Aviation Investigation Final Report

Location:	Gorman, Texas	**Accident Number:**	FTW02FA192
Date & Time:	June 30, 2002, 12:00 Local	**Registration:**	N8681P
Aircraft:	Piper PA-24-260	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The instrument-rated pilot lost control of the airplane, which experienced an in-flight break-up, after encountering instrument meteorological conditions (IMC) while on a visual flight rules (VFR) cross-country flight. There was no record of a weather briefing or air traffic control (ATC) communications for the accident airplane. Radar data, assumed to be that of the accident airplane, revealed it was climbing from 7,300 to 8,500 feet before descending rapidly to 4,700 feet, which was the altitude of the last radar return. The radar data depicted the airplane making a left turn followed by a right turn (the right turn took place during the rapid descent). The aircraft fuselage was located approximately 4,500 feet southwest from the last radar return. The wreckage was distributed along a 1.4-mile wreckage path. Weather radar data at the time of the accident was overlayed onto the ATC radar data. The combined information depicted the airplane flying through the leading edge of a precipitation cell that was in the area. The pilot's logbooks were not located, therefore, his instrument currency and experience was left undefined. No anomalies were noted with the airplane, engine, or its flight instruments that would have contributed to the accident. No distress calls were received from the airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of control and the exceedence of the design limits of the airplane which resulted in an in-flight break-up. A factor was inadvertent VFR flight into IMC.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings
1. (F) VFR FLIGHT INTO IMC - INADVERTENT - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

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

Occurrence #3: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED
4. HORIZONTAL STABILIZER SURFACE - OVERLOAD
5. HORIZONTAL STABILIZER SURFACE - SEPARATION
6. WING - OVERLOAD
7. WING - SEPARATION

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
8. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On June 30, 2002, approximately 1200 central daylight time, a Piper PA-24-260 single-engine airplane, N8681P, was destroyed following an in-flight breakup near Gorman, Texas. The airplane was registered to and operated by the pilot. The instrument-rated private pilot and three passengers sustained fatal injuries. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 personal flight. The cross-country flight originated from the Lamesa Municipal Airport, Lamesa (2F5), Texas, stopped at the San Angelo Regional/Mathis Field (SJT), San Angelo, Texas, and at the Dublin Municipal Airport (9F0), Dublin, Texas, to pick up passengers. At 1145, the flight departed Dublin for the return flight to Lamesa.

At 1150, a witness heard a low flying airplane, and one minute later he heard a "thud." The witness stated that the wind was blowing out of the southeast at 20 miles per hour and light rain and low clouds existed near the accident site. No radio or distress calls were received from the airplane. The Civil Air Patrol (CAP) received Emergency Locator Transmitter (ELT) signals at 1428, 1452, and 1522. At 1600, the CAP initiated a search, and at 2045, the accident site was located.

Air traffic control (ATC) radar data was obtained from information recorded by the FAA. Between 1151:09 and 1154:10, the radar data depicted an airplane with a mode C transponder code "1200, " flying northwest and climbing from 7,300 feet to 8,500 feet. Radar plots showed that the airplane made a left turn followed by a right turn. The last three radar returns (while the aircraft was in the right turn), showed the airplane descending from 8,500, to 7,600 feet and 4,700 feet, respectively. The 4,700-foot radar return was the last recorded. The airplane's fuselage was located approximately 4,500 feet southwest of the last radar return.

PERSONNEL INFORMATION

The private pilot held single-engine land, multi-engine land and instrument airplane ratings. He held a valid third class medical certificate that was issued on January 11, 2000, with the limitation, "Must have available glasses that correct for near vision." The pilot's logbooks were not made available to the NTSB investigator-in-charge (IIC), but his last medical certificate application indicated he had accumulated a total of 7,900 flight hours. It is unknown whether the pilot was current in instrument flying, when his last biennial flight review took place, or how much instrument flight time he had accumulated.

AIRCRAFT INFORMATION

The 4-seat airplane (serial number 24-4129) was equipped with retractable landing gear, a constant speed propeller, and a 260-horsepower Lycoming IO-540-D4A5 engine (serial number L-21069-48A). The maintenance records were not located; however, a repair order for the aircraft's last annual inspection was obtained. The annual inspection was started on September 10, 2001, and was signed off on October 1, 2001. The repair order listed the airworthiness directives complied with, the emergency locator due date, and engine compression check results. No anomalies or repairs were listed. According to the repair order, the aircraft tachometer reading and aircraft total time was 5,090.0 hours.

METEOROLOGICAL INFORMATION

The nearest weather observation facility was located in Mineral Wells, Texas, which was approximately 50 statute miles northeast of the accident site. At 1207, the weather facility issued a special observation reporting the wind from the southeast at 13 knots gusting to 19 knots, visibility 5 statute miles in light rain and mist, and few clouds at 1,800 feet, broken clouds at 3,900 feet, and an overcast layer at 5,000 feet agl. The temperature was 72 degrees Fahrenheit and the dew point was 70 degrees Fahrenheit.

The Abilene, Texas, weather observation facility, located approximately 70 miles west-southwest of the accident site, issued a weather report at 1152, which reported the wind from 140 degrees at 5 knots, visibility 10 statute miles, and broken clouds at 4,400 and 6,000 feet agl. The temperature and dew point were 73 and 72 degrees Fahrenheit, respectively. The altimeter setting was 30.08 inches of mercury.

The ATC radar data was plotted along with weather radar data obtained from the Dyess Air Force Base NEXRAD (Next Generation Radar) facility. A review of the weather radar animation revealed precipitation moving through the accident area from the south-southeast to the north-northwest. An overlay of the radar track with the NEXRAD image showed that at the time of the accident, the airplane was positioned along the leading edge of a precipitation cell that was moving to the north.

There was no record of a weather briefing for the accident airplane.

WRECKAGE AND IMPACT INFORMATION

The accident site was located at 032 degrees 15.643 minutes north latitude and 098 degrees 42.535 minutes west longitude. The wreckage was distributed along a linear path that measured 1.40 miles in length and was oriented from the southeast to northwest. Documentation of the wreckage path began with the fuselage, which was located at the southeast edge of the path. The main wreckage consisted of the propeller, engine, and fuselage from the cockpit aft to the tail cone. The fuselage came to rest inverted in a field against farm equipment. The main wreckage was compressed, measuring approximately 2 feet in height from the belly to the top of the fuselage. The cabin roof was separated from the fuselage. The fuselage, aft of the cabin, was folded over, coming to rest on the front fuselage

belly and the remaining empennage remained lodged in the farm equipment. The right wing was separated outboard from the flap, and the left wing was separated outboard from the landing gear wheel well. The right and left main landing gears were found in the retracted position.

Examination of the fuselage revealed the fuel selector was positioned on the right main fuel tank. The altimeter was broken and the face was recovered, displaying an altimeter reading of 1,380 feet with a Kollsman window setting of 30.08 inches of mercury. The airspeed indicator was recovered without its needles. The tachometer at the accident site read 5,104.39 hours.

Examination of the left main spar section that remained attached to the fuselage revealed the lower spar cap was bent up and spar web was torn from the bottom to the top. The upper spar cap was bent aft. The separated spar cap sections displayed 45-degree sheer lips. The left aileron was separated from the left wing. Its balance weight remained attached and its control cables, though separated, displayed a broomstraw appearance. The outboard section of the left wing displayed paint transfers similar to those found on the vertical stabilizer. The left flap was recovered and was found separated into three main components. The outboard hinge attachment point had separated from the outboard section of the flap. The skin surrounding the hinge point was bent upward. Another separation, near the middle of the flap, displayed upward bending along with compression of the top flap skin.

Examination of the right wing revealed the outboard section separated approximately 110 inches from the fuselage. The right wing fracture faces displayed irregular surfaces, and did not reveal any corrosion. The right outboard wing section was recovered near the left outboard wing section. The aileron control sector and attaching components were separated from the right wing, but remained attached to the aircraft fuselage via the control cables. The right aileron was separated from the outboard wing section and was fractured in two. The right flap remained attached to the right wing and appeared to be in the retracted position. Blue colored residual fluid, similar in smell and color to that of 100LL aviation gasoline, was found in the right wing fuel tank.

The vertical stabilizer and rudder were both separated and recovered along the debris path. A portion of the vertical stabilizer front spar remained attached to the empennage, and was bent aft and to the right. Diagonal impact marks were noted near the base of the vertical stabilizer and were oriented from the front left side to the aft right. Impact damage and paint transfers were noted on the left side of the vertical stabilizer. A hole was noted on the left side of the vertical stabilizer, which displayed the same general size and dimensions as the aileron balance weight. The horizontal stabilator's outboard sections were separated near the mid-span area (approximately 24-30 inches outboard of the mid point). Examination of both the left and right horizontal stabilator's separation areas revealed the spars and skins were bent downward. The skin on top of the right stabilator appeared to be stretched along the front spar and the skin on the bottom appeared to be compressed.

The airplane's primary flight control surfaces were located within the wreckage distribution

path.

The engine remained attached to its mount, and the mount remained attached to the firewall. Fuel was found in the fuel injector. The fuel flow divider was separated from its attachment point, and the injector nozzle fuel lines were crushed. The oil filter was removed and cut open. No debris or contaminants were noted. The #2, 4, & 6 cylinders sustained crushing damage to their push rods and rocker arm covers and rocker arms. The engine crankshaft could not be rotated due to damage sustained by the #2, 4, and 6 cylinders and pushrods.

The vacuum pump was removed and rotated manually. Compression and suction pressures were noted on the input and output ports. The attitude indicator sustained impact damage, which destroyed the face of the instrument. The attitude indicator was disassembled, and light rotational scoring was noted on both the gyro casing and the gyro in the same relative position (aft side of the case and gyro; closest to the pilot).

Examination of the airspeed indicator under both a magnifying lens and a black light revealed no impressions in the shape of a needle.

The propeller blades remained attached to the propeller hub; however, the hub was separated from the engine crankshaft flange. Though it was separated from the flange, the propeller hub came to rest within the spinner cone and adjacent to the flange attach point. One propeller blade, which was embedded in the dirt at the accident site, displayed light rubbing (polishing) of the propeller paint, and a slight (approximately 5 degrees) forward bending. The other blade displayed no notable damage.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was conducted on the pilot by the Tarrant County Office of Chief Medical Examiner on July 1, 2002. According to the autopsy report, the pilot died as a result of "massive blunt force trauma."

Toxicological testing was conducted by the Federal Aviation Administration (FAA) Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma. Toxicology tests for cyanide, ethanol, and drugs were positive for 3.964 ug/ml of acetaminophen detected in the pilot's blood.

Pilot Information

Certificate:	Private	**Age:**	64,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	January 11, 2000
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	7900 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8681P
Model/Series:	PA-24-260	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-4129
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 1, 2001 Annual	**Certified Max Gross Wt.:**	2900 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	5090 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	IO-540-D4A5
Registered Owner:	Ronald N. Raney	**Rated Power:**	260 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MWL	**Distance from Accident Site:**	50 Nautical Miles
Observation Time:	12:07 Local	**Direction from Accident Site:**	45°
Lowest Cloud Condition:	Few / 1800 ft AGL	**Visibility**	5 miles
Lowest Ceiling:	Broken / 3900 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	13 knots / 19 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	22°C / 21°C
Precipitation and Obscuration:	N/A - None - Haze		
Departure Point:	Dublin, TX (9F0)	**Type of Flight Plan Filed:**	None
Destination:	Lamesa, TX (2F5)	**Type of Clearance:**	None
Departure Time:	11:45 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	32.260555,-98.708885

Administrative Information

Investigator In Charge (IIC):	Ragogna, Jason
Additional Participating Persons:	John Butler; Textron Lycoming; Williamsport, PA Michael McClure; New Piper Aircraft; Vero Beach , FL Lou Vargo; Federal Aviation Administration; Fort Worth, TX
Original Publish Date:	September 1, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=55079