



National Transportation Safety Board Aviation Accident Final Report

Location:	INDEPENDENCE, NY	Accident Number:	NYC95FA167
Date & Time:	07/19/1995, 1050 EDT	Registration:	N54NA
Aircraft:	DOUGLAS DC-3	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General Aviation - Ferry		

Analysis

The new owner/co-pilot of the 50-year-old airplane and another pilot, who was typed rated in the airplane, departed on a 1,700 mile ferry flight. After the first 250 mile leg, the airplane was landed at another airport with a right engine problem. The owner replaced the right engine and continued the ferry flight. Twenty minutes into the second flight, the replacement right engine lost power. The owner stated that they applied maximum power to the left engine, were unable to feather the right propeller, and performed a forced landing to a field. However, the airplane collided with trees before reaching the field, then burned after impact. Investigation revealed that during the past 5 years, the airplane had neither flown nor had an annual inspection, except for 3 recent maintenance flights, totaling 1.5 Hours. The right propeller blades had chordwise scratches. The left propeller blades had no chordwise scratches. Examination of the wreckage revealed three propeller strikes in the ground, near the right engine ground scar, and no propeller strikes in the ground, near the left engine ground scar. The right engine mixture was locked in the auto-cruise position, while the left was locked in the emergency position. Airplane charts listed the single-engine rate of climb with a feathered propeller to be 350 feet per minute, and 10 feet per minute with a windmilling propeller.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power for undetermined reasons, and the pilot's shutdown of the wrong engine, which resulted in a forced landing and collision with trees.

Findings

Occurrence #1: LOSS OF ENGINE POWER

Phase of Operation: CRUISE

Findings

1. 1 ENGINE

2. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL

Phase of Operation: CRUISE

Findings

3. 1 ENGINE

4. (C) WRONG ENGINE SHUTDOWN - PILOT IN COMMAND

Occurrence #3: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #4: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: DESCENT - EMERGENCY

Findings

5. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On July 19, 1995, at 1050 eastern daylight time, a Douglas DC-3, N54NA, was destroyed during a forced landing and post crash fire near Independence, New York. The airline transport pilot was fatally injured, and the co-pilot received serious injuries. Visual meteorological conditions prevailed, for the ferry flight that departed Elmira, New York, at 1020. A VFR flight plan had been filed for the flight conducted under 14 CFR Part 91.

The airplane's last annual maintenance inspection was performed in 1989. Except for 1.5 hours of maintenance flights conducted in June, 1995, the airplane had not flown for 5 years. A ferry permit, valid for 10 days, had been issued by the Portland Flight Standard District Office (FSDO), on June 30, 1995. The airplane was then purchased on July 3, 1995. The new owner/co-pilot and pilot-in-command (PIC), departed Bennington, Vermont, July 3, 1995, on a ferry flight, destined for El Paso, Texas.

After a 250 mile flight, the airplane landed in Elmira, New York, with a number 2 (right) engine problem. The co-pilot/owner of the airplane, and local maintenance personnel, examined the engine and determined that the number eight cylinder had a broken connecting rod.

The owner departed Elmira by commercial flight, and returned several days later with a replacement engine. The owner and three other personnel installed the replacement right engine.

On July 18, 1995, the right engine was started, and local maintenance personnel heard and observed the engine run at high power settings. They made similar observations of the propeller being cycled and feathered. A test flight was not observed by any personnel at the airport. On July 19, 1995, a second ferry permit was issued by the Rochester FSDO.

After departure from the Elmira-Corning Regional Airport (ELM), the pilot was advised by the ELM Air Traffic Control (ATC) Tower controller that he was in radar contact. The ATC controller also informed the pilot that his radar was not receiving the airplane's transponder, and requested the airplane's altitude. The pilot reported level at 2,500 feet.

At 1027, the controller advised the pilot that he had lost radar contact with the airplane, and that radar service was terminated. The controller also suggested that the pilot contact Cleveland Center in about 15 miles, for further advisories. The pilot acknowledged the Cleveland frequency and thanked the controller. That was the last radio transmission received from N54NA.

Witnesses near the accident site reported that they observed the airplane flying low along the valley, and heard the sounds of an engine backfiring. They observed the airplane fly very low over their barn in a westerly direction. One witness stated:

We were in the driveway when we heard this sound. We looked and saw a plane coming over the trees just missing them. It went by the barn almost hitting it. I saw blacky [sic] white smoke coming out of the left side engine.

In written statements provided by the owner/co-pilot, he stated that he was flying the airplane from the left seat, when the right engine developed a problem. This occurred about 20

minutes into the flight, at 2,500 feet. He further stated:

...The right engine was misfiring and vibrating severely. [The PIC] advanced the power on the left engine several times. I do not remember the settings. I was flying the aircraft. [The PIC] was checking the mags, fuel mixture, switched tanks in an attempt to troubleshoot the engine problem. I was in the left seat because [The PIC] was a DC-3 flight instructor and had told me he would just as soon fly from the right seat...After attempting to feather the right engine and realizing we were losing airspeed and altitude, [the PIC] said he would take over and try to land in the clearing ahead. The left engine was running close to full power and the right was dragging badly...Crossing the tree line [The PIC] was flying the aircraft...When we hit the trees I saw [the PIC] chop the power on the left throttle and pull back on the controls before we hit. Fuel tanks were full and running on front tanks. Left mixture in emergency position in hopes of getting a little more power out of the left engine and also to keep the engine cooler.

The airplane struck trees, landed in an open field, and was consumed by a post crash fire. The owner exited the airplane through the aft cargo door. A witness on the scene stated:

I went down to the plane. I saw a guy walking around the plane...I asked him how many other people were in the plane and he said just one...The main part of the plane was on fire. I saw someone trying to get [out] the right side window. He looked like he got stuck, because the window was too small...

The accident occurred during the hours of daylight approximately 42 degrees, 5 minutes north latitude, and 77 degrees, 54 minutes west longitude.

PILOT INFORMATION

The pilot-in-command, Mr. Ruben G. Wayman, held an Airline Transport Pilot Certificate with a rating for airplane multi-engine land. He also held a Commercial Pilot Certificate with ratings for airplane single engine land, sea, and glider. Additionally, he held a Flight Instructor Certificate for airplane single and multi-engine land, glider, and instrument airplane.

His most recent Federal Aviation Administration (FAA) Second Class Medical Certificate was issued on May 1, 1995.

Mr. Wayman's pilot log book was not located. A review of his resume provided by a friend, revealed that he had accumulated over 12,500 hours of total flight experience, of which about 2,865 hours were in this make and model. Recent flight hours were not available; however, Mr. Wayman completed a 14 CFR Part 125 PIC proficiency check in the DC-3, on June 7, 1995. A review of Mr. Wayman's Airman Certification Records revealed that he was type rated in the DC-3 on September 7, 1983.

The owner/co-pilot, Mr. Neil F. Stalder, held a Commercial Pilot Certificate with ratings for airplane single and multi-engine land, and instrument airplane. He was not type rated in the DC-3.

His most recent FAA First Class Medical Certificate was issued on October 18, 1994.

Mr. Stalder's pilot log book revealed that he had accumulated about 12,800 hours of total flight experience. It also revealed that all of Mr. Stalder's flight experience during the previous 12 months was in a Lear Jet.

AIRCRAFT INFORMATION

The airplane was purchased on July 3, 1995, from Business Air Inc., Bennington, Vermont. The airplane's last annual maintenance inspection was performed in December 1989. The last regular use of the airplane occurred during early 1990.

In preparation for the sale of the airplane, maintenance inspections were performed by Business Air mechanics. This included installation and rigging of the ailerons and trim system, visual and operational checks of the flight controls, visual checks of engines and accessories, pre-oiling of engines, installation of the right and left propellers, and engine ground checks. It also included three, 30 minute test flights, with a check and cleaning of the oil screen between each flight.

The airplane departed Bennington with all of the airplane's maintenance records aboard. The historical records were stored in the aft section of the airplane, and were burned extensively. The recent maintenance records were stored in forward cabin area, and were destroyed during the post crash fire.

WRECKAGE INFORMATION

The airplane wreckage was examined at the accident site on July 19 and 20, 1995. The examination revealed that all major components of the airplane were accounted for at the scene. The airplane came to rest on an approximate magnetic bearing of 150 degrees, at a ground elevation of approximately 2,150 feet above mean sea level (MSL).

A line of 45 foot high trees was observed to be about 260 feet east of the main wreckage. The upper 20 feet was missing from 1 of the tree tops. In the vicinity of this tree, were other trees with numerous broken branches. A 10 foot long section, of a 10 inch diameter tree, was laying on the ground about 10 feet west of the tree line. A section of the airplane's right horizontal stabilizer and elevator were separated from the airplane, and located about 62 feet west of the tree line, in the direction of the main wreckage.

Two parallel ground scars, 107 and 112 feet respectively, began west of the tree line. The left and right ground scars were about 18 feet apart, and extended on a magnetic bearing of 275 degrees, in the direction of the wreckage. The ground scars began as flattened grass, and were approximately 12 inches wide.

The right ground scar extended about 10 feet, then widened into a dirt trench about 5 feet wide, until the trench faded back to compressed dirt, 160 feet from the tree line. Three perpendicular slash marks were observed in the ground, on the north side of the ground scar. The first slash was 121 feet from the tree line, along the flattened grass scar. This slash extended to the north, and was about 3 feet long and 18 inches deep. The second slash mark was 124 feet from the tree line at the beginning of the dirt trench. It extended to the north, and was about 3 feet long and 18 inches deep. The third slash mark was 128 feet from the tree line, and also extended from the dirt trench to the north. The slash was about 2 feet long.

The left flattened grass ground scar extended for about 27 feet, then widened into a dirt trench about 5 feet wide, until the trench faded back to compressed grass, 164 feet from the tree line. No perpendicular slash marks were observed north or south of the ground scar.

Another ground scar, centered between the parallel ground scars, began about 135 feet from the tree line, and extended on a magnetic bearing of 275 degrees towards the wreckage. This ground scar contained two pitot tubes and one antenna.

The left engine and propeller were separated from the wreckage, and located 231 feet from

the tree line, 30 feet short of the wreckage. The engine cowling and accessories displayed impact damage.

The propeller hub and blades remained attached to the engine.

The propeller was not in the feathered position. One blade was curved aft about 20 degrees, and had leading edge nicks and chord wise scratches over the center 2 feet of the blade; however, the last several inches of the blade tip were not nicked or scratched. The second blade was curved more than 90 degrees aft.

The blade contained substantial scratches extending from the hub towards the tip, and some chord wise scratches. No leading edge nicks were visible. The third blade was curved less than 20 degrees aft. No chord wise scratches or leading edge nicks were visible. The blade tip did contain scratches that extended about 18 inches towards the hub.

The right engine was separated from the wreckage, and was 248 feet from the tree line, directly aft of the right wing trailing edge. The engine cowling displayed impact damage. The nose case and accessories were destroyed.

The right propeller hub and blades were separated from the engine, and located just forward of the right wing. A section of the nose case, that separated from the engine, remained attached to the propeller hub. The propeller blades were not in the feathered position. One blade was rotated 180 degrees in the hub. When the blade was repositioned, all three blades were similarly curved, opposite the direction of rotation. All three blades displayed chord wise twisting and scratches.

The main landing wheels were in the retracted position, and the flaps and actuators indicated that they were also retracted at impact.

The left and right wings remained attached to the main fuselage. A post crash fire consumed and destroyed the fuselage, cockpit, and the left and right center wing areas.

The pilot's control pedestal was located. The throttle levers were about 1 to 2 inches above the idle position, and the propeller levers were both in a mid-range position. The mixture levers were equipped with thumb latches, which mechanically locked the mixture levers in the selected position. The left lever was locked in the full-rich/emergency position. The right lever was locked in the auto-rich position.

The left and right engine magneto switches were located. Each magneto switch was observed to be set on the "both" position.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on Mr. Ruben G. Wayman, on July 20, 1995, by Dr. Kim Panosian, of the Monroe County Medical Examiners Office, New York.

The toxicological testing report, from the FAA toxicology Accident Research Laboratory, Oklahoma City, Oklahoma, was negative for drugs and alcohol for Mr. Ruben Wayman.

ADDITIONAL INFORMATION

In a written statement by the owner, he said that after the installation of the replacement engine at ELM, several engine run-ups and ground checks were completed. He stated that during these checks, "The propeller was cycled and a feathering check done on each run-up."

The airplane was converted from a C-47, to a DC-3, in 1984. A C-47 Operating Handbook troubleshooting chart, stated that for puffs of black smoke from exhaust, and a rough running engine, "CAUSE: Detonation, afterfire or backfire from lean mixture and/or carburetor failure. REMEDY: Enrich mixture, reduce power and temperature. Monitor engine instruments."

The most recent airplane weight and balance records, dated July 7, 1989, indicated the airplane's total empty weight, without passenger seats, was 18,306 pounds. The airplane's estimated takeoff and accident weight calculated as follows:

Empty Weight-----	18,306	Fuel (800 gallons)-----	4,800
Cargo-----	1,825	(Replaced engine minus accessories)	Pilot
and Co-Pilot-----	425	Airplane records-----	30
-----	50	Baggage-----	25
Weight=====	25,461	Total Takeoff	
Minus run-up, takeoff and cruise fuel---	400	Accident	
weight=====	25,061		

A C-47 Operating Handbook Chart, listed the maximum single engine rate of climb to be 350 feet per minute, with maximum power on the operating engine, a feathered propeller on the inoperative engine, at a gross weight of 25,000 pounds, and a density altitude of 3,200 feet.

For an inoperative engine propeller windmilling, another chart listed the maximum single engine rate of climb to be 10 feet per minute, for the conditions listed above, at an airplane gross weight of 26,000 pounds.

The airplane wreckage was released on July 20, 1995, and a copy of the wreckage release was left with the property owner. The airplane owner signed the wreckage release form on October 13, 1995.

Pilot Information

Certificate:	Airline Transport; Commercial	Age:	57, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Right
Other Aircraft Rating(s):	Glider	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Glider; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	05/01/1995
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	12534 hours (Total, all aircraft), 2865 hours (Total, this make and model), 10441 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	DOUGLAS	Registration:	N54NA
Model/Series:	DC-3 DC-3	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Utility	Serial Number:	19475
Landing Gear Type:	Retractable - Tailwheel	Seats:	2
Date/Type of Last Inspection:	12/01/1989, Annual	Certified Max Gross Wt.:	26000 lbs
Time Since Last Inspection:		Engines:	2 Reciprocating
Airframe Total Time:	16700 Hours	Engine Manufacturer:	P&W
ELT:	Not installed	Engine Model/Series:	R-1830-92
Registered Owner:	NEIL F. STALDER	Rated Power:	1200 hp
Operator:	NEIL F. STALDER	Operating Certificate(s) Held:	None
Operator Does Business As:	JET AIR EXPRESS INC.	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	ELM, 955 ft msl	Distance from Accident Site:	39 Nautical Miles
Observation Time:	1000 EDT	Direction from Accident Site:	90°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	20 Miles
Lowest Ceiling:	Broken / 3300 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	23° C / 14° C
Precipitation and Obscuration:			
Departure Point:	ELMIRA, NY (ELM)	Type of Flight Plan Filed:	VFR
Destination:	KANSAS CITY, MO (MKC)	Type of Clearance:	None
Departure Time:	1020 EDT	Type of Airspace:	Class G

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	ROBERT L PEARCE	Report Date:	03/21/1996
Additional Participating Persons:	EDWARD DICK; ROCHESTER, NY		
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/ .		

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