Aviation Investigation Final Report

Location:	EAST HADDAM, Connecticut	**Accident Number:**	NYC99LA156
Date & Time:	June 23, 1999, 14:00 Local	**Registration:**	N3385L
Aircraft:	Cessna 185E	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was on its first flight since recent maintenance from a previous accident in which the airplane was submerged under water. As the airplane climbed out the engine began to loose power and the pilot attempted a forced landing to a river. The airplane stalled and impacted the water nose down and sank. A test run of the engine was performed after the accident and no anomalies were noted. Inspection of the fuel injector distributor valve revealed fuel and water coming from under the diaphragm. An airworthiness directive was issued in 1986 to prevent power loss or engine stoppage due to water contamination of fuel system. The AD addressed the potential for trapped water in the wing fuel bladder due to wrinkles. The AD was complied with in 1989. Examination of the left wing revealed inward and upward crushing damage to the leading edge, from the wing root outward. The wing fuel bladder was inspected, and 5 wrinkles were found, about 8-12 inches in length and 1/4 inch high, that extended from the wing root, outward.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to water in the fuel system.

Findings

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

Findings
1. (C) FUEL SYSTEM - CONTAMINATION,WATER

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

Findings
2. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. TERRAIN CONDITION - WATER

Factual Information

On June 23, 1999, about 1400 Eastern Daylight Time, a Cessna 185E, N3385L, was substantially damaged during a forced landing into the Connecticut River, after departure from the Goodspeed Airport, East Haddam, Connecticut. The certificated commercial pilot was seriously injured, and the certificated pilot mechanic received minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight conducted under 14 CFR Part 91.

During an interview, the pilot mechanic who performed the repair work on the airplane stated this was the first flight for the airplane since recent maintenance from a previous accident in June of 1998, in which the airplane was submerged under water. Prior to the maintenance, the airplane remained outdoors about 2-3 weeks after the accident, then it was positioned into an enclosed hanger, where it remained until June 10, 1999. The airplane was then removed from the hanger on a daily basis for the next two weeks to conduct test runs of the engine. On June 22, 1999, the airplane was taxied to a fuel pump located on the north end of the airport, fueled to capacity, and tied down outdoors.

On the day of the accident, the airplane was pre-flight inspected by the pilot mechanic, and all fuel drains were sumped. About 1 quart of fuel was drained from each sump, and all samples were free of visual contaminates. The pilot mechanic decided that the fuel would be drawn from the left tank for the flight.

The pilot mechanic, who was seated in the left front seat of the airplane, was not familiar with the make and model of airplane to be flown, and decided to bring along a second pilot, to act as pilot in command. It was agreed between the two pilots that the pilot mechanic would be at the controls for the flight. The airplane was taxied out to the departure end of Runway 14, and a full run-up of the engine was performed. The airplane was then taxied at high speed down the runway three times, reversing direction at each end of the runway. The airplane was then taxied into position for takeoff at the beginning of Runway 32. Power was applied, and the airplane began to roll down the runway. The airplane rotated about 1,500 feet down the runway, and climbed to about 25 feet above the ground. During the climb, the pilot mechanic noticed that the airplane was not performing as expected, and asked that the other pilot take the controls while he attempted to raise the landing gear. The pilot pushed the nose over and attempted a forced landing to a river that was located about 500 feet beyond the departure end of the runway. The airplane impacted the water in a nose down attitude, and flipped over. The airplane sank in about 10 feet of water, and came to rest on the riverbed inverted.

The pilot mechanic did not recall the impact; however, he did recall a rush of water coming through the windshield of the airplane, and the cabin beginning to fill with water.

Releasing his seat belt, the pilot mechanic fell to the ceiling of the cabin, and exited through the left cabin door window. On the surface, the pilot mechanic did not see the other pilot, and dove back under the water. He reached into the left cabin door window and pulled the pilot out of the wreckage, to the surface of the water.

Work that was performed on the airplane by a maintenance facility after the first submersion in water included the removal, clearing, inspection, and reinstallation of all fuel lines. The fuel shut-off valve and gascolator were also removed, cleared, inspected, then reinstalled. The right tank fuel bladder was removed, and replaced with a new one. The left tank fuel bladder was filled to capacity, shaken, and drained completely about six times, then inspected. No anomalies were noted.

A Federal Aviation Administration Inspector examined the wreckage on June 24, 1999. During the examination the oil system was drained, along with the removal of the lower spark plugs and valve covers, to verify valve train continuity. The ignition system and engine timing were also verified. The fuel injector distributor valve top was removed and revealed fuel and water coming from under the diaphragm. Water was also drained from the left wing fuel tank, fuel strainer, and the fuel line coming from the electric fuel pump.

On June 25, 1999, the FAA Inspector witnessed the preparation and test run of the engine, which remained attached to the airframe. Mechanics prepared the engine for the test run by installing a temporary propeller and a separate fuel system. The engine started and ran normally with no interruptions.

An Airworthiness Directive (AD), 84-10-01 Bladder Fuel Cells Revision 1, was issued on October 4, 1986, and complied with on February 16, 1989. The AD stated:

"To prevent power loss or engine stoppage due to water contamination of fuel system, accomplish the following:

(c) Within the next 50 hours time-in-service after the effective date of this AD, on all applicable airplanes, except models 190 and 195, conduct an inspection for fuel tank wrinkles in accordance with the following: (1) Drain the fuel tanks.

(2) Note any wrinkles which retain fluid after draining. Remove diagonal wrinkles across the inboard rear corner in the vicinity of the fuel tank drain by installation of Cessna drain kit described in Service Letter SE84-9 dated March 23, 1984, or by replacement of the fuel bladder. Verify that no wrinkles exist in the tank sump drain area before returning the airplane to service.

(3) If wrinkles are found in the tank bottom at a location other than diagonally across the inboard rear corner, determine the amount of fluid which is trapped by these wrinkles in accordance with the following:

(i) Place the airplane in the normal ground (water) attitude.

(ii) Service tank(s) with enough fuel to completely cover bottom of tank surface. Drain Tank and note any wrinkles which retain fuel."

On November 9, 1999, examination of the left wing revealed inward and upward crushing damage to the leading edge, from the wing root outward. The wing fuel bladder was inspected, and 5 wrinkles were found, about 8-12 inches in length and 1/4 inch high, that extended from the wing root, outward.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	56,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	July 1, 1998
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	12500 hours (Total, all aircraft), 200 hours (Total, this make and model), 10000 hours (Pilot In Command, all aircraft), 92 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N3385L
Model/Series:	185E 185E	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	185-1337
Landing Gear Type:	Amphibian	**Seats:**	4
Date/Type of Last Inspection:	June 22, 1999 Annual	**Certified Max Gross Wt.:**	3265 lbs
Time Since Last Inspection:	0 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3882 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520-D142B
Registered Owner:	LYNDE G. JOHNSON	**Rated Power:**	300 Horsepower
Operator:		**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:	MMK ,103 ft msl	**Distance from Accident Site:**	19 Nautical Miles
Observation Time:	13:56 Local	**Direction from Accident Site:**	300°
Lowest Cloud Condition:	Scattered / 7500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	32°C / 12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(42B)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	14:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	GOODSPEED AIRPORT 42B	**Runway Surface Type:**	Asphalt
Airport Elevation:	9 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	32	**IFR Approach:**	
Runway Length/Width:	2120 ft / 75 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	Demko, Stephen
Additional Participating Persons:	JOHN D CHERIS; WINDSOR LOCKS , CT
Original Publish Date:	November 30, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46668