



National Transportation Safety Board Aviation Accident Final Report

Location:	BREMERTON, WA	Accident Number:	SEA97FA201
Date & Time:	09/01/1997, 1622 PDT	Registration:	N9015T
Aircraft:	Cessna 182C	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	5 Fatal
Flight Conducted Under:	Part 91: General Aviation - Skydiving		

Analysis

Witnesses reported that immediately after the airplane took off, it went into a left turn, and that its nose then dropped and it impacted the ground at a steep angle. No evidence of preimpact conditions interfering with normal operation was found during on-site examination or in follow-up examinations of the airplane's engine, propeller, and carburetor. A gross weight computation based on airplane empty weight, reported fuel loading, and occupant and parachute weight estimates indicated that the airplane was approximately 38 pounds over maximum gross weight 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: The pilot's failure to maintain adequate airspeed in a climbing turn at low altitude, resulting in a stall and impact with terrain. A factor was the pilot exceeding the aircraft's maximum takeoff gross weight limitation.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CLIMB

Findings

1. (F) AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND
2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
3. STALL - ENCOUNTERED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On September 1, 1997, approximately 1622 Pacific daylight time, a Cessna 182C, N9015T, being operated by Blue Skies Skydiving Adventures of Dupont, Washington, collided with terrain during climbout immediately after takeoff from the Bremerton National Airport, Bremerton, Washington. The airplane was destroyed and the commercial pilot and four skydivers riding in the airplane were fatally injured. Visual meteorological conditions prevailed for the 14 CFR 91 local flight and no flight plan had been filed.

The operator reported that the airplane had carried multiple loads of skydivers on the day of the accident, and that the accident flight was to have been the last skydiving flight of the day. The operator reported that after departing from Bremerton runway 19 (a 6,200 by 150 foot asphalt runway), the aircraft climbed to approximately 300 to 500 feet above ground level before turning back to the left toward the airport runway. The aircraft impacted in a shallow ravine approximately 900 feet south of the departure end of runway 19, to the left of the runway 19 centerline. A fire erupted at ground impact.

Two individuals witnessed the accident from another aircraft which was on final approach to runway 19, and gave statements to the Washington State Patrol. One of these individuals reported that after observing the airplane on takeoff roll and then momentarily looking away and back again, he saw the airplane in a left bank "as if he was leaving the pattern." He stated that the accident aircraft then increased its bank and the nose dropped further into a descent. He stated the aircraft continued the left bank until approximately on a heading parallel to Runway 1, and that the nose then dropped vertical and the airplane went into a one-half-turn spin. The other witness in this aircraft stated that he observed the aircraft in a left turn at an estimated 300 feet. He stated that the aircraft appeared to complete a 180-degree turn when it went nose down, rotated once and impacted the ground and exploded.

A 9-year-old witness who stated he observed the accident from near the runway entrance reported to the State Patrol that he saw the plane take off to the south and noticed the wings "wobbling back and forth way too much." He stated he looked away briefly and turned to see the plane spiraling toward the ground. He then saw a big explosion. This witness stated he did not hear anything unusual, except for the explosion. Another witness reported to the State Patrol that after the plane taxied out, he/she looked toward the active runway and saw the plane with the nose straight up. This witness stated that the plane then rolled its left wing in a 180-degree turn to put it in a nose-down attitude, and went straight down into the ground with a ball of flames following. A third ground witness reported to the State Patrol that the plane left the runway, became airborne, and took a sudden left. This witness reported that the next thing he/she saw was a fireball with black smoke.

The accident occurred during the hours of daylight at 47 degrees 29.0 minutes North and 122 degrees 46.2 minutes West.

PERSONNEL INFORMATION

The pilot was 26 years old at the time of the accident. He held a commercial pilot certificate with airplane single engine land, airplane multiengine land, and instrument airplane ratings. He also held a flight instructor certificate with airplane single engine, airplane multiengine, and instrument ratings. The pilot's logbooks indicated that as of May 14, 1997 (the last logbook

entry), he had approximately 839 hours total pilot time, 770 hours single engine time, 784 hours pilot-in-command time, and 78 hours of instructor time. Several loose sheets of note paper were also filed inside the logbooks, indicating that he had flown frequently since the last logbook entry with the last record of a flight prior to the accident being August 24, 1997.

According to the pilot's logbooks, his first flight was in April 1991, and he earned his private pilot certificate in August 1992. On April 15, 1994, he was rated unsatisfactory on a commercial pilot pre-checkride review lesson, completing it satisfactorily on the second attempt. He was subsequently rated unsatisfactory on his first attempt at the commercial pilot-airplane single engine land practical test, on April 22, 1994. After a review ride on which engine-out operations and forward slips to landing were logged, he passed the practical test on his second attempt on April 27, 1994. The pilot completed an initial Cessna 182 checkout in July 1994, and his logbooks indicated that he had flown the Cessna 182 frequently since completing the initial checkout.

The pilot's logbooks indicated that from April 1996 to March 1997, the pilot flew for Skydive Oregon of Mollala, Oregon. The pilot subsequently began flying for the Snohomish Parachute Center (SPC) at Harvey Field, Snohomish, Washington, on May 8, 1997. On December 30, 1997, the chief pilot of SPC contacted the NTSB by telephone to relay information regarding the pilot's employment history with SPC. The SPC chief pilot stated that the accident pilot worked for SPC for most of the summer of 1997, and left about two weeks prior to the accident. The SPC chief pilot stated that SPC forced the accident pilot to leave by assigning him to a schedule they knew he would not take, but stated the accident pilot was not fired. The SPC chief pilot stated the SPC took this action due to safety concerns about the accident pilot's airmanship, such as: failure to check oil on preflight resulting in operation of the aircraft with substantially less than required minimum oil quantity; performing midfield takeoffs (NOTE: Harvey Field's longest runway is 2,660 feet long); and performing "high-performance" takeoffs with excessive nose-up attitudes. The SPC chief pilot stated that he saw the accident pilot perform such a maneuver on one occasion.

The owner of SPC subsequently contacted the NTSB on December 31, 1997 by telephone and provided statements similar to those provided by the SPC chief pilot's statements. The SPC owner cited instances of questionable airmanship by the accident pilot including operating aircraft with substantially less than required minimum oil quantity, and on one occasion observing the pilot perform what he described as a "zoomer" takeoff with a full load of skydivers (consisting of getting airborne, accelerating in ground effect, and then pulling up sharply.) The SPC owner stated that after consulting with SPC's chief pilot, he and the chief pilot mutually decided to assign the pilot to a light flying schedule in the hope he would refuse it and leave their employment. The SPC owner stated that the accident pilot was not fired, but that firing would have been the next step in dealing with the situation. The SPC owner stated he was not aware that the accident pilot was flying for Blue Skies at the time of the accident.

The vice president of Blue Skies Skydiving Adventures, Inc. reported that the accident pilot began flying for Blue Skies on August 9 and 10, 1997, in an airplane contracted from SPC. From August 15, 1997 until the accident date, the accident pilot's Blue Skies flights were flown in aircraft operated by Blue Skies. The Blue Skies vice president reported that the pilot told him at about that time that "he only flew for Snohomish on weekdays and was available to fly for us on weekends." The Blue Skies vice president also reported that their jumpers were "very impressed" with the accident pilot's flying capabilities.

The accident pilot's FAA airman record did not contain any record of accidents, incidents, or enforcement actions.

AIRCRAFT INFORMATION

The airplane, a 1960 Cessna 182C, was modified per FAA Supplemental Type Certificate (STC) number SA874CE (issued to the United States Parachute Association of Alexandria, Virginia) to carry four skydivers in addition to the pilot, and STC numbers SA2000CE and SE1997CE (issued to Petersen Aviation, Inc. of Minden, Nebraska) to operate on automotive gasoline. Modifications per STC SA874CE included removal of the right front seat, rear seat, and baggage shelf, and installation of floor-level seat belt brackets to accommodate four occupants in addition to the pilot. In addition, the aircraft had been modified by replacement of the standard right-side door with a door hinged at the top, and installation of a step over the right main landing gear wheel. The door and step modifications were accomplished via FAA field approvals.

According to the aircraft logbooks, the last inspection on the aircraft was documented as a 100-hour inspection on August 15, 1997 at 4,231.5 hours airframe total time. At the time of this inspection, the aircraft's Continental O-470-L engine had 888.9 hours since major overhaul (a 1,500-hour time between overhauls interval is recommended for the engine.) This inspection was accomplished by Pavco, Inc., an FAA-certificated repair station in Gig Harbor, Washington. The last documented annual inspection on the aircraft took place on July 14, 1996 at 4,064.1 hours airframe total time, and was accomplished by a Woodinville, Washington, FAA-certified mechanic with inspection authorization. According to the aircraft logbooks, the STC and field approval modifications to enable carriage of skydivers were accomplished in conjunction with the July 1996 annual inspection. The auto-fuel STCs were accomplished by Pavco, Inc., on March 13, 1997, at 4152.6 hours airframe total time and 810.0 hours since major overhaul.

Personnel at the airport reported to FAA investigators that the airplane was refueled with 20 gallons (four 5-gallon containers) of automotive gasoline from a Texaco station in Belfair, Washington, immediately prior to the accident, and that the aircraft was usually flown with a 10-gallon fuel reserve.

An estimate of the aircraft's gross weight at the time of the accident was computed using the following parameters: aircraft empty weight 1,595 pounds (from aircraft records); pilot weight 175 pounds (from FAA medical certificate) plus 20-pound parachute; front passenger weight of 160 pounds (Blue Skies estimate) plus 20-pound parachute; center passenger weights of 188 and 160 pounds (from FAA medical certificate and Blue Skies estimate, respectively) plus two 20-pound parachutes; rear passenger weight 160 pounds (Blue Skies estimate) plus 20-pound parachute; and 25 gallons of fuel at takeoff. Based on these figures, the aircraft gross weight at the time of the accident was approximately 2,688 pounds. The aircraft's maximum allowable takeoff gross weight is 2,650 pounds.

METEOROLOGICAL INFORMATION

A 1615 Bremerton automated weather observation gave the temperature as 24 degrees C (75 degrees F) and dewpoint as 16 degrees C (61 degrees F). According to FAA carburetor ice prediction data, this combination of temperature and dewpoint does not pose a carburetor ice hazard at takeoff power settings. The winds in the 1615 Bremerton automated observation were reported as being from 170 degrees at 5 knots.

WRECKAGE

The airplane wreckage was examined at the accident site on September 2, 1997. The accident site was in a shallow, approximately northeast/southwest-oriented draw approximately 900 feet south of the departure end of Bremerton runway 19. The aircraft's engine, propeller, both outboard wing sections, and the tailcone and empennage were all located at the accident site. No aircraft component was more than approximately 30 feet from the main wreckage, which consisted of the engine and propeller, burned cabin section, outboard wing sections, and tailcone and empennage. The tailcone had come to rest upright on a heading of 356 degrees magnetic. A burn area on the ground extended approximately 45 feet up the draw to the northeast of the main wreckage.

The engine, separated from its mounts and with propeller still attached, faced approximately west and was northwest of and adjacent to the remnants of the cabin. The engine, as found, would not rotate. Both propeller blades were bent aft and exhibited chordwise scoring, with one blade containing heavy, jagged leading edge damage. The entire cabin section, to include the instrument panel, had been destroyed by fire. The left wing outboard section was adjacent, to the left of, and parallel to the tailcone/empennage section. The tailcone/empennage section was relatively intact. A wing lift strut was located approximately 15 feet east of the main wreckage, and the jump door was located approximately 30 feet east of the main wreckage. The right wing outboard section was approximately 8 feet north of the cabin remnants. The engine cowling was located 30 feet up the draw to the northeast of the main wreckage.

All primary and secondary flight control surfaces were identified at the accident site. Flight control cable continuity was established from all flight control surfaces to the control column/rudder pedal area, which had sustained severe fire damage. No evidence of preimpact airframe or systems failure was found in the wreckage.

FIRE

Witnesses to the accident reported that a fire erupted upon impact. Witnesses did not report observing any fire aboard the aircraft prior to impact. The aircraft wreckage was extensively fire-damaged at the accident site; however, no evidence of inflight fire was observed by investigators.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies on all five aircraft occupants were performed at the Kitsap County, Washington, morgue, Port Orchard, Washington, on September 2, 1997. The cause of death for all five occupants was given as massive blunt impact injuries sustained in the crash.

Toxicology tests on the pilot were performed by the FAA Civil Aeromedical Institute (CAMI), Oklahoma City, Oklahoma. The CAMI toxicology tests screened for ethanol and drugs and did not find any of these substances. Carbon monoxide and cyanide analyses were not performed due to a lack of suitable specimens.

TESTS AND RESEARCH

A disassembly examination of the accident aircraft's engine, a Continental O-470-L, was conducted with the NTSB investigator-in-charge (IIC) in attendance at the facilities of the engine manufacturer, Teledyne Continental Motors of Mobile, Alabama, on December 5, 1997. Teledyne Continental's analytical inspection report of this examination stated that the engine "did not exhibit any condition [during the examination] that would have caused an operational

problem."

The airplane's McCauley two-blade, constant-speed propeller was sent to the propeller manufacturer, McCauley Accessory Division of the Cessna Aircraft Company, Vandalia, Ohio, for a teardown inspection. This inspection was conducted at McCauley's facilities under FAA supervision on November 5, 1997. Based on this examination, McCauley concluded that there were no indications of any type of propeller failure prior to impact, and that the propeller was being operated with power at impact, with "overall propeller damage...[being] indicative of rotational impact at high rpm and with high power."

A teardown examination of the Precision Airmotive MA-4-5 carburetor from the accident aircraft's engine was conducted with the NTSB IIC in attendance at the facilities of the carburetor manufacturer, Precision Airmotive Corporation of Everett, Washington, on November 3, 1997. This examination revealed that the accelerator pump discharge check valve was extremely worn, with the tapered tip worn off and the needle worn round along the length of the part. The examination did not disclose any other evidence of a preimpact malfunction within the carburetor.

ADDITIONAL INFORMATION

The airplane wreckage was released to the airplane owner, Mr. Robert Adkins of Eatonville, Washington, on September 3, 1998. As of the date this report was submitted, Mr. Adkins had not acknowledged receipt of the aircraft wreckage.

Additional Persons Participating in This Accident Investigation (continued): Thomas M. Knopp McCauley Accessory Division, Cessna Aircraft Company Vandalia, OH 45377

Pilot Information

Certificate:	Commercial	Age:	26, 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:	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	03/31/1997
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	839 hours (Total, all aircraft), 784 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N9015T
Model/Series:	182C 182C	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	52915
Landing Gear Type:	Tricycle	Seats:	5
Date/Type of Last Inspection:	08/19/1997, Annual	Certified Max Gross Wt.:	2650 lbs
Time Since Last Inspection:	20 Hours	Engines:	1 Reciprocating
Airframe Total Time:	4250 Hours	Engine Manufacturer:	Continental
ELT:	Not installed	Engine Model/Series:	O-470-L
Registered Owner:	ROBERT ADKINS	Rated Power:	230 hp
Operator:	BLUE SKIES SKYDIVING ADV INC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PWT, 439 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1615 PDT	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 3700 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	150°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	24° C / 16° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(PWT)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1621 PDT	Type of Airspace:	Class E

Airport Information

Airport:	BREMERTON NATIONAL (PWT)	Runway Surface Type:	Asphalt
Airport Elevation:	439 ft	Runway Surface Condition:	Dry
Runway Used:	19	IFR Approach:	None
Runway Length/Width:	6200 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	4 Fatal	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 Fatal	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	GREGG NESEMEIER	Report Date:	02/15/2000
Additional Participating Persons:	ROBERT ARCHIBALD; RENTON, WA DAVE RYAN; WICHITA, KS ROBERT S BOYLE; ARVADA, CO PETER NIELSON; EVERETT, WA		
Publish Date:	10/17/2016		
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/ .		

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](#).