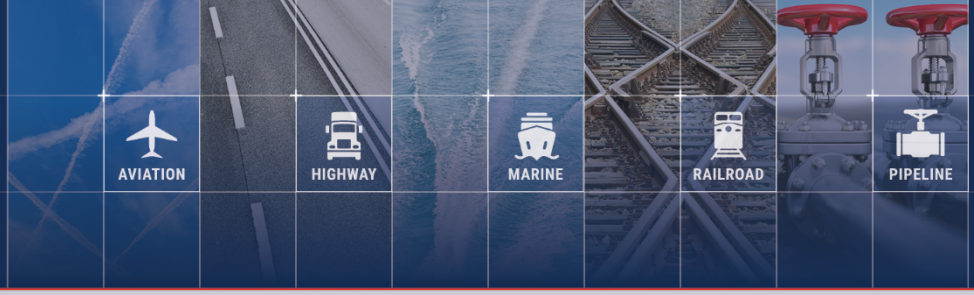

Aviation Investigation Final Report

Location:	MARLBORO, New Jersey	**Accident Number:**	NYC93FA145
Date & Time:	August 7, 1993, 18:50 Local	**Registration:**	NC365M
Aircraft:	Curtiss-Wright TRAVEL AIR 4000	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

THIS FLIGHT WAS THE NINTH SIGHTSEEING FLIGHT OF THE DAY FOR THIS AIRPLANE AND PILOT. NO PROBLEMS HAD BEEN REPORTED ON THE EARLIER FLIGHTS. AFTER TAKEOFF AND AT AN ALTITUDE OF APPROXIMATELY 150 FEET, THE ENGINE LOST POWER AND IT BEGAN TO SPUTTER. THE PILOT INITIATED A LEFT TURN TO LAND ON A FIELD NORTH OF THE AIRPORT. DURING THIS TURN, THE PILOT LOST CONTROL OF THE AIRPLANE, AND IT IMPACTED THE GROUND IN ANOSE LOW ATTITUDE. A POST-IMPACT FIRE DESTROYED THE AIRPLANE AND SEVERELY BURNED THE ENGINE. AN EXAMINATION OF THE ENGINE REVEALED NO DISCREPANCIES.

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 failure to maintain adequate airspeed, which resulted in an inadvertent stall and inflight collision with the terrain.

Findings

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

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Findings
2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
3. (F) STALL - INADVERTENT - PILOT IN COMMAND

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

Factual Information

HISTORY OF FLIGHT

On Saturday, August 7, 1993, at 1850 eastern daylight time, a Curtis-Wright Travel Air 4000, NC365M, operated by Biplane Adventure Tours, Ltd., and piloted by Michael E. Flakker, was destroyed by a post-impact fire, after a forced landing near the Marlboro Airport, Marlboro, New Jersey. The pilot was seriously injured, and the two passengers were fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed. The flight was being conducted under 14 CFR 91.

This was a sightseeing flight, with the pilot occupying the rear cockpit, and the two passengers sharing an oversized seat in the front cockpit. The pilot stated in his report:

I completed my pre-takeoff check....I began rolling eastbound [runway 09]....The main wheels lifted off at what felt to be the normal speed and I began climbing out at 70 mph. Still at full power, I reached approximately 100 to 150 feet. There was no indication of impending problem. Then suddenly, without warning, the engine quit. The silence was deafening....I thought immediately of the clearing to the left. In front of me was a house, multiple trees, a highway and electrical wires along the highway. I turned left in an attempt to make an emergency landing in the clearing in the soybean field.

In his report he continued:

In the turn, I explicitly remember closing the throttle and reopening it, in an attempt to make something happen....I attempted to flare....the airplane did not respond to my pulling the stick all the way back.

The pilot was interviewed on August 11, 1993. He said that he had flown about eight sightseeing flights that day. This was the last one and was scheduled for about 15 minutes duration. The passengers boarded the airplane with the engine running. He taxied down the runway for the run-up. He said that he had experienced no difficulties with the engine on the previous flights. He performed the run-up, and everything was "normal." After becoming airborne, the engine just quit, with no sputter. He thought the propeller might have been windmilling. He said that he pushed the throttle and mixture full forward, but no change occurred.

Mr. Edward Del Rosso, the owner of the airplane, was a witness to the accident. He stated:

I watched it go past my hangar and out over the field...It was about 200' or more

when I heard the engine sputter for a second or two and come back on. For about 3 seconds it remained on heading and in level flight. The it abruptly pulled up into a tight...climbing turn to the left....About halfway through the 180 degree turn, the nose dropped through the horizon still turning to the left, over the trees and out of sight.

Ms. Kathryn Volk witnessed the accident, and she stated:

I saw a biplane taking off from the runway. It was almost above the trees when I heard a pop and the engine stalled. The engine was not running any more and the plane began to drop and go to the left sharply.

Another witness, Mr. David Krug, a pilot for Biplane Adventures, Ltd., stated, "[The] airplane took off...got to 50 to 100 feet and [the] engine sputtered and quit..."

Brian W. Mulqueen stated:

I am a flight instructor at Marlboro Airport... I was watching the airplane take off...About 50 feet above the tree top level, I heard a noise from the engine and a substantial loss of RPM. The aircraft pitched up and turned rapidly to the left...

Mr. Russell Potoski also witnessed NC365M take off, and he said in a telephone interview:

After becoming airborne and at approximately one hundred to two hundred feet, the engine became quiet, then a bang occurred, followed by a pop and sputter.

Mr. Robert Chesnowitz stated that he did not see NC365M take off, but he did hear the engine "sputter and miss." He then looked at the airplane....He saw the airplane turn left...it looked like a "stall or spin" before hitting the ground. He did not think the airplane could have glided to the field straight ahead.

Mr. Dennis Heucke and his wife were passengers on the flight prior to the accident. They both stated that on their flight, the engine sounded "normal." Mr. Heucke said that they also witnessed the takeoff of NC365M on the accident flight. He said that the engine began to "sputter and kept sputtering throughout the left turn."

The accident occurred during the hours of daylight, at about 40 degrees, 22 minutes North; 74 degrees, 15 minutes West.

AIRCRAFT INFORMATION

NC365M was a vintage biplane produced in 1929. The last maintenance inspection of this airplane was a 100 hour inspection performed on July 19, 1993. The airplane had accumulated approximately 70 hours since that inspection.

The airplane was approved for the use of autogas under a Supplemental Type Certificate (STC). The Petersen Aviation, Inc., specifications stated that a mixture of 25%, 100 low lead aviation gas and 75% unleaded autogas should be used in this radial engine to comply with this STC.

Company records showed that the airplane had been refueled four times that day, with the last refueling four flight prior to the accident flight. The airplane's single fuel tank had a capacity of 42 gallons, and the company's policy was to fill the tank at each refueling. It was estimated that at the time of the accident, the fuel tank contained approximately 15 gallons of fuel.

Fuel samples were obtained from the tender from which NC365M was refueled, and in which the mixture described above was blended by the operator. Also obtained was a sample of fuel from the service station from which the autogas was obtained. These samples revealed no evidence of contamination. Also, other airplanes had used the same fuel tender during that day without any reported problems.

PERSONNEL INFORMATION

Mr. Michael E. Flakker held a Commercial Pilot Certificate, with single and multi-engine land, instrument airplane ratings. He also held a current Flight Instructor Certificate. His most recent First Class Airman Medical Certificate was issued on July 26, 1993.

He reported his total flight time as 2636 hours, which was broken down as follows:

Total time in the Travel Air	336 hours
Total time in last 90 days	385 hours
Total time in last 30 days	134 hours

WRECKAGE

The wreckage was examined at the accident site on August 8, 1993. The examination revealed an impact mark on the ground approximately 18 feet from the main wreckage, which came to rest on a magnetic heading of 190 degrees. The left wing tips of the bi-plane were crushed and burned. The fuselage was destroyed by post-impact fire. The empennage was intact.

All flight controls were accounted for and continuity was established to the rudder and elevator. The aileron control tubes were destroyed by impact and fire and continuity could not be established.

The single fuel tank, which was located in front of the forward cockpit instrument panel,

was ruptured and empty. The reserve tank baffle had been displaced.

All cockpit instruments and switches were destroyed by post- impact fire.

The engine was attached to the firewall, and there was a visible fracture of the case in the bottom of the engine. The engine was subjected to fire damage, particularly to the accessory section. The carburetor was broken from the engine at the flange, but it intact.

The wooden propeller was splintered, and a piece of one blade tip, 8 inches long was found approximately 300 feet from the wreckage on a magnetic heading of 225 degrees from the wreckage.

TESTS AND RESEARCH

The engine was examined at Teledyne Continental Motors, Mobile, Alabama, on October 14, 1993, under the supervision of the NTSB. The accessory section had fire damage; in particular, both magnetos, alternator and starter.

The left magneto drive shaft rotated freely, moving the cam and opening and closing the points.

The cam ring was intact with no observable damage. All accessory drive gears rotated and engaged, and no gear teeth were missing.

The main oil pump rotated freely. The oil sump was removed and a magnetic test revealed no metal particles. The high pressure oil screen was clean except for a few fine metal flakes. The oil scavenging filter was clean. The low pressure oil screen was examined and no contamination observed.

All ignition leads were securely connected to the spark plugs. The ignition harness was intact and no discrepancies noted. The spark plugs were a grayish color, with no evidence of excessively rich mixture.

The exhaust ring was intact. The exhaust manifold was clean with no evidence of oil or rich mixture. No contamination was found in the exhaust elbow.

Visual inspection of the upper rocker boxes revealed lubrication.

The front case near the cylinder boss for cylinders #4 and #5 was fractured. Cylinder #5 was removed. The articulating rods for cylinders #4 and #5 were bent, which was consistent with the impact damage to the case. The other piston rods were connected to the master rod assembly. The engine master rod was intact. The knuckle pins were intact also.

The engine was rotated approximately 3/4 of a turn, before #4 piston jammed at the point

of impact damage. All intake and exhaust valves moved freely.

The carburetor was examined. The float and needle assembly moved freely with no contamination observed in the bowl. The accelerator pump was intact and operated.

The carburetor finger screen was examined at the NTSB Materials Laboratory in Washington, D.C., to determine the composition of a white substance on the mesh filter. The element in abundance was cadmium, which was used as an inhibitor of corrosion for various components in the fuel system, possibly including the brass filter screen itself. When subjected to intense heat, cadmium turns into a white material. The examination revealed that the material found on this screen was predominantly on the outside of the mesh screen.

The wooden propeller thrust nut was tight and the sling ring was secure and correctly positioned.

No discrepancies were noted with the engine or the accessories.

ADDITIONAL INFORMATION

The complete wreckage was released to the Crittenden Adjusters, on February 14, 1994.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	31,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	July 26, 1993
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	2636 hours (Total, all aircraft), 336 hours (Total, this make and model), 2516 hours (Pilot In Command, all aircraft), 385 hours (Last 90 days, all aircraft), 134 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Curtiss-Wright	**Registration:**	NC365M
Model/Series:	TRAVEL AIR 4000 TRAVEL AIR	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1297
Landing Gear Type:	Tailwheel	**Seats:**	3
Date/Type of Last Inspection:	July 19, 1993 Annual	**Certified Max Gross Wt.:**	2900 lbs
Time Since Last Inspection:	70 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6276 Hrs	**Engine Manufacturer:**	CONTINENTAL
ELT:	Not installed	**Engine Model/Series:**	W670-6A
Registered Owner:	EDWARD DEL ROSSO	**Rated Power:**	220 Horsepower
Operator:	BIPLANE ADVENTURE TOURS, LTD.	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	26°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(2N8)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	18:50 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	MARLBORO 2N8	**Runway Surface Type:**	Macadam
Airport Elevation:	122 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	9	**IFR Approach:**	
Runway Length/Width:	2156 ft / 40 ft	**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal, 1 Serious	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Leonard, Charles
Additional Participating Persons:	ANDREW J DONNELLY; STATEN ISLAND , NY FREDERICK H FIHE; MOBILE , AL
Original Publish Date:	September 13, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=38587