



National Transportation Safety Board

Aviation Accident Final Report

Location:	Arlington, AL	Accident Number:	ATL04FA077
Date & Time:	02/23/2004, 0849 CST	Registration:	N9103Z
Aircraft:	Piper PA-46-310P	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:		Part 91: General Aviation - Personal	

Analysis

The pilot received a preflight briefing from the Gainesville Automated Flight Service Station before departing on the instrument flight. The briefer advised the pilot of the potential for occasional moderate turbulence between 24,000 and 37,000 feet and on the current Convective SIGMET for embedded thunderstorms over southern Mississippi. The flight was in cruise flight at 24,000 feet when the airplane encountered moderate to severe turbulence and heavy rain. The airplane descended from 24,000 feet to 3,100 feet in a descending right turn in 2 minutes and 10 seconds before radar contact was lost. The airplane was located 8 hours 26 minutes after the accident along a crash debris line that extended between 1.31 miles and 1.53 miles northwest of Arlington, Alabama. Airframe components recovered from the accident site were submitted to the NTSB Materials laboratory for examination. The examinations revealed all failures were consistent with overstress fracturing and there was no evidence of pre-existing conditions or fatigue damage. Examination of the airframe revealed that the airframe design limits were exceeded. The Pilot's Operating Handbook states the maximum structural cruising speed is 173 knots indicated airspeed or 170 knots calibrated airspeed. The co-pilot airspeed indicator at the crash site indicated 180 knots calibrated airspeed. The design maneuvering speed is 135 knots indicated airspeed or 133 knots calibrated airspeed.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilots inadequate in-flight planning/decision and his failure to maintain aircraft control, resulting in an in-flight encounter with a thunderstorm and exceeding the design limits of the aircraft.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: CRUISE

Findings

1. (C) WEATHER CONDITION - THUNDERSTORM
 2. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
 3. (C) FLIGHT INTO KNOWN ADVERSE WEATHER - CONTINUED - PILOT IN COMMAND
-

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
-

Occurrence #3: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: DESCENT - UNCONTROLLED

Findings

5. AIRFRAME - OVERLOAD
 6. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND
-

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Findings

7. TERRAIN CONDITION - SWAMPY

Factual Information

HISTORY OF FLIGHT

On February 23, 2004, at 0849 central standard time, a Piper PA-46-310P, N9103Z, registered to a private owner, operating as a 14 CFR Part 91 personal flight, broke up in-flight in the vicinity of Arlington, Alabama. Instrument meteorological conditions prevailed at flight altitude and an instrument flight plan was filed. The airplane was destroyed. The private pilot and his passenger received fatal injuries. The flight originated from Panama City-Bay County International Airport, Panama City, Florida, on February 23, 2004, at 0738 central standard time.

At 0605, the pilot received a preflight weather briefing from the Gainesville Automated Flight Service Station and filed an instrument flight plan. The briefer advised the pilot of the potential for occasional moderate turbulence between 24,000 and 37,000 feet and on the current Convective SIGMET for embedded thunderstorms over southern Mississippi. Review of pilot reports revealed light rime icing conditions and light to moderate turbulence across the area with instrument meteorological conditions. After takeoff from Panama City, Air Traffic Control procedures were described as routine.

At 0819:32, the pilot radioed Atlanta Center, "uh we'd like to deviate a little bit to the north to get around some of these buildups." The controller asked the pilot if he encountered any rime icing in his area, and the pilot stated no. The pilot was cleared to Flight level (FL) 230 and instructed to contact another sector of Atlanta Center at 0827. The pilot made the frequency change and informed the new controller that he was climbing to FL230. The controller informed the pilot to climb to FL250 and amended the climb clearance to FL240 at 08:30:23. The pilot stated "Four oh thank you." At 08:46:54, radar data revealed the airplane was at 24,000 feet flying a northwest heading. At 08:47:02, the airplane was at 23,800 feet in a right turn. At 08:47:04, the airplane was at 23,600 feet heading northwest. At 08:47:34, the airplane was heading northeast at 16,300 feet. At 08:47:51, the controller radioed the pilot to verify that he was flying at FL240. There was no response from the pilot. At 08:47:58, radar data revealed the airplane was at 9,600 feet. At 08:48:04, the airplane was at 8,300 feet heading southeast. At 08:48:44, the airplane was last observed by the controller in radar contact flying a southeast heading at 3,100 feet.

At 1000, the shift supervisor for the Atlanta Air Route Traffic Control Center telephoned the Wilcox County Sheriff Department and reported the loss of radar contact with N9103Q at 24,000. The Sheriff Department was also told that the last radar contact with the airplane was 40 miles north of Monroeville, Alabama. A ground search was initiated at local airports failed to locate the downed airplane. However, at 1715, the airplane wreckage was located by a local pilot. The airplane wreckage was scattered over an area 1/2 mile long.

PERSONNEL INFORMATION

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the pilot was issued a private pilot certificate on May 30, 1985, with ratings for airplane single engine land, multiengine land, and instrument airplane. The pilot held a third-class medical certificate issued on April 16, 2002, with the limitation, "not valid for any class after April 30, 2004." The pilot reported his total flight time was 4,500 hours on his application for the medical certificate. Review of the pilot's logbook revealed the last recorded

entry was on June 20, 2003. The pilot had logged 5,021.4 hours of which 883.6 hours were in the PA-46-310P. The pilot's last biennial flight review and instrument proficiency was on June 20, 2003.

AIRCRAFT INFORMATION

Examination of the airplane logbooks revealed the last annual inspection was conducted on May 7, 2003. The Hobbs hour meter and total airframe hours was 2105.0. The Hobbs hour meter at the crash site and total airframe hours was 2155.15. The airplane had flown 50.15 hours since the annual inspection. The pitot system check and transponder inspection was conducted on April 29, 2003. The emergency locator transmitter was inspected on May 5, 2003. The last entry in the engine and airframe logbook was on August 12, 2003, at 2133.0 Hobbs hours. Review of refueling records revealed the airplane was last refueled on February 23, 2004; with 68.5 gallons of 100 low lead fuel.

METEOROLOGICAL INFORMATION

The National Weather Service (NWS) Surface Analysis Chart at 09:00 depicted a warm front extending along the Gulf coast to the south of the accident site with an extensive area of overrunning clouds and precipitation north of the front. A weak trough of low pressure extended over the accident site with an area of moderate-to-heavy rain.

The NWS Weather Depiction Chart issued at 10:00 depicted a large area of instrument flight rule and marginal flight rule conditions extending over southwest Alabama, Mississippi, Louisiana, southeast, and northern Texas, Oklahoma, the Texas panhandle, and extended over the accident site. Several stations across southwest and western Alabama, and Mississippi indicated moderate to continuous rain, with the majority of the stations over Louisiana reporting light continuous rain.

The NWS Radar Summary Chart depicted an area of echoes extending from western South Carolina, northern and western Georgia, extreme western Florida panhandle, most of Alabama, Mississippi, Louisiana, to eastern Texas, and along the Gulf coastal sections. In the vicinity of the accident site the echoes were depicted as strong-to-very strong intensity rain showers. The echo tops depicted across southern Alabama ranged from 29,000 to 32,000 feet. Movement of the cells was depicted to the east-northeast at 38 knots near the Alabama Gulf coast.

The NWS Convective Outlook indicated possible thunderstorm activity over the region, with a slight chance of severe thunderstorms along the coastal area to the south of the crash site. The closest NWS Surveillance Radar was located at Birmingham, Alabama, 78 miles northeast of the accident site. The radar images indicate the accident airplane was operating in an area of echoes associated with heavy rain at the time of the in-flight breakup.

The nearest weather reporting facility was located at Middleton Field Airport, Evergreen, Alabama, and located 49 miles southeast of the crash site. The 0853 surface weather observation was, wind from 030 degrees at 5 knots, visibility 1 3/4 miles in moderate rain and mist, ceiling broken at 2,400 feet, overcast at 6,500 feet, temperature 46 degrees Fahrenheit, dew point 45 degrees Fahrenheit, altimeter 30.13 inches of Mercury. Remarks: automated observation system, sea level pressure 1020.1-mb, precipitation in the last hour 0.19 inches, 6-hour rainfall 0.24 inches, 3-hour pressure tendency fallen 3.0-mb.

The 0842 special observation for Middleton Field Airport was, wind from 050 degrees at 6

knots, visibility 1 1/2 miles in heavy rain and mist, ceiling broken at 2,800 feet, overcast at 6,000 feet, temperature 46 degrees Fahrenheit, dew point temperature 45 degrees Fahrenheit, and altimeter 30.12. Remarks: automated observation system, precipitation since last hour 0.13 inches.

The next closest observation location was from Key Field Airport, Meridian, Mississippi, located approximately 56 miles west of the accident site. The 0853 surface weather observation was, wind from 090 degrees at 5 knots, visibility 2 1/2 miles in heavy rain and mist, ceiling overcast at 2,800 feet, temperature 9 degrees C, dew point 8 degrees C, altimeter 30.10 inches of Mercury. Remarks: automated observation, sea level pressure 1019.1-mb, precipitation last hour 0.28 inches, 6-hour rainfall 0.72 inches, 3-hour pressure tendency fallen 1.2-mb.

The National Weather Service issued Convective SIGMET 47C at 0753 for portions of Alabama, Mississippi, Louisiana, Arkansas, and coastal waters was valid until 0955 for an area of embedded thunderstorms moving from 240-degrees at 20 knots, with tops to 37,000 feet. At 08:55 Convective SIGMET 51C updated the boundaries of the advisory. The advisor warned of an area of embedded thunderstorms moving from 240 at 20 knots, with tops to 38,000 feet. The accident site was located within the boundaries of the advisory.

The National Center for Environmental Prediction forecast for clear air turbulence indicated a high probability of turbulence across central Alabama. The forecast was confirmed by an air carrier report north-northwest of the accident site that reported moderate to severe turbulence at 35,000 feet.

WRECKAGE AND IMPACT INFORMATION

The main forward cabin wreckage was located north of County Road 32 in a wooded swampy area 1.31 miles northwest of Arlington, Alabama. The remaining empennage was located .31 nautical miles southwest of the main forward cabin, and 1.53 miles northwest of Arlington, Alabama.

Examination of the crash site revealed the airplane rested on its right side. Three slash marks were present on the side of a tree located to the right of the main cabin area 18 feet above the base of the tree. There was no evidence of a crash debris line.

The engine assembly was displaced to the left. The engine cowling was damaged on both sides and the bottom. The propeller spinner was crushed and remained attached to the propeller hub. The propeller assembly was attached to the engine crankshaft propeller flange. Both propeller blades remained in their propeller hub. One propeller blade exhibited torsional twisting, "S" bending, and chord wise scarring on the camber and aft side of the propeller blade. The remaining propeller blade exhibited torsional twisting and was bent forward at midspan. The nose gear was in the extended position. The landing gear lever in the cockpit was in the retracted position.

The forward baggage compartment was buckled aft and up. The baggage door was attached to the airframe and in the open position. The door lock was in the latched position. The cabin

windshield was broken and the cabin roof was crushed to the left and inward. The cabin roof skin separated 6-feet aft of the instrument panel. Diagonal crushing and scarring was present on the right side and top of the cabin roof next to the fourth passenger window. Black and maroon transfer marks were present on the right side of the fuselage, cabin roof, and extended over to the left cabin door. The airplane was painted maroon and white and was equipped with black deice boots. The cabin floor was compressed upward. The elevator control cables were connected at the pilot control column and extended aft to the broken and separated elevator bell crank. The left and right rudder cables were connected at the rudder bar sector assembly. The left rudder cable separated 4-feet aft of the rudder bar. The right rudder cable separated 1 foot aft of the rudder bar.

The right wing remained attached at the wing root. The forward and aft spar attachments were attached to the airframe. The right wing separated 7-feet outboard of the wing root near the main spar splice with 7-feet of the inboard flap. This separation area containing the forward spar, main spar, and aft spar were forwarded to the NTSB Materials Laboratory for further examination. The examination revealed all fracture surfaces were consistent with overstress fracturing and there was no evidence of pre-existing conditions or fatigue damage observed. The remaining outboard section of the wing, flap, and right aileron were not located. The right flap push pull rod separated and impact damage was noted at the wing root. The landing gears are held in the up position by hydraulic pressure. The hydraulic lines were found separated and the right main landing gear was found in the transit position. The right main fuel tank was ruptured. The header fuel tank was not ruptured and fuel was present in the header tank. The aileron control cable was intact from the pilot control column and separated 5-feet outboard of the wing root.

The aft section of the fuselage separated forward of the left cabin door and the fuselage came to rest upright. The three static ports were clear and unobstructed. The cabin floor was compressed upward. Black and maroon transfer marks were present on the right emergency exit window and extended diagonally over the cabin roof to the main cabin door. An 8-inch tree penetrated the right side of the fuselage in the cabin area next to the No. 6 seat. The right side of the fuselage was crushed inward and upward extending aft to the rear-pressure bulkhead. The tail section was partially separated aft of the pressurized bulkhead. The left and right rudder cables separated near the mid cabin area. The separated cables were attached to the broken and separated rudder bell crank.

The dorsal fin separated from the fuselage and was attached to the vertical fin. The vertical fin was damaged at the rear vertical fin attachment point. The rudder separated from its attachment points and was located behind the tail cone. The rudder stops were intact. The horizontal stabilizer separated and was not located. The elevator was not located. The elevator stops were damaged. The aft 32 inches of the empennage and tail cone were forwarded to the NTSB Materials laboratory for further examination. The examination revealed all fracture surfaces were consistent with overstress fracturing and no evidence of pre-existing conditions or fatigue damage observed. The left side of the fuselage was crushed inward 18-inches aft of the left rear passenger window. The left side of the fuselage was resting against a 4-inch tree. The cabin door was attached to the airframe and was in the open position. The door latch was in the closed position.

The left wing remained attached at the forward and aft wing attachments. The top and bottom main spar cap was separated and the wing was bent downward. The leading edge of the wing

received impact damage 9-feet outboard of the wing root, and the outboard wing tip was damaged. The pitot tube was clear and unobstructed. The left aileron was not recovered. The left flap was attached to its attach points and was in the retracted position. The trailing edge of the flap was damaged 3-feet outboard of the wing root extending outboard 3-feet. The flap push pull rod separated at the flap bell crank. The flap jackscrew displayed 3 1/2 threads and was 5/8 inch in length. The left main landing gear was in the down and locked position. Both fuel caps were in place with a tight seal. The left main fuel tank was ruptured. The left header tank was not ruptured and fuel was present in the header tank. The aileron control cable was intact from the pilot control column to the left aileron sector. The aileron stops were intact and were damaged. The balance cable separated at the mid cabin section.

The engine assembly received damage. The left inner cooler was intact, the right inner cooler received impact damage. The left and right turbochargers were not damaged. Both turbine shafts rotated freely when turned by hand. The exhaust system was not damaged. The fuel manifold valve, lines, and fuel nozzles No.2, No.4, No.5 and No. 6 were not damaged. The No. 1 and No.3 fuel nozzle received damage. The right side engine baffling received impact damage. The waste gate actuator, oil cooler, oil filter canister, turbo controller, oil pump, scavenge pump, fuel pump, starter adapter, starter motor, both alternators, air conditioner compressor, oil sump, air/oil separator, magnetos, and the throttle body and metering unit were not damaged.

The crankcase and crankshaft propeller flange were not visibly damaged. The No. 1 and No. 3 cylinder fins received impact damage. The No. 1 and No. 3 cylinders top spark plugs received impact damage. All top spark plugs were removed and all electrodes were normal when compared to the Champion Aviation Check-A-Plug Chart. The electrodes were clean and were light tan in color. The piston crowns were tan in color and were absent of carbon and oil. The No.1 cylinder top and bottom ignition leads were severed at the spark plug. The No. 3 top ignition lead was severed at the spark plug. The remaining ignition harness was not damaged. The No. 1 cylinder exhaust and intake valve covers received impact damage. The No.2, No.4, No.5, and No.6 cylinders were not damaged. The No.1 and No. 3 induction tubes received impact damage at the cylinders. The induction tube from the right inner cooler to the induction manifold received impact damage. Fuel was present in the fuel pump supply line and in the vapor pressure return line. The fuel pump mixture arm was not damaged. The mixture arm moved freely through its full range of travel.

The following items of work were accomplished to facilitate a functional check of the engine. The No.1 and No.3 sparkplugs and the induction tubes were damaged and replaced. The No.1 and No.3 fuel injection nozzles were replaced. The engine was mounted on a test stand and an alternate fuel supply was attached to the fuel pump inlet fitting. A fuel line was connected to the fuel vapor return line. An electrical fuel pump was installed in the fuel supply line to the engine. A test propeller and magneto grounding wires were installed. An electronic tachometer was not available for the engine run. The engine was started and the power was advanced to about 2000 rpm and a magneto check was performed with no anomalies. The power was advanced to about 2500 rpm, reduced to the idle position, and shutdown with the mixture control.

MEDICAL AND PATHOLOGICAL INFORMATION

The Alabama Department of Forensic Services conducted a postmortem examination of the private pilot, on February 25, 2004. The reported cause of death was "multiple blunt force injuries."

Postmortem toxicology of specimens from the pilot was performed by the Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, Oklahoma. The results were negative for carbon monoxide, cyanide, and ethanol. Metoprolola was detected in the blood and urine.

The Wilcox County Coroner issued a death certificate on the deceased passenger on February 23, 2004. The cause of death was "multiple blunt force injuries." No toxicology testing was performed.

TEST AND RESEARCH

The pilot and co-pilot altimeter, airspeed indicators, vertical speed indicators, attitude indicators, and co-pilot's directional gyro were removed and examined. No anomalies were noted.

The MALIBU PA-46-310P PILOT'S OPERATING HANDBOOK states in Section 2, Limitations, that the maximum structural cruising speed is 173 knots indicated airspeed (KIAS) or 170 knots calibrated airspeed (KCAS). It further states, "Do not exceed this speed except in smooth air and then only with caution." The co-pilot airspeed indicator at the crash site indicated 180 KCAS. The design maneuvering speed (VA) at 4,100 LBS. Gross weight is 135 KIAS or 133 KCAS. The manual states "Do not make full or abrupt control movements above this speed". Review of radar and winds aloft data for N9103Z revealed the estimated calibrated airspeed from 0842 to 0847 was about 145 KCAS.

ADDITIONAL INFORMATION

The wreckage was released to Atlanta Air Recovery, Griffin, Georgia, on August 24, 2004. The pilot's logbooks were released to the son of the pilot on March 18, 2004.

Pilot Information

Certificate:	Private	Age:	67, 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):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	04/16/2002
Occupational Pilot:		Last Flight Review or Equivalent:	06/20/2003
Flight Time:	5021 hours (Total, all aircraft), 884 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N9103Z
Model/Series:	PA-46-310P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	4608028
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	05/07/2003, Annual	Certified Max Gross Wt.:	4100 lbs
Time Since Last Inspection:	50 Hours	Engines:	1 Reciprocating
Airframe Total Time:	2155.15 Hours at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	TSIO-520-BE
Registered Owner:	Robert M. Compton Jr.	Rated Power:	310 hp
Operator:	Robert M. Compton Jr.	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	GZH, 260 ft msl	Distance from Accident Site:	50 Nautical Miles
Observation Time:	0853 CST	Direction from Accident Site:	330°
Lowest Cloud Condition:	Scattered / 2400 ft agl	Visibility	2 Miles
Lowest Ceiling:	Overcast / 6500 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	35°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.13 inches Hg	Temperature/Dew Point:	8°C / 7°C
Precipitation and Obscuration:			
Departure Point:	Panama City, FL (PFN)	Type of Flight Plan Filed:	IFR
Destination:	Tulsa, OK (RVS)	Type of Clearance:	IFR
Departure Time:	0738 CST	Type of Airspace:	Class A

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	32.067222, -87.612778

Administrative Information

Investigator In Charge (IIC):	Carrol A Smith	Report Date:	01/24/2005
Additional Participating Persons:	Richard J Henry; Birmingham FSDO-09; Vestavia Hills, AL Robert P Martellotti; New Piper Aircraft Company; Vero Beach, FL Al Butler; Teledyne Continental; Mobile, AL		
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.ntsb.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](#).