Aviation Investigation Final Report

Location:	Arlington, Washington	**Accident Number:**	SEA02FA171
Date & Time:	September 9, 2002, 13:30 Local	**Registration:**	N8195T
Aircraft:	Cessna 175B	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal, 2 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

The passengers reported that as the aircraft was climbing out shortly after takeoff, at an altitude of about 200 to 300 feet, the engine lost power. The pilot was heard to say, "oh no, this isn't good." The pilot made a right turn, a maneuver the passenger thought was to return back to the runway. Witnesses reported hearing the engine "popping," or "missing" shortly after takeoff. The aircraft was observed to make a sharp right turn, and that the aircraft then appeared to stall out of the right turn and impacted the ground in a steep right bank and nose down attitude on the west side of the runway. During the post-accident inspection of the airframe and engine, no evidence was found to indicate a mechanical failure or malfunction. The Medical Examiner noted in the pilot's autopsy report that the pilot was wedged in the aircraft for an extended period of time following the accident. The cause of death was indicated to be arteriosclerotic cardiovascular disease. Disseminated prostate cancer and positional asphyxia were contributory factors. Toxicology results identified a prescription narcotic painkiller used for the control of moderate to severe pain; and an over-the-counter antihistamine used for the treatment of allergy symptoms and itching. Both medications can impair motor and cognitive skills. The pilot had been under treatment for pain associated with his cancer at the time of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A partial loss of engine power for undetermined reasons during the initial climb, followed by the pilot's failure to maintain airspeed while maneuvering. Impairing drugs found in the pilot's system at the time of the accident were a factor.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - NONMECHANICAL
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING

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

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

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On September 9, 2002, approximately 1330 Pacific daylight time, a privately owned Cessna 175B airplane, N8195T, was substantially damaged when it impacted terrain following a loss of control while maneuvering at low altitude, after engine power was reportedly lost during initial climb after takeoff from the Arlington Municipal Airport, Arlington, Washington. The commercial pilot-in-command, who was the airplane's registered owner, was fatally injured in the crash. Three passengers (reportedly an employee of the Snohomish County, Washington, Surface Water Management Division, an AmeriCorps intern with the Snohomish Conservation District, and the city of Arlington's natural resources manager) were aboard the aircraft at the time of the accident. Two of the passengers (the intern and the city natural resources manager) were seriously injured in the accident, and one passenger (the county employee) received minor injuries. The accident flight was operated by the pilot/aircraft owner, who was a volunteer pilot for LightHawk (a nonprofit environmental advocacy group based in Lander, Wyoming), and was coordinated by LightHawk. The reported purpose of the accident flight was to conduct an aerial survey of local watersheds in relation to salmon recovery issues. Visual meteorological conditions, with winds from 210 degrees true at 7 knots, were reported at Arlington at 1335, and no flight plan had been filed for the local 14 CFR 91 aerial observation flight.

At 1232 on the day of the accident, the pilot departed Olympia, Washington, in order to fly to Arlington to pick up the aforementioned passengers. The right rear seated passenger reported that shortly after takeoff she heard the pilot state, "Oh, oh, this doesn't look good," followed by the aircraft making a right turn. She did not recall any further events after this point.

The front right seat passenger stated that when the aircraft attained an altitude of about 200 to 300 feet, "the engine simply wound down. I heard no sputtering or backfiring." The passenger heard the pilot say, "Oh no, this isn't good." The passenger noticed no attempt by the pilot to re-start the engine, and thought that the right turn was made to turn back to the airport. During the turn, the aircraft dropped and hit the ground.

Witnesses reported to local police that they heard the aircraft's engine "popping" or "missing" shortly after takeoff from runway 16. They reported that at an altitude of approximately 200 to 300 feet above ground level, the aircraft began a sharp right turn, and that the aircraft then appeared to stall out of the right turn and impacted the ground in a steep right bank and nose-down attitude on the west side of runway 11-29.

PERSONNEL INFORMATION

At the time of the accident, the pilot held a commercial certificate for airplane single and multi-engine land and an instrument rating. The pilot's flight logbook was not located, however, during his last Federal Aviation Administration medical examination for a class three certificate dated December 21, 2000, he reported a total flight time of 1,845 hours, with 200 hours in the preceding six months.

At the time of the December 21, 2000, medical examination, the pilot reported that he was not using any medications (prescription or nonprescription), and no serious medical conditions were identified.

AIRCRAFT INFORMATION

The individual who refueled the aircraft at Pearson Air in Olympia, Washington, reported that between 1200 and 1230 on the day of the accident, he filled the accident aircraft's fuel tanks to the top.

According to the aircraft maintenance logbook, the aircraft received its last annual inspection on May 10, 2002, at 3,558.11 hours aircraft total time. Comparison of the recording tachometer hours entered with the log entry for this inspection with the recording tachometer hours noted in the wreckage indicated that the airplane had flown 51.59 hours since the last annual inspection.

The accident aircraft, which had a 175-HP Continental GO-300 series engine installed at original manufacture in 1960, had been modified by installation of a 180-HP Lycoming O-360-A1D engine. The engine log indicated that this engine was installed new on the accident aircraft during the 1966-1967 time frame in accordance with Supplemental Type Certificate (STC) number SA3-674. A January 27, 1978, engine log entry indicated that at 856.23 hours engine total time, the aircraft's propeller was exchanged for a newly overhauled one with new blades, and the engine underwent a major overhaul. The engine had accumulated 1,889.65 hours since the major overhaul at the time of the May 10, 2002, annual inspection, and (per the tachometer hours indicated in the aircraft wreckage) 1,941.24 hours since major overhaul at the time of the accident. Textron Lycoming Service Instruction No. 1009AQ gives the manufacturer's recommended time between overhauls (TBO) for this engine as 2,000 hours.

According to the aircraft owner's manual, the aircraft's fuel system consists of two 26-gallon fuel tanks (one in each wing), of which 21 gallons in each tank is usable in all flight attitudes. An additional 4.5 gallons in each tank is usable during level flight only, and 1/2 gallon in each tank is unusable.

WRECKAGE AND IMPACT INFORMATION

The aircraft came to rest inverted on the airport property, just west of the runway 11-29 pavement and approximately abeam the top visual approach slope indicator (VASI) light bar. Local police reported that a fire that broke out in the aircraft after impact was extinguished by

individuals who responded to the accident site with hand-held fire extinguishers.

The initial ground disturbance, located about 30 feet west of the runway edge, found buried in the soil was the right wing tip green lens cap. The magnetic bearing from this point to the resting point of the main wreckage was 290 degrees. The total distance from the point of initial impact to the main wreckage was 102 feet. Approximately 30 feet into the path, an area of significant ground disturbance was noted followed by lesser degrees of ground disturbances leading up to the main wreckage. The aircraft came to rest inverted with the nose of the aircraft pointing back along the wreckage distribution path.

NTSB and FAA investigators responded to the accident scene and performed an on-scene examination on September 9, 2002. During the on-scene examination, the aircraft was righted by towing equipment and the fuel quantity in both tanks was visually checked after the aircraft was righted. During the righting process, fuel was observed leaking out of the left tank with the aircraft in a left-wing-low attitude (note: the two wing tanks are interconnected by a vent line.) Upon righting, a small quantity of blue fuel (approximately 1/2 to 1 inch deep in the bottom of the tank) was observed in the left tank, and no fuel was observed in the right tank. An individual who reported that he turned the aircraft's fuel selector to BOTH OFF at the accident scene at the request of the fire department reported to the NTSB that at the time he shut it off, he noted the fuel selector in the BOTH ON position (a setting that enables fuel feed from both tanks simultaneously).

Following the aircraft's removal from the accident scene, investigators from the NTSB, FAA, Cessna Aircraft Company, Lycoming Engines, and Precision Airmotive Corporation (manufacturer of the engine's carburetor) performed a detailed wreckage examination at the Arlington airport on September 10, 2002. The wreckage examination did not reveal any evidence of pre-impact structural or mechanical problems with the airframe, engine, or aircraft systems. The aircraft's airspeed indicator, stall warning switch, and stall warning horn were all found to be functional. The engine, with the propeller attached, was attached to the engine mount, but was bent to the right about 40 degrees. Aileron, elevator and rudder control continuity was established from the flight control surfaces to the cabin controls. The elevator trim actuator extension was not measured, however, the trim tab measured 3/8" tab trailing edge up with the elevator neutral.

During the engine inspection, all eight spark plugs were removed and inspected. All indicated normal wear signatures. At a later date, the spark plugs were tested and one did not "fire" due to lead deposits. The crankshaft was easily rotated by hand and gear and valve train continuity was established. Compression was developed in each cylinder. Both magnetos were removed and rotated by hand. Spark was produced from each lead. At a later date, the magnetos were bench tested and confirmed to "spark" on all positions. The oil filter was cut open and no unusual metallic particles were found.

The propeller remained attached to the crankshaft. One blade was bent aft about 90 degrees at mid-span of the blade. The second blade was also bent aft about 90 degrees, but in a

smaller radius than the first blade.

The fuel lines at the wing root tank outlets were disconnected and air was blown through from the lines at the tank fittings, through both left and right selector positions, through the fuel strainer, through the electric fuel pump and through the engine pump attachment line. During the line tests, about one ounce of clear blue fuel was captured at the line outlet. No obstructions were found. No debris was observed in the fuel strainer bowl and the filter was clean. The electric fuel boost pump was removed and tested by applying 12 volts direct current. The pump could be heard to operate. The boost pump fuel filter was clean.

MEDICAL AND PATHOLOGICAL INFORMATION

The Snohomish County Medical Examiner's Autopsy Report for the pilot indicated that, "The cause of death of this 61 year old male is arteriosclerotic cardiovascular disease. Disseminated prostate cancer and positional asphyxia were contributory factors. …He was noted to be wedged in his plane … for an extended period of time."

Toxicological samples were sent to the Federal Aviation Administration Civil Aeromedical Institute for analysis. The results of the analysis reported:

No Carbon Monoxide or Cyanide were detected in blood.

No Ethanol was detected in urine.

0.051 (ug/ml, ug/g) Hydrocodone was detected in blood.

2.032 (ug/ml, ug/g) Hydrocodone was detected in urine.

0.744 (ug/ml, ug/g) Hydromorphone was detected in urine.

0.022 (ug/ml, ug/g) Dihydrocodeine was detected in blood.

0.499 (ug/ml, ug/g) Dihydrocodeine was detected in urine.

0.07 (ug/ml, ug/g) Diphenhydramine was detected in blood.

Diphenhydramine was present in urine.

147.9 (ug/ml, ug/g) Acetaminophen was detected in urine.

61.23 (ug/ml, ug/g) Salicylate was detected in urine.

Hydrocodone is a prescription narcotic painkiller, used for the control of moderate to severe pain. Dihydrocodeine and Hydromorphone are active metabolites of Hydrocodone.

Diphenhydramine (commonly known by the trade name Benadryl) is an over-the-counter antihistamine. Acetaminophen is a common pain reliever/fever reducer, often known by the trade name Tylenol. Salicylate is the active form of aspirin.

In a post-accident telephone interview with the NTSB, the pilot's wife reported that he had been diagnosed with prostate cancer in 1995, and at that time underwent cryosurgery followed by other non-invasive therapies. She further stated that in 1998 cancer was discovered in his lymph system, and that about a year prior to the accident he was diagnosed with bone cancer. Additionally, she said that he had experienced life-long headaches, and had been put on Vioxx a couple of months before the accident. She reported that he used medications and participated in a daily one-on-one session with a Psychoneuro Immunologist for the purpose of dealing with the pain generated by the presence of the bone cancer, and as part of curative process. The autopsy confirmed the presence of cancer in the pilot's lymph nodes and large tumors involving the pilot's ribs.

ADDITIONAL INFORMATION

On November 7, 2002, investigators from the National Transportation Safety Board, and Lycoming Engines accomplished a secondary engine inspection. The cylinders, intake and exhaust valves and components were removed. No discrepancies other than normal wear were noted to the intake and exhaust valves and guides. The cylinders and pistons displayed normal wear. The camshaft lobes and tappets were unremarkable. No visual anomalies were found.

The wreckage was released to the owner's representative on September 19, 2002.

Pilot Information

Certificate:	Commercial	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	December 21, 2001
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 28, 2001
Flight Time:	1845 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N8195T
Model/Series:	175B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	17556895
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 10, 2002 Annual	**Certified Max Gross Wt.:**	2350 lbs
Time Since Last Inspection:	52 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3610 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-360-A1D
Registered Owner:	Richard E. Kibbey	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AWO,137 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	13:35 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	24°C / 12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Arlington, WA (AWO)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	13:30 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Arlington Municipal AWO	**Runway Surface Type:**	Asphalt
Airport Elevation:	137 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	5333 ft / 100 ft	**VFR Approach/Landing:**	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Serious, 1 Minor	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 2 Serious, 1 Minor	**Latitude, Longitude:**	48.156665,-122.159164

Administrative Information

Investigator In Charge (IIC):	Nesemeier, Gregg
Additional Participating Persons:	Brent A Morrow; FAA-FSDO; Renton, WA Joseph A Hutterer; Cessna Aircraft Company; Wichita, KS Jeffrey R Poschwatta; Lycoming Engines; Kent, WA Peter Nielson; Precision Airmotive Corp.; Marysville, WA
Original Publish Date:	June 2, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=55682