



National Transportation Safety Board Aviation Accident Final Report

Location:	Vero Beach, FL	Accident Number:	MIA01FA117
Date & Time:	04/09/2001, 1208 EDT	Registration:	N262MM
Aircraft:	Piper PA-46-500TP	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

Witnesses observed N262MM taxi to runway 29 left and the pilot perform what appeared to be a normal engine runup. The airplane then taxied onto runway 29 left for takeoff. The wind was from the east, making the takeoff with a tail wind. During the takeoff, the engine seemed to operate at a steady level, but appeared to be low on power. The flight lifted off about halfway down the runway and the landing gear was retracted. The airplane climbed slowly and turned slowly to the left. The airplane then entered a 60-80 degree left bank followed by the airplane rolling level and the wings rocking back and forth. The airplane was now on a southerly heading and the nose dropped. The airplane then collided with trees about 15-20 feet above the ground, fell to the ground, and burst into flames. Witnesses stated they saw no smoke or flames coming from the airplane prior to impact with the trees. At the time of the accident the landing gear was retracted and the engine was running. Transcripts of recorded communications show that at 1205:40, the local controller instructed the flight to taxi into position and hold on runway 29 left. At 1206:43, N262MM was cleared for takeoff and a north bound departure was approved. At 1208:03, the passenger transmitted "we need to land we have to turn around". The local controller cleared the flight to return to the airport when able. At 1208:20, the passenger transmitted "two mike mike we're going down we're going down", followed by "over the golf (unintelligible)". The local controller responded "copy over the golf course". No further transmissions were received from the flight. Analysis of background noise contained on the ATC recordings show that at the time the passenger on N262MM transmitted to controllers that they were ready for takeoff and when he acknowledged the takeoff clearance, the propeller was rotating at 1,261 and 1,255 respectively. When the passenger transmitted to controllers after takeoff, that they needed to land, the propeller was rotating at 1,980 rpm. When the passenger transmitted we have to turn around, shortly after the above transmission, the propeller was rotating at 2,017 rpm. When the passenger made his last transmission stating they were going down, the propeller rpm was 1,965. The maximum propeller speed at takeoff is 2,000 rpm. Additional evidence was found indicating electrical arcing and progressive fatigue cracking in the engine's P3 line, which could result in a rapid rollback of engine power. Simulator testing showed that a P3 line failure would result in the engine decelerating from full takeoff power (2,000 propeller rpm) and stabilizing at an idle power setting in less than 9 seconds. However, the sound spectrum analysis of the first radio transmission indicated the

propeller rpm was 1,980, and two subsequent radio transmissions, the last of which was made 17 seconds after the initial transmission, detected the propeller rpm at near takeoff speed. Thus, there was no evidence of dramatic rpm loss, making the P3 line failure an unlikely cause of the accident. Postcrash examination of the aircraft structure, flight controls, engine, and propeller, showed no evidence of failure or malfunction. Witnesses indicated the flight used about 3,650 feet of runway for takeoff or about half of the 7,296 foot long runway. Charts contained in the Piper PA-46-500TP, Pilot's Operating Handbook, indicated that for the conditions at the time of the accident, the airplane should have used about 2,000 feet of runway for the ground roll during the takeoff with no wing flaps extended. The charts also show that the airplane indicated stall speed at 60 degrees of bank angle with the landing gear and wing flaps retracted is 111 knots.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's excessive bank angle and his failure to maintain airspeed while returning to the airport after takeoff due to an unspecified problem resulting in the airplane stalling and colliding with trees during the resultant uncontrolled descent.

Findings

Occurrence #1: MISCELLANEOUS/OTHER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings

2. (C) AIRCRAFT HANDLING - EXCESSIVE - PILOT IN COMMAND
3. (C) AIRSPEED(VS) - NOT MAINTAINED - PILOT IN COMMAND
4. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings

5. OBJECT - TREE(S)

Factual Information

This report was modified on September 30, 2009

HISTORY OF THE FLIGHT

On April 9, 2001, about 1208 eastern daylight time, a Piper PA-46-500TP, N262MM, registered to LK Aero Corporation, collided with trees shortly after takeoff from Vero Beach Municipal Airport, Vero Beach, Florida, while on a Title 14 CFR Part 91 personal flight to Daytona Beach, Florida. Visual meteorological conditions prevailed at the time and no flight plan was filed. The airplane was destroyed and the commercial-rated pilot and private-rated passenger were fatally injured. The flight was originating at the time of the accident.

Transcripts of recorded communications from the FAA, Vero Beach Air Traffic Control Tower, show that at 1200:12, N262MM was cleared by the ground controller to taxi to runway 29 left. At 1204:54, the passenger transmitted to the local controller that the flight was ready for takeoff. The local controller instructed the flight to hold short of the runway. At 1205:40, the local controller instructed the flight to taxi into position and hold on runway 29 left. At 1206:43, N262MM was cleared for takeoff and a north bound departure was approved. At 1208:03, the passenger transmitted "we need to land we have to turn around". The local controller cleared the flight to return to the airport when able. At 1208:20, the passenger transmitted "two mike mike we're going down we're going down", followed by "over the golf (unintelligible)". The local controller responded "copy over the golf course". No further transmissions were received from the flight. (See transcript of communications).

Witnesses stated they observed N262MM taxi to runway 29 left and the pilot perform what appeared to be a normal engine runup. The airplane then taxied onto runway 29 left for takeoff. The wind was from the east, making the takeoff with a tail wind. During the takeoff, the engine seemed to operate at a steady level, but appeared to be low on power. The flight lifted off about halfway down the runway and the landing gear was retracted. The airplane climbed slowly and turned slowly to the left. The airplane then entered a 60-80 degree left bank followed by the airplane rolling level and the wings rocking back and forth. The airplane was now on a southerly heading and the nose dropped. The airplane then collided with trees about 15-20 feet above the ground, fell to the ground, and burst into flames. Witnesses stated they saw no smoke or flames coming from the airplane prior to impact with the trees. At the time of the accident the landing gear was retracted and the engine was running. (See witness statements).

PERSONNEL INFORMATION

The pilot, age 43, held a FAA commercial pilot certificate, with airplane single engine land, private privileges airplane multiengine land, and instrument airplane ratings, last issued on December 4, 1998, when the commercial pilot certificate was issued with a single engine land rating. The pilot held a FAA class 3 medical certificate, last issued on January 6, 2000, with a limitation that the pilot wear corrective lenses while exercising the privileges of the certificate. The pilot's logbook reflected that the pilot received a biennial flight review as required by 14 CFR Part 61, on January 4, 2000. Pilot logbook records show the pilot had accumulated about 1,514 total flight hours, and about 33 flight hours in the Piper PA-46-500TP. The pilot also had 608 flight hours in the Piper PA-46-350P, and 119 flight hours in a Piper PA-46 JetProp

conversion. The pilot attended Attitudes International, Inc., Vero Beach, Florida, in January 1998, for Piper PA-46-350P initial pilot training, and in January 1999, for Piper PA-46-350P recurrent training. On March 8, 2001, the pilot received 5 flight hours of training in the Piper PA-46-500TP, from a flight instructor. (See pilot records.)

The passenger, age 44, held a FAA private pilot certificate, with a airplane single engine land rating, last issued on March 25, 1988. The passenger held a FAA class 3 medical, with no restrictions, last issued on January 11, 2001. At the time of the medical examination, the pilot reported he had accumulated 378 total flight hours and that he had flown 60 flight hours in the previous 6 months.

AIRPLANE INFORMATION

The airplane was a 2001 model year Piper PA-46-500TP, registration N262MM, manufactured in February 2001, and certificated on March 5, 2001. The airplane was equipped with a Pratt and Whitney PT6A-42A, 500 shaft horsepower engine. At the time of the accident the airplane had accumulated 45 total flight hours. At the time the pilot took possession of the airplane, it had about 12 total flight hours.

Maintenance records show the airplane was taken by the pilot to Sun Aviation, Inc., Vero Beach, Florida, on April 2, 2001, for installation of weather avoidance and collision avoidance systems. The pilot had also complained about intermittent alternator output problems and about the pilot's microphone and headset being intermittent. During this shop visit, the voltage regulator was changed to correct the alternator problem, but the microphone and headset problem could not be duplicated. The airplane was picked up by the pilot on April 6, 2001, and the airplane total time at this work was 43.7 hours. On April 9, 2001, the day of the accident, the pilot took the airplane to the New Piper Aircraft, Inc., Vero Beach, Florida, for repair of the intermittent pilot's microphone and headset and a high alternator load. The plug for the headset was reconnected securely behind the lower pilot's side panel and the alternator voltage regulator was adjusted. The airplane total time during this work was 44.8 hours. (See witness statements and airplane records.)

WEIGHT AND BALANCE INFORMATION

Calculations show that at the time of the accident the airplane weighed about 4,686 pounds and the center of gravity was located at 139.76 inches aft of the datum. The maximum takeoff weight for the airplane is 4,850 pounds and the center of gravity limits at the maximum takeoff weight is 139.3 inches aft of the datum forward limit and 147.10 inches aft of the datum aft limit. (See weight and balance information).

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time of the accident. The Vero Beach Municipal Airport, 1150 surface weather observation was winds from 070 degrees at 5 knots, visibility 12 statute miles, few clouds at 3,000 feet, few clouds at 20,000 feet, temperature 82 degrees F, dew point temperature 67 degrees F, altimeter setting 30.10 inches Hg.

COMMUNICATIONS

At the time of the accident the occupants of N262MM were in radio communications with controllers at the FAA, Vero Beach Municipal Airport, Control Tower. The pilot's sister stated that the voice on the recording was not her brother. A person who knew both the pilot and passenger stated the transmissions from N262MM to the local controller were made by the

passenger. (See witness statements).

AIRPORT INFORMATION

The Vero Beach Municipal Airport runway 29 left is 7,296 feet long and 100 feet wide.

WRECKAGE AND IMPACT INFORMATION

The airplane crashed in a wooded area between the 17th tee of the Dodger Pines Golf Course and a residence located at 2761 51st Avenue, Vero Beach, Florida. The main wreckage coordinates were 27 degrees, 38 minutes, 59.0 seconds, north latitude, and 080 degrees, 26 minutes, 21.1 seconds, west longitude.

Examination of the crash site showed the airplane passed over the 17th tee of the golf course while on a southerly heading. The left wing struck a 75-foot-tall tree at about the 25-foot level, causing separation of the outboard left wing area. About 20 feet to the south, the left and right wings collide with trees at the 25-foot level, causing separation of the outboard right wing area and additional portions of the left wing outboard area. The airplane continued to the south about 55 feet, striking several other trees prior to the nose of the airplane striking a large tree at the 18-foot level. The remainder of the right wing separated and was located forward of the main wreckage. The airplane came to rest upright adjacent to the large tree. The propeller separated from the engine during impact with the large tree and the propeller dome and portions of the weather radar system were found up to 120 feet to the south of the airplanes main wreckage. A post crash fire erupted, burning the airplane wreckage and an estimated 100-foot by 100-foot portion of the wooded area around the crash site.

Examination of the airplane wreckage showed that all components of the airplane, which are necessary for flight, were located on or around the main wreckage of the airplane. Examination of the flight control system showed that all separation points within the flight control system was consistent with overstress separation due to impact forces and damage from the postcrash fire. The elevator trim system and rudder trim system were found in the neutral position. The airplane was equipped with a ground adjustable tab on the right aileron for the aileron trim. The landing gear and wing flaps were found in the retracted position. The main cabin door was destroyed by the post crash fire. The locking pins for the door were found in the locked position. The autopilot pitch, roll, yaw, and pitch trim servos were found in the disengaged position and the cables from the actuators were attached to the respective cables to the flight control and trim tab surfaces.

Examination of the engine controls in the airplanes cockpit and at the engine showed they had received impact and fire damage. The condition lever was found in the run position. The power lever was found in the midrange position. The manual over ride lever was found in the midrange position. (See The New Piper Aircraft, Inc. Report).

Examination of the engine was performed under NTSB supervision at Pratt and Whitney Canada, Montreal, Canada. The engine sustained severe fire and impact damage , including complete fire consumption of the accessory gearbox. Strong circumferential rubbing and machining were displayed by the compressor impeller, the impeller shroud, the compressor turbine vane ring, the compressor turbine, the first stage power turbine vane ring, the first stage power turbine, the second stage power turbine vane ring, and the second stage power turbine due to their making axial contact with their adjacent components under impact loads and external housing deformation. The compressor first, second, and third stage shrouds, the compressor turbine shroud, the first stage power turbine shroud, and second stage power

turbine shroud displayed strong circumferential rubbing and scoring due to their making radial contact with their adjacent blade tips. There were no indications of any operational dysfunction to any of the engine components, controls, or accessories examined. The engine displayed contact signatures to its internal components characteristic of the engine developing significant power at the time of impact. The engine displayed no indications of any preimpact anomalies or distress that would have precluded normal engine operation prior to impact. (See Pratt and Whitney Report).

Examination of the propeller was performed under NTSB supervision at Hartzell Propeller, Inc., Piqua, Ohio. The propeller separated from the engine during tree impact when a portion of the engine propeller flange separated from the engine and remained bolted to the propeller with two bolts and the remaining propeller mounting bolts either broke, pulled out the inserts in the propeller hub, or stripped the threads of the inserts. The propeller spinner was crushed and had an impact mark from the counter weight of the number three blade consistent with the blade being in the normal operating range at impact. The cylinder and piston had separated from the propeller hub. Each of the propeller blades had bending damage and no significant leading edge damage or rotational scoring. The examination concluded that the propeller was rotating and not in the feathered position at the time of impact. The amount of engine power applied at the time of impact could not be determined. There were no propeller discrepancies noted that could have precluded normal operation of the propeller. All damage was consistent with impact damage. (See Hartzell Propeller, Inc. Report).

NTSB was informed that the Meggitt Avionics, Inc., data acquisition unit, on board the airplane, contained stored information about any limits in engine operation that are exceeded. The unit received impact and fire damage. The unit was taken by NTSB to Meggitt Avionics, Inc., for possible extraction of any stored data. The circuit boards were fire damaged and the memory chip containing the stored data was fire damaged. Meggitt Avionics, Inc. was unable to retrieve data from the chip. The circuit board containing the memory chip was then taken by FAA to Atmel, Inc., the memory chip manufacturer. Atmel, Inc. was unable to retrieve data from the damaged memory chip. (See Atmel, Inc. Report).

MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examination of the pilot and pilot-rated passenger was performed by Charles A. Diggs, M.D., Associate Medical Examiner, Fort Pierce, Florida. The cause of death for each was attributed to blunt trauma of the head. No findings which could be considered causal to the accident were reported.

Postmortem toxicology tests were performed on specimens obtained from the pilot by the FAA Toxicology Laboratory, Oklahoma City, Oklahoma, and by Wuesthoff Reference Laboratory, Melbourne, Florida. The tests were positive for 2.4 percent carbon monoxide and negative for cyanide, ethanol, and drugs.

Postmortem toxicology tests were performed on specimens obtained from the pilot-rated passenger by the FAA Toxicology Laboratory, Oklahoma City, Oklahoma, and by Wuesthoff Reference Laboratory, Melbourne, Florida. The tests were positive for 6.2 percent carbon monoxide and negative for cyanide, ethanol, and drugs. (See toxicology reports.)

TESTS AND RESEARCH

Analysis of background noises recorded by the FAA, Vero Beach Municipal Airport, Control Tower, during transmissions from N262MM, and from transmissions recorded from a test

Piper PA-46-500TP at known power settings, was performed by the NTSB Vehicle Recorders Division, Washington, D.C. The analysis showed that noise signatures from the propeller of N262MM and from the test airplane were present on the recordings. At the time the passenger on N262MM transmitted to controllers that they were ready for takeoff and when he acknowledged the takeoff clearance, the propeller was rotating at 1,261 rpm and 1,255 rpm respectively. When the passenger transmitted to controllers after takeoff, that they needed to land, the propeller was rotating at 1,980 rpm. When the passenger transmitted we have to turn around, shortly after the above transmission, the propeller was rotating at 2,017 rpm. When the passenger made his last transmission stating they were going down, the propeller rpm was 1,965. The propeller speed at takeoff is 2,000 rpm. (See NTSB Specialists Factual Report, Air Traffic Control Recording).

Metallurgical examination of components from the engine and debris found in the compressor of the engine was performed by the NTSB Materials Laboratory, Washington, D.C. All fractures were consistent with overload separation. The debris found in the compressor of the engine was made of aluminum and magnesium with traces of carbon, oxygen, and zinc, materials found in the melted accessory gearbox.

After the investigation was concluded, additional evidence was found indicating electrical arcing and progressive fatigue cracking in the engine's P3 line. The P3 line is a component of the compressor air lines group and functions as a pneumatic control line that regulates fuel flow to the engine; a hole in the P3 line could result in a rapid rollback of engine power. Based on this information, a series of tests were conducted in a Meridian simulator to determine how quickly a power rollback would occur and to compare this data with sound spectrum evidence. The simulator was configured with the engine at full takeoff power (2,000 propeller rpm) and a P3 line failure was simulated. In each of the tests, the engine decelerated and stabilized at an idle power setting in less than 9 seconds. The sound spectrum analysis of the background sounds in the passenger's three radio transmissions, the last of which was made 17 seconds after the initial transmission, did not detect a drop in propeller rpm, and the last transmission indicated the propeller was rotating at takeoff speed.

The airplane was fueled by The New Piper Aircraft, Inc. with 26 gallons of Jet-A fuel in each wing tank, for a total of 52 gallons added to the airplane prior to the flight. The person who refueled the airplane stated this brought the fuel load to about 900 pounds. A sample was drawn after the accident from the fuel truck used to fuel N262MM and tested at Panair Laboratory, Inc., Miami, Florida. The sample met all specifications for Jet-A fuel and did not contain any contaminants. (See Panair Laboratory Report).

Charts contained in the Piper PA-46-500TP, Pilot's Operating Handbook, indicated that for the conditions at the time of the accident, the airplane should have used about 2,000 feet of runway for the ground roll during the takeoff with no wing flaps extended. The charts also show that the airplane indicated stall speed at 60 degrees of bank angle with the landing gear and wing flaps retracted is 111 knots. (See pages from Pilot's Operating Handbook).

ADDITIONAL INFORMATION

The NTSB released the airplane wreckage on April 10, 2001, to Road One Towing, Fort Pierce, Florida. Components retained by NTSB for further investigation were released to David Gourgues, Liability Specialist, Universal Loss Management, Orlando, Florida.

Pilot Information

Certificate:	Commercial	Age:	43, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	01/06/2000
Occupational Pilot:	No	Last Flight Review or Equivalent:	01/01/2000
Flight Time:	1514 hours (Total, all aircraft), 32 hours (Total, this make and model), 1384 hours (Pilot In Command, all aircraft), 33 hours (Last 90 days, all aircraft), 26 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N262MM
Model/Series:	PA-46-500TP	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	4697040
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	03/05/2001, Annual	Certified Max Gross Wt.:	4850 lbs
Time Since Last Inspection:	35 Hours	Engines:	1 Turbo Prop
Airframe Total Time:	45 Hours at time of accident	Engine Manufacturer:	Pratt & Whitney Canada
ELT:	Installed, not activated	Engine Model/Series:	PT6A-42A
Registered Owner:	L K Aero Corp.	Rated Power:	500 hp
Operator:	Leonard Korman	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	VRB, 25 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	1210 EDT	Direction from Accident Site:	250°
Lowest Cloud Condition:	Few / 3000 ft agl	Visibility	12 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	100°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.12 inches Hg	Temperature/Dew Point:	27° C / 18° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Vero Beach, FL (VRB)	Type of Flight Plan Filed:	None
Destination:	Daytona Beach, FL (44J)	Type of Clearance:	VFR
Departure Time:	EDT	Type of Airspace:	Class D

Airport Information

Airport:	Vero Beach Municipal (VRB)	Runway Surface Type:	Asphalt
Airport Elevation:	25 ft	Runway Surface Condition:	Dry
Runway Used:	29L	IFR Approach:	None
Runway Length/Width:	7296 ft / 100 ft	VFR Approach/Landing:	Precautionary Landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	On-Ground
Total Injuries:	2 Fatal	Latitude, Longitude:	27.649722, -80.439167

Administrative Information

Investigator In Charge (IIC):	Jeffrey L Kennedy	Report Date:	01/16/2003
Additional Participating Persons:	Duane Kincaid; FAA FSDO; Orlando, FL Kris Wetherell; The New Piper Aircraft, Inc.; Vero Beach, FL John Franklin; Pratt and Whitney Canada; Longueuil, Tom McCreary; Hartzell Propeller, Inc.; Piqua, OH		
Publish Date:	10/01/2009		
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/ .		

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](#).