



Aviation Investigation Final Report

Location:	LONE WOLF, Oklahoma	Accident Number:	FTW97FA100
Date & Time:	February 3, 1997, 16:20 Local	Registration:	N33322
Aircraft:	Piper PA-28-200	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot met his two passengers at an airport where he purchased 10 gal of fuel. The airport attendant estimated that there was about 1 inch of fuel in each wing tank before he added 5 gal to each tank. The pilot commented to the attendant, 'let me see if I can't scar these guys to death.' Witnesses observed the airplane flying over a lodge area. They said the airplane was 'tilting at 90 degree angles on its wings.' Also, they reported the airplane went 'inverted,' and then nosed down and disappeared from view. It then crashed in a lake and was destroyed by impact. One witness stated that 'the motor was making a noise, as if it was getting gas and then not getting gas.' Another witness observed the airplane earlier that day doing 'tricks and stunts.' The airplane was restricted from inverted flight and was not approved for acrobatic maneuvers. During examination of the wreckage, flight control continuity was established, and no anomalies were found that would have resulted in a loss of power. Toxicology tests of the pilot's blood showed 0.008 mcg/ml tetrahydrocannabinol (marijuana), 0.014 mcg/ml tetrahydrocannabinol carboxylic acid (metabolite of marijuana), and 0.052 mcg/ml alprazolam. Tests of his urine showed 0.695 mcg/ml tetrahydrocannabinol carboxylic acid, 0.071 mcg/ml dihydrocodeine, 0.155 mcg/ml hydrocodone, 0.338 mcg/ml hydromorphone, 4.8 mcg/ml acetaminophen, and an undetermined amount of alprazolam and alph-hydroxalprazolam. According to the FAA's Southwest Regional Flight Surgeon, 'the combined effects of these drugs would have caused impairment in the cockpit.'

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's impairment of judgment and performance due to drugs, his resultant improper planning/decision, and his failure to maintain sufficient altitude (clearance above a lake), while performing aerobatic flight. Factors relating to the accident were: the pilot's use of an aircraft

that was not certified for aerobatic flight, and possible pilot distraction (diverted attention), when the engine momentarily lost power due to fuel starvation during inverted flight.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: MANEUVERING

Findings

1. (C) PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
2. (C) IMPAIRMENT(DRUGS) - PILOT IN COMMAND
3. (F) AEROBATICS - INITIATED - PILOT IN COMMAND
4. (F) LACK OF CERTIFICATION
5. (F) FLUID,FUEL - STARVATION
6. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
7. (F) DIVERTED ATTENTION - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On February 3, 1997, approximately 1620 central standard time, a Piper PA-28-200 airplane, N33322, owned by a private owner, and operated by Pro Flight, Inc., was destroyed following loss of control while maneuvering near Lone Wolf, Oklahoma. The private pilot and his two passengers sustained fatal injuries. Visual meteorological conditions prevailed for the Title 14 CFR Part 91 personal flight. A flight plan was not filed for the local flight that originated in Altus, Oklahoma, about 25 minutes before the accident.

According to the operator, the pilot rented the airplane for an after hours departure on February 2, 1997. It was to be a flight to Oklahoma City, with a return to Tulsa the following morning. About 1000, on the morning of the accident, the pilot telephoned the operator and stated that the en route weather prevented his return, and he would return in the afternoon.

According to witnesses, at about 1430, the pilot landed the airplane on a dirt road, near the Lakecreek Baptist Road, north of Granite, Oklahoma. The pilot told one of the witnesses that he had landed due to a low engine oil pressure indication; however, "it was okay now." The witness observed the pilot check the oil quantity, and he observed oil on the dipstick; however, he never saw the pilot add any oil to the engine. The witness helped the pilot turn the airplane around and drove to the end of the dirt road to block traffic; however, the airplane did not takeoff. When the witness returned to the airplane, the pilot stated he could not start the engine. The witness observed "the starter was about to fall off [and] only one bolt was holding it on." He also observed a streak of oil on the bottom of the fuselage, which appeared to originate from a "brass nut" on the bottom of the engine. According to another witness, "the starter had disengaged from the engine due to a loose/broken bracket." This witness "loaned the pilot some wrenches to fix [the] problem." The pilot took the alternator bracket off and left it off. He told the witnesses that there was no problem leaving the bracket off because "he had 24 volts," and the "mechanics were going to get it at the vo-tech." The pilot then told the witnesses he was headed back to Tulsa. The aircraft took off and "headed east." The aircraft then "did a roll, a 360 loop," and then turned south towards Altus. One witness stated that "the motor was making a noise, as if it was getting gas and then not getting gas."

The airport attendant at Altus Municipal Airport reported that, at 1515, the accident aircraft entered a right base for runway 35 at an altitude of 150 to 200 feet AGL. It over shot final and made a "rough fast landing approximately 1,500 feet down the runway." It then exited the runway at taxiway C and taxied to the ramp. The attendant also reported that he signaled the pilot where to park the airplane, and the pilot "firewalled the throttle and locked the brake" as he maneuvered the aircraft to the parking spot. The pilot used a cellular telephone while they walked to the operations building. After completing his telephone call, he asked the attendant

to put 5 gallons of fuel in "each side" and 1 quart of oil in the engine. The pilot then left the airport in the courtesy car to get something to eat.

The airport attendant further reported that he estimates that there was approximately 1 inch of fuel in each tank before he added the fuel. After he added the 5 gallons of fuel to each tank, the level of fuel was well below the "tabs." About 5 minutes after the two construction workers that work at the Quartz Mountain State Park lodge construction site at Lake Altus arrived at the airport, the pilot returned. The pilot told the passengers to get in the aircraft while he paid for the fuel and oil. After paying for the fuel and oil, he made the comment to the attendant, "let me see if I can't scare these guys to death." The aircraft jumped its chocks and taxied to the runway for takeoff. After takeoff, the landing gear remained down as the airplane disappeared from the attendant's view.

At approximately 1600, one witness who was located at the Lake Altus lodge construction site, observed the accident airplane flying from northeast to southwest through the lodge area, very low to the water. The airplane "buzzed" the construction site, and continued southwest, then circled to the east northeast. At approximately 1615-1620 the airplane flew back through the area "inverted" and flew through the mountain gap. The airplane then "banked to the left in a east northeast direction." After the airplane disappeared behind the mountain (approximately 4 seconds), "he heard a thud and no more engine noise."

Other witnesses located on the east side of Lake Altus, at the boat ramp in area one, observed the accident airplane flying south through the lodge area. The airplane was "tilting at 90 degree angles on its wings." As the airplane "got past the twin peaks it [went] inverted with the cockpit towards the water and then nosed down and headed straight down and disappeared behind one of the peaks, but in front of another mountain." One of the witnesses "heard the engine cut on and off just before the plane went behind the mountain." This witness had seen the airplane earlier in the day doing "tricks and stunts."

PERSONNEL INFORMATION

The pilot became qualified as a private pilot on September 4, 1995, with 134.7 flight hours at the time of this flight evaluation. This rating meets the requirement of a biennial flight review. According to the pilot's flight log book, he had accumulated 210.3 hours total time in all aircraft since becoming qualified as a private pilot. He completed a check out in the accident airplane on January 30, 1997, after 10.7 hours of flight instruction.

On June 15, 1995, the pilot, while a student at the Spartan School of Aeronautics, video taped acrobatic maneuvers he performed during a solo training flight. On June 22, 1995, he gave the video tape to his flight instructor and told him he thought he would be interested in it. The Spartan School of Aeronautics convened a Board of Inquiry to review this incident. On July 17, 1995, the pilot was put on academic probation.

On January 16, 1996, the pilot was observed performing acrobatic maneuvers in a Cessna 152.

The FAA suspended his pilot certificate for 90 days for this incident. The reason given for this suspension was performing acrobatic maneuvers, which is contrary to the operating limitations specified in the approved flight manual for the airplane, and for performing acrobatic flight within 4 nautical miles of the centerline of V-140, a Federal airway.

AIRCRAFT INFORMATION

The Piper Cherokee Arrow is a four place, single engine airplane with retractable landing gear. The airplane's two fuel tanks hold a total capacity of 50 gallons, of which 48 gallons are usable. Filling both tanks to their tabs gives a total capacity of 34 gallons. According to the flight manual, this aircraft must be operated as a normal category airplane in compliance with the operating limitations stated in the form of placards, markings and manuals. The aircraft's maximum positive flight load factor is 3.8 G's., and there is no negative flight load factor, which restricts it from inverted flight. The aircraft is not approved for acrobatic maneuvers.

A review of the airframe and engine records did not reveal evidence of any anomalies or uncorrected maintenance defects. The aircraft's maximum gross weight is 2,650 pounds, and an estimate of the weight of the aircraft at the time of the accident placed it within weight and balance limits.

WRECKAGE IMPACT INFORMATION

The aircraft wreckage was located submerged in Lake Altus, about 6 nautical miles southwest of Lone Wolf, Oklahoma, at latitude 34 degrees 53 minutes 53.4 seconds north and longitude 99 degrees 18 minutes 08.6 seconds west. All major components were located within a 100 foot radius of the main wreckage.

The airplane's nose landing gear and engine were separated at the firewall. The firewall was attached to the instrument panel on the left side only. The roof of the aircraft was crushed downward. The floor from the front seats forward was torn away.

The inboard, forward 24 inches of the right wing, aft to the main spar was torn off. The forward, main, and aft wing attachment points were fractured. There were small dents along the leading edge of the wing. The right main landing gear was down.

The left wing forward and aft wing attachment points were fractured. The wing tip and outboard 13 inches of the wing, aft of the main spar were fractured and bent forward under the leading portion of the wing. The main spar was still intact along the wing, at the main wing attachment point and into the cockpit. The left main landing gear was down.

The empennage was undamaged except for the damage that occurred during the salvage of the airplane. Continuity was established to all flight controls.

The engine was found 90 feet southwest of the fuselage in 12 feet of water. It was intact with

all of the accessories attached except for the alternator and its bracket, which were not recovered. The propeller was still attached to the engine, and all three propellers blades had minimal damage; however, one blade tip was bent forward.

The engine was examined by the NTSB at Air Salvage of Dallas on February 13, 1997. The rocker box covers were removed and the exhaust valve stem cap on the #1 cylinder was found loose inside the rocker box. According to the manufacturer, if this was a preexisting condition, there would be no noticeable difference in power to the pilot, due to the hydraulic lifter compensating for the additional clearance between the valve stem and the rocker arm. Examination of the valve stem, stem cap and rocker box did not reveal any markings or damage. The crankshaft was rotated and continuity was established to the accessory gears, and valve action was confirmed. There was thumb compression on all four cylinders. The left and right magnetos produced spark to the spark plugs on all cylinders except to the #1 cylinder top spark plug. This plug's lead was cut at the magneto distribution block and a spark was then noted. Examination of the engine driven fuel pump revealed no anomalies. There was only one bolt holding the starter on the engine.

Examination of the airplane did not reveal evidence of any pre-impact structural or mechanical anomalies.

MEDICAL AND PATHOLOGICAL INFORMATION

The autopsy was performed by Larry E. Balding, M.D., Office of the Medical Examiner, Oklahoma City, Oklahoma. There was no evidence found of any preexisting disease that could have contributed to the accident.

Toxicology findings were positive for Tetrahydrocannabinol (Mariuhana), Hydrocodone, Alprazolam, and Actetaminophen. According to Dr. Canfield, Civil Aeromedical Institute (CAMI), the Tetrahydrocannabinol (parent Mariuhana) detected in blood and Tetrahydrocannabinol Carboxylic Acid (metabolite of Mariuhana detected in blood and urine, suggests recent ingestion of Mariuhana. "This would have had a detrimental effect on the individual."

According to Dr. Salazar, FAA Southwest Regional Flight Surgeon, "0.071 ug/ml Dihydrocodeine (metabolite of Hydrococone, a narcotic analgesic), 0.155 ug/ml Hydrocodone (parent), and 0.338 ug/ml Hydromorphone (metabolite of Hydrocodone) were detected in urine; however, none of these drugs were detected in blood. This suggests usage, but it would be difficult to ascertain what effect these may have had on the pilot." The level of 0.052 ug/ml Alprazolam (antidepressant) detected in blood is "twice the therapeutic level." Alprazolam and Alpha-hydroxyalprozolam (metabolite of Alprazolam) were detected in urine. "This medication would have had a definite effect on the individual's cognitive ability," and the FAA does not recommend the use of these drugs while flying. "The combined effects of these drugs would have caused impairment in the cockpit."

ADDITIONAL DATA

Aircraft wreckage released to the owner's representative.

Pilot Information

Certificate:	Private	Age:	30, 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:	February 1, 1997
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	345 hours (Total, all aircraft), 13 hours (Total, this make and model), 238 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N33322
Model/Series:	PA-28-200 PA-28-200	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	28R-7535134
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	October 21, 1996 100 hour	Certified Max Gross Wt.:	2650 lbs
Time Since Last Inspection:	110 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	4618 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	IO-360-C1C
Registered Owner:	H.W. SHAW	Rated Power:	200 Lbs thrust
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:	PRO FLIGHT, INC.	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	LTS ,1381 ft msl	Distance from Accident Site:	14 Nautical Miles
Observation Time:	15:55 Local	Direction from Accident Site:	170°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	250°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ALTUS , OK (AXS)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	15:50 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	2 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal	Latitude, Longitude:	34.989311,-99.239418(est)

Administrative Information

Investigator In Charge (IIC):	Wigington, Douglas
Additional Participating Persons:	JERRY YATES; OKLAHOMA CITY , OK DAVID BORDEN; VERO BEACH , FL GERALD R JAMES; WILLIAMSPORT , PA
Original Publish Date:	December 15, 1997
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=20021

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).