



National Transportation Safety Board Aviation Accident Final Report

Location:	PALMER, AK	Accident Number:	ANC97FA002
Date & Time:	10/02/1996, 1224 AKD	Registration:	N64RS
Aircraft:	Piper PA-18	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot was departing his 700 feet long grass strip in a tundra-tire/tail-wheel equipped airplane to transport a passenger to a hunting area. The airplane climbed to about 100 feet above the ground while in a slight right turn. The pilot described the airplane's tail as suddenly being pushed downward by a gust of wind. The airplane then descended in a right wing and nose low attitude toward the ground, through two strands of high voltage electrical wires. The pilot recalled seeing sparks emanating from the right wingtip. The airplane struck the ground in a small grove of trees 2/10 of a mile from the departure end of the runway, and a postcrash fire erupted. No mechanical malfunction of the engine was found. The pilot reported the wind conditions as light and variable. Wind conditions from an airport 1/2 mile northeast of the accident site, one half hour before the accident, were reported as 9 knots. One half hour after the accident, the wind conditions were 15 knots with gusts to 32 knots. Local residents reported strong gusty winds throughout the area. No evidence was found that the pilot had obtained an official weather briefing.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's inadequate compensation for wind conditions and failure to maintain adequate airspeed, which resulted in an inadvertent stall. The unfavorable wind condition was a related factor.

Findings

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

Findings

1. (F) WEATHER CONDITION - UNFAVORABLE WIND
 2. (C) COMPENSATION FOR WIND CONDITIONS - INADEQUATE - PILOT IN COMMAND
 3. (C) AIRSPEED - INADEQUATE - PILOT IN COMMAND
 4. (C) STALL - INADVERTENT - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings

5. OBJECT - WIRE, TRANSMISSION
 6. OBJECT - TREE(S)
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Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

7. TERRAIN CONDITION - GROUND

Factual Information

History of the Flight

On October 2, 1996, at 1224 Alaska daylight time, a tundra tire equipped Piper PA-18, N64RS, crashed during takeoff from a private airstrip 1/2 mile southwest of the Palmer, Alaska, airport. The airplane was being operated as a visual flight rules (VFR) cross-country personal flight when the accident occurred. The airplane, registered to and operated by the pilot, was destroyed by impact and postimpact fire. The certificated private pilot received serious injuries. The sole passenger received fatal injuries. Visual meteorological conditions prevailed.

The pilot reported he was departing his 700 feet long grass strip to transport the passenger to a hunting spot. He described the wind conditions as light and variable. The departure runway is oriented on a 210 degree heading. Following a run-up of the engine, the pilot departed and climbed the airplane to about 100 feet above the ground while in a slight right turn. The pilot described the airplane's tail suddenly being pushed downward. The engine was operating at full power. The airplane then descended in a right wing and nose low attitude toward the ground. The airplane descended through two strands of high voltage electrical wires located 41.5 feet above the ground. The pilot recalled seeing sparks emanating from the right wingtip. The airplane struck the ground in a small grove of trees and a postcrash fire erupted.

Witnesses observed the airplane climb to about 100 feet above the ground and begin a slight right turn. The turn suddenly steepened and the nose of the airplane dropped toward the ground. No rotation of the fuselage was noted and the engine continued to produce normal sounds.

The accident occurred during the hours of daylight at latitude 61 degrees, 34.107 minutes north and longitude 149 degrees, 06.152 minutes west. The location is 2/10 of a mile, on a 235 degree magnetic heading, from the end of the departure runway.

Other Damage

The electrical wires struck by the accident airplane sustained abrasion and scuffing damage. The wires did not break.

Crew Information

The pilot holds a private pilot certificate with an airplane single-engine land rating. The most recent third-class medical certificate was issued to the pilot on May 25, 1995, and contained the limitation that correcting lenses be worn while exercising the privileges of his airman certificate.

According to the pilot/operator report submitted by the pilot, his total aeronautical experience consists of about 2,441 hours, of which 2,140 hours were accrued in the accident airplane make and model. In the preceding 90 and 30 days prior to the accident, the report lists a total of 36 and 20 hours respectively.

Aircraft Information

The airplane's recording hour meter, installed in the engine RPM gauge, was destroyed. Examination of the maintenance records revealed the most recent annual inspection of the engine and airframe was accomplished on June 19, 1996. At that time, the airplane had accrued 4,263.94 hours. The engine had accrued 1,567.54 hours since a major overhaul on

October 1, 1981.

The airplane has a supplemental type certificate (STC) to permit the use of automotive gasoline. The pilot reported the airplane was fueled with 16 gallons of gasoline prior to the flight.

Meteorological Information

The closest official weather observation station is the Palmer, Alaska, airport which is located about 1/2 nautical mile northeast of the accident site. At 1156, an aviation routine weather report (METAR) was reporting in part: wind, 145 degrees (magnetic) at 9 knots; visibility, 40 miles; sky condition, clear; temperature, 41 degrees F; dew point, 22 degrees F; altimeter, 29.69 inHg.

At 1258, a METAR was reporting in part: wind, 015 degrees (magnetic) at 15 knots, gusts to 32 knots; visibility, 40 miles; sky condition, clear; temperature, 45 degrees F; dew point, 18 degrees F; altimeter, 29.66 inHg.

A local area resident reported he was traveling in an area about 4 miles northwest of the accident area about 1215. Weather conditions consisted of strong gusty winds from the northeast about 40 miles per hour. A few minutes later, at his residence about 2 miles northeast of the accident site, the wind conditions were calm.

Following the accident, neighbors near the accident site told the pilot they had assembled stacks of hay for baling. At the time of the accident, strong gusty winds from the northwest, scattered the hay stacks.

There is no evidence the pilot obtained an official weather briefing.

Aerodrome and Ground Facilities

The departure airstrip is privately owned by the pilot. It is a 700 foot long grass strip, oriented on a 210/030 degree heading at an elevation of 240 feet mean sea level. The airstrip is equipped with a wind sock, located about midfield on the south side of the strip. The grass was cut short along the entire runway.

Wreckage and Impact Information

The National Transportation Safety Board investigator-in-charge (IIC) examined the airplane wreckage at the accident site on October 2, 1996. The airplane came to rest upright with the nose of the airplane oriented on a magnetic heading of about 180 degrees in a small stand of bare trees. Several trees, 2 to 3 inches in diameter, were found cleanly dissected. The cut limbs were oriented on about a 45 degree angle along the vertical axis of the trees. (All heading/bearings noted in this report are oriented toward magnetic north.)

All of the airplane's major components were found at the main wreckage area. The wings remained attached to their respective attach points but exhibited extensive fire damage and melting. Both lift struts remained attached to their respective wing and lower attach points. The right wing exhibited spanwise leading edge upward crushing and flattening on the underside of the leading edge. The underside of the right wing metal leading edge was crushed upward about 12 inches inboard of the right wingtip position light assembly and displayed a scuffing that resembled a braided appearance. The underside of the right wing position light assembly exhibited evidence of paint removal and electrical arcing at the junction of the light assembly and wingtip rib.

The empennage was about 6 feet above the ground. The fuselage was bent at a 45 degree angle along the longitudinal axis, just aft of the rear seat and angled upward toward the tail. The fuselage tubing, aft of the rear cargo area, displayed bending and buckling of the vertical tubing. The longitudinal tubing of the same area displayed a more rounded and curved bending in an aft direction toward the empennage. The fuselage tubing adjacent to the rear seat displayed downward buckling of the overhead tubing and outward bending of the left side of the fuselage. The main landing gear was attached to their respective attach points and crushed upward.

The flight control surfaces remained connected to their respective attach points and were fire damaged. The manually operated flaps were attached to their respective attach points. Both flaps had drooped down to 40 degrees. The horizontal stabilizer trim actuator mechanism was found with 14 threads exposed below the actuator. According to the airplane manufacturer, the horizontal stabilizer trim actuator corresponded to a 2.9 degree leading edge up (near full nose-down trim) setting. The continuity of the flight control cables was established to the cockpit control stick.

On October 4, 1996, the engine and airframe were examined after recovery of the wreckage from the accident site. The parties noted in this report participated in the examination.

The propeller assembly remained connected to the engine crankshaft. One propeller blade was bent forward slightly about 12 inches outboard from the hub and exhibited leading edge abrasion and slight torsional twisting. The second blade exhibited slight forward bending and leading edge scuffing near the tip. The chambered side of the blade exhibited a curved scuff mark and removal of paint about 5 inches inboard from the tip. The scuff mark had a braided appearance.

The engine sustained extensive fire damage. The crankshaft could be rotated by the propeller. Gear and valve train continuity was established and thumb compression in each cylinder was noted, when the crankshaft was rotated by hand. The muffler was free of obstructions. The lower left side exhaust tubes were crushed upward and flattened. The number 2 exhaust tube displayed a sharp bend and wrinkling of the tube with no evidence of breaking or cracking at the radius of the bend.

The right magneto was found to be timed at 25 degrees before top dead center (BTC). Both magnetos sustained fire damage but produced spark from all leads upon hand rotation.

The massive electrode spark plugs from the number 1 and 3 cylinders exhibited a sooty, black, appearance. The spark plugs from the number 2 and 4 cylinders exhibited a dark brown appearance.

The carburetor sustained impact damage on the underside of the air box and bowl. It also exhibited external fire damage. The metal floats sustained thermal damage with slight melting of its solder joints. The carburetor inlet fuel screen was free of contaminants.

Fire Aspects

A postcrash fire erupted after impact with the ground. The pilot reported he and a neighbor attempted to extricate the passenger from the wreckage. A large expansion of the flames forced them away from the wreckage.

Survival Aspects

Following the impact, the pilot did not recall how he egressed from the airplane. He noticed the passenger was still seated in the rear seat of the airplane. The only egress from the airplane is through the right front area of the fuselage where a combination, downward hinged door and upward hinged window, is located. Compression and folding of the fuselage trapped the passenger's hips in the seat and wreckage.

Wreckage Release

The Safety Board released the wreckage, located at Wick Air Inc., Palmer, Alaska, to the owner on October 7, 1996. No parts or components were retained by the Safety Board.

Pilot Information

Certificate:	Private	Age:	61, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	05/25/1995
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	2441 hours (Total, all aircraft), 2140 hours (Total, this make and model), 36 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N64RS
Model/Series:	PA-18 PA-18	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	18-6078
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	06/19/1996, Annual	Certified Max Gross Wt.:	1750 lbs
Time Since Last Inspection:	36 Hours	Engines:	1 Reciprocating
Airframe Total Time:	4264 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-320-A2B
Registered Owner:	FREMONT L. HOTCHKISS	Rated Power:	150 hp
Operator:	FREMONT L. HOTCHKISS	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PAA, 232 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	1156 ADT	Direction from Accident Site:	45°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	40 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	145°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	5°C / -6°C
Precipitation and Obscuration:			
Departure Point:		Type of Flight Plan Filed:	None
Destination:	GEORGE GLACIER, AK	Type of Clearance:	None
Departure Time:	1223 ADT	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	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):	SCOTT R ERICKSON	Report Date:	03/31/1998
Additional Participating Persons:	FRANK MCGARR; ANCHORAGE, AK KRIS WETHERELL; FEDERAL WAY, WA JEFFREY POSCHWATTA; KENT, WA		
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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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](#).