of which 375 hours were as pilot-in-command. He had flown the airplane seven hours within the last 90 days prior to the accident of which six hours were within the last 30 days. On the day of the accident he had flown the airplane from Livingston, Texas, to Conroe, Texas, which was a flight of about 15-18 minutes. His last biennial flight review was completed in a MD-80 flight simulator on

December 15, 1995. The flight instructor reported to a FAA inspector during an interview that he was not qualified to be pilot-in-command for the flight due to not having completed a proficiency check or flight check for the DC3 type aircraft within the previous 24 months. See the Tests and Research section of the report for the pilot-in-command proficiency check or flight check requirements for type ratings.

The airline transport rated copilot had flown the DC3 airplane during the Vietnam Conflict. He had accumulated a total of 816 flight hours in the airplane of which 400 hours were as pilot-in-command. He has flown the airplane two hours within the last 30 days prior to the accident. His last biennial flight review was completed in a B-727 flight simulator on January 29, 1995. He had not completed a proficiency check or flight check for the DC3 type aircraft within the previous 24 months.

AIRCRAFT INFORMATION

The World War II vintage twin-engine airplane was manufactured in 1943. The minimum required crew is a pilot and copilot. According to the operator, the aircraft's records indicated it had been used during the Vietnam War, and was commissioned "The Chariot of Fire." The aircraft had undergone a major restoration, and was operating under an exemption to FAA regulation part 125. The DC3A was going to be flown to Africa to be used for missionary work.

The aircraft has two main fuel tanks which hold 202 gallons each, and two auxiliary tanks which hold 200 gallons each. The aircraft was fueled prior to departing Montgomery County airport with 572.8 gallons of 100 octane low lead avgas.

The maximum gross weight of the airplane for takeoff is 26,200 pounds. The calculated takeoff weight of the airplane was 23,500 pounds. This places the airplane at the time of the accident within its limits. The aircraft's airframe and engine log books were not located. According to the operator, the log books were normally kept in the aircraft.

WRECKAGE AND IMPACT INFORMATION

The initial impact point was the top of a 55 foot tall hickory tree approximately 3,960 feet from the departure end of runway 14 of the Montgomery County Airport. As the aircraft continued to descend on a magnetic heading of 100 degrees it struck a trailer roof, trees, a small pickup truck, and powerlines before coming to rest upright in a residential front yard 337 feet from the initial impact point. The outboard right wing was severed on impact with the trees, and the left wing and horizontal stabilizer were also severed. The aircraft came to rest on a magnetic heading of 115 degrees, with 17 feet of the tail section obstructing a road. The remainder of the fuselage and cockpit area was consumed by a post crash fire. See enclosed wreckage diagram for wreckage distribution details.

The remains of the throttle quadrant were located within the cockpit area. Both propeller control levers were found in the full increase position (forward). The throttle for the #1 engine (left) was found in the idle (rearward) position, while the #2 engine (right) throttle was in the full power (forward) position. Both mixture control levers were found in the autorich position.

Both propellers were separated from their respective engines. The left propeller had impacted the front of a house 38 feet from the front of the aircraft. The propeller hub displayed rotational scoring, one blade was not bent, one blade was bent from mid span 40 degrees aft, and one blade was bent from mid span 25 degrees aft. Part of the engine reduction gearbox was still attached to the propeller and rotated freely about the sun gears located within it. The

right propeller struck the right side of the house and came to rest 31 feet from the house and 77 feet from the front of the aircraft. Two of the blade's tips were curled aft, and the other blade was bent forward. All three blades exhibited chordwise scratching. There were three slash marks on the road and several digs in the ground on line with the right side of the house.

The left engine was located just aft of the left wing and the right engine was laying in front of the right wing. The examination of the left engine revealed impact damage to the accessory housing and blower case as well as the attached accessories. The spark plugs were removed from all of the rear bank cylinders and were found serviceable. All cylinders were examined for preexisting cracks and unusual deformities, which none were found. All cylinders were found intact except for the #5 cylinder, which is located at the engine's six o'clock position. The #5 cylinder was split between the fore and aft plug bosses and vertically down the fore and aft face of the cylinder. Pieces of this cylinder were found in a hole where the engine impacted the road. There was no report of a loss of power to the right engine and due to propeller damage consistent with high power settings, no examination of the right engine was performed.

TESTS AND RESEARCH

FAR Part 61.58 requires a pilot-in-command proficiency check or flight check for type ratings every 12 months. Those pilots who have more than one type rating may alternate the proficiency check every other 12 months not to exceed a 24 month period. A pilot who is type rated in four aircraft would take a proficiency check in two aircraft the first 12 months, then the other two aircraft the following 12 months. The proficiency or flight check includes those maneuvers and procedures required for the original issuance of a type rating for the aircraft used in the check. The in-flight maneuvers according to Appendix A to part 61 are steep turns, approaches to stalls, specific flight characteristics that are peculiar to the airplane type, and powerplant failures. The stalls include one in the take off configuration, one in a clean configuration, and one in a landing configuration.

According to a FAA operations inspector who administers pilot-in-command proficiency checks and flight checks for DC3 type ratings, during takeoff climb, following a single engine loss of power, with the propeller not feathered (windmilling), 80 knots indicated airspeed (84 calibrated airspeed) should be used for climb airspeed. The increase in airspeed from 80 knots would decrease the climb performance, and using a airspeed of 90 knots would cause the airplane to descend.

ADDITIONAL DATA

The aircraft wreckage was released to the owner's representative.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Flight Engineer	Age:	52, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	03/15/1996
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	16500 hours (Total, all aircraft), 707 hours (Total, this make and model), 6000 hours (Pilot In Command, all aircraft), 230 hours (Last 90 days, all aircraft), 55 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Douglas	Registration:	N23WT
Model/Series:	DC3A DC3A	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	11650
Landing Gear Type:	Retractable - Tailwheel	Seats:	3
Date/Type of Last Inspection:	02/18/1996, Annual	Certified Max Gross Wt.:	25200 lbs
Time Since Last Inspection:	6 Hours	Engines:	2 Reciprocating
Airframe Total Time:	51307 Hours	Engine Manufacturer:	P&W
ELT:	Installed, not activated	Engine Model/Series:	R-1830-92
Registered Owner:	LOREN DAVIS MINISTRIES	Rated Power:	1200 hp
Operator:	LOREN DAVIS MINISTRIES	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	, 0 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	0000	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 4000 ft agl	Visibility	15 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	140°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	32° C / 22° C
Precipitation and Obscuration:			
Departure Point:	(CXO)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1400 CDT	Type of Airspace:	Class E

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	DOUGLAS D WIGINGTON	Report Date:	02/18/1997
Additional Participating Persons:			
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 pubin@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](#).