



National Transportation Safety Board Aviation Accident Final Report

Location:	BATTLE GROUND, WA	Accident Number:	SEA96LA001
Date & Time:	10/01/1995, 1450 PDT	Registration:	N488WR
Aircraft:	RASMUSSEN KITFOX 2	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

Witnesses observed that the aircraft began a 'steep climb' after a normal lift-off, then it began to drift to the right of the runway. According to one witness, the aircraft leveled off approximately 50 to 100 feet above adjacent tall trees, while going 'very slowly,' and then it began turning right and descending. The passenger stated that the aircraft's nose dropped after takeoff and again during the level-off. Subsequently, the airplane struck treetops and crashed. After impacting terrain, the aircraft burst into flames. The airport owner told a sheriff's deputy that the pilot usually flew alone; the passenger's weight of 195 pounds represented about 20 percent of the aircraft's 950-pound maximum gross weight. The kit manufacturer estimated that adding a 200-pound passenger would add 3 to 5 MPH to the aircraft's stall speed.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the pilot to maintain adequate airspeed during the initial climb after takeoff, which resulted in a stall/mush and subsequent collision with trees and the ground.

Findings

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

Findings

1. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
2. (C) STALL/MUSH - INADVERTENT - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: TAKEOFF

Findings

3. OBJECT - TREE(S)

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: TAKEOFF

Factual Information

On October 1, 1995, approximately 1450 Pacific daylight time, a Rasmussen Kitfox 2, N488WR, experienced an inflight loss of control on climbout from Goheen Airport near Battle Ground, Washington. The airplane subsequently struck trees, then impacted terrain; a fire erupted immediately upon impact. The airplane was destroyed and the private pilot, who owned but had not built the experimental-category airplane, was fatally injured. His passenger received serious injuries. The flight had been planned as a local 14 CFR 91 flight out of Goheen Airport. Visual meteorological conditions existed and no flight plan had been filed.

Three individuals who witnessed the accident from various locations on the airport submitted statements to the investigator. These statements were in general agreement as to the accident sequence. The witnesses observed the airplane take off on runway 33, then, after a lift-off which appeared normal, pull up into a "steep climb" (all three witnesses used this phrase to describe the climb angle; one also reported "The climb angle was steeper than I would consider normal", and another stated "I had seen the pilot climb out like that on two previous occasions.") Two of the witnesses reported that during the steep climb, the airplane began to drift to the right (east) over tall fir trees. They stated that the airplane then leveled off between 50 and 100 feet above the trees (one stated that the plane's airspeed appeared "very slow" at this point) and began a right turn and headed east. They stated that the plane was descending by this point and observed its nose and tail to be "bobbing up and down" or "raising and lowering." They reported that the airplane's right wing then dipped and it began a rapid descent, or that it entered a "sharp right hand descending turn." These two witnesses reported that the aircraft then disappeared from their view, but that they subsequently heard the noise of the crash and saw the aircraft engulfed in flames after the impact. They also reported that the engine sounded like it was running at "high RPM" or "full power" throughout the sequence. The third witness, who was the airport owner, reported that prior to impact, the aircraft came back into his view, "perhaps 30 feet from the ground in a nose up attitude...wings level and at full power but still descending or 'mushing' towards the ground." He then stated, "Perhaps two seconds after impact, the aircraft burst into flame. There was a huge fire ball...." He stated that he then observed the passenger exiting the aircraft. He observed later that "The pilot was still in the aircraft. The left side of the plane was in a position that precluded the left door from opening. The pilot[']s upper body was through the right door...."

The investigator-in-charge interviewed the passenger by telephone on December 4, 1995. During this interview, the passenger stated that the aircraft lifted off smoothly, then the nose dropped and the pilot recovered. He then stated that at an estimated maximum altitude of 150 feet, while still climbing, the nose dropped again and the aircraft simultaneously turned right. The passenger stated that the pilot recovered again and the aircraft was now headed for trees straight ahead of it. He reported that the airplane hit the tops of the trees in a nose-high attitude and that the nose subsequently dropped a third time, "straight ahead." He stated that the aircraft did not recover from the third nose drop. He reported that the aircraft hit on its left side with the left wing and the nose impacting nearly simultaneously. He indicated that at the instant of impact, both occupants were soaked with fuel, and that a fire ignited immediately upon impact which instantly engulfed the entire cabin. To the passenger, the fire appeared to start in the floorboard area. The passenger expressed an opinion to the investigator-in-charge that the impact force was not severe and that the post-crash fire was the principal source of injury to the occupants, stating: "If there hadn't been a fire, we would probably have just

gotten out, dusted ourselves off and laughed about it."

During the phone interview, the passenger stated that he would not have characterized the pilot's handling of the aircraft as "showing off", and that he had not felt like the takeoff angle was excessively steep or dangerous. He stated that the pilot performed a conscientious preflight walk-around and pre-takeoff engine run-up, that there was no "small talk" during the taxi out, and that the pilot appeared to him to take a generally serious approach to the flight.

Photographs taken at the accident site showed that the aircraft had burned. The aircraft impacted in the vicinity of a cluster of trees with one tree behind the wreckage containing a scar about 10 feet above the ground, and another being broken completely over onto its side at approximately its base. The downed tree was pointing in approximately the same direction as the main wreckage heading. Sections of both wings had separated from the aircraft. The right wing section was located adjacent to, behind and to the right of the main wreckage, in the broken-over tree. The left wing section was located about 20 feet behind the main wreckage, at the base of the tree with the scar 10 feet above the ground. The main wreckage was in an upright position; the FAA coordinator to the accident, who responded to the accident scene, stated to the NTSB investigator that the wreckage came to rest headed approximately south. A tree with a scar at its top was observed northwest of the point of ground impact. The angle from the accident site to the scarred tree top was later measured at approximately 30 degrees above the horizontal.

The investigator-in-charge and FAA coordinator performed a further examination of the aircraft wreckage at Goheen Airport on November 17, 1995. This examination revealed that the aircraft had burned down to the structural tubing back to a point immediately aft of the cabin area. Wood stringers aft of the cabin had survived the fire, as had the empennage structure and fabric. The engine and cabin areas were whitened. The firewall, which photos from the aircraft construction book showed installed, was no longer in place. The structural tubing along the bottom of the left door area was collapsed upward 10 inches and inward 4 inches; the right door area was not visibly deformed. The forward edge of the left horizontal stabilizer was bent upward about 90 degrees while the right horizontal stabilizer and vertical tail were substantially intact. The empennage section was bent to the right relative to the forward fuselage. The wings were no longer attached to the fuselage. The engine was in place in its mount. The engine, reduction gearbox and propeller hub remained together as a unit. Less than approximately 12 inches of each of the three propeller blades remained on the hub; all three blade remnants were charred.

In a report on the accident, a Clark County sheriff's deputy stated that the airport owner told him that the airport owner had usually observed the pilot flying his aircraft alone. The passenger gave his weight as 195 pounds during the telephone interview with the investigator. A weight addition of 195 pounds represents approximately 20.5 percent of the aircraft's 950-pound maximum gross weight. In a letter to the investigator dated December 5, 1995, the president of SkyStar stated: "We estimate that the addition of a 200 pound passenger would result in an increase of the stall speed of 3-5 miles per hour." SkyStar also indicated that the Kitfox 2 operating handbook gives the power-on stall speed at maximum gross weight as 32 MPH, and the best rate-of-climb speed at maximum gross weight as 55 MPH with a climb rate of 1,200 feet per minute at that weight and speed for a Kitfox 2 with a Rotax 582 engine. The climb angle for a 1,200-foot-per-minute climb at an airspeed of 55 MPH was calculated to be 14.4 degrees. One of the witnesses, in a statement to responding law enforcement officers,

estimated the aircraft's speed at 40 to 50 MPH when it started its steep climb.

The investigator used information obtained from the aircraft construction book, SkyStar shipping records, the airport owner, the aircraft logbook, and the wreckage examination to determine the aircraft's fuel system configuration. The information indicated that at the time of the accident, the aircraft was equipped with a 6-gallon-capacity tank in each wing and a 1.1-gallon-capacity header tank mounted behind the seats.

Toxicology tests on the pilot conducted by the FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma, detected 23.200 micrograms per milliliter of salicylate in the pilot's urine.

Pilot Information

Certificate:	Private	Age:	44, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	07/06/1995
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	228 hours (Total, all aircraft), 202 hours (Pilot In Command, all aircraft), 12 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	RASMUSSEN	Registration:	N488WR
Model/Series:	KITFOX 2 KITFOX 2	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental	Serial Number:	488
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	07/05/1995, Annual	Certified Max Gross Wt.:	950 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Rotax
ELT:		Engine Model/Series:	582LC
Registered Owner:	JEFFREY W. PLUE	Rated Power:	65 hp
Operator:	JEFFREY W. PLUE	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PDX, 27 ft msl	Distance from Accident Site:	14 Nautical Miles
Observation Time:	1450 PDT	Direction from Accident Site:	166°
Lowest Cloud Condition:	Scattered / 4000 ft agl	Visibility	40 Miles
Lowest Ceiling:	Broken / 15000 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	20°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	19° C / 8° C
Precipitation and Obscuration:			
Departure Point:	(WA05)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1449 PDT	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Serious	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):	GREGG NESEMEIER	Report Date:	05/29/1996
Additional Participating Persons:	DALE MORRIS; HILLSBORO, OR		
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 pubinquiry@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](#).