



National Transportation Safety Board Aviation Accident Final Report

Location:	ROCHESTER, MN	Accident Number:	CHI95FA061
Date & Time:	12/22/1994, 1152 CST	Registration:	N133MA
Aircraft:	PIPER PA-46-350P	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Fatal

Flight Conducted Under: Part 91: General Aviation - Personal

Analysis

THE AIRPLANE DEPARTED ON RUNWAY 31 IN INSTRUMENT METEOROLOGICAL CONDITIONS (IMC) AND TURNED RIGHT TO A HEADING OF 090 DEGREES. RADAR CONTACT (ARTS TAG) WAS ACQUIRED ABOUT 1 TO 2 MILES NORTH OF THE AIRPORT. REPORTEDLY, THE ARTS TAG WOULD TYPICALLY BE ACQUIRED AS THE AIRPLANE CLIMBED THROUGH AN ALTITUDE OF ABOUT 700 FEET AGL. SUBSEQUENTLY, THE AIRPLANE CRASHED ABOUT 2 MILES NORTH OF THE AIRPORT. A WITNESS REPORTED HEARING A LOUD ENGINE NOISE BEFORE THE PLANE CRASHED. THE WRECKAGE PATH WAS ORIENTED ALONG A WESTERLY HEADING AND OVER AN AREA OF ABOUT 380 FEET. THERE WAS EVIDENCE OF AN IN-FLIGHT BREAKUP. AN OUTBOARD PORTION OF THE RIGHT WING WAS FOUND ABOUT 150 FEET FROM THE MAIN IMPACT CRATER. AN EXAMINATION REVEALED THE RIGHT WING HAD FAILED NEAR THE PRODUCTION SEAM. THE RIGHT SPAR EXHIBITED FEATURES 'TYPICAL OF AN UPWARD BENDING OVERSTRESS SEPARATION.' EXAMINATION REVEALED NO OTHER EVIDENCE OF PREIMPACT AIRCRAFT OR ENGINE MALFUNCTION. THE AIRPLANE'S GROSS WEIGHT WAS ESTIMATED TO BE ABOUT 4696 POUNDS; ITS MAX LIMIT WAS 4300 POUNDS. THE PILOT'S LOGBOOK INDICATED THAT HE HAD FLOWN ONLY 2 INSTRUMENT APPROACHES IN THE PREVIOUS 14 MONTHS.

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 CONTROL OF THE AIRPLANE, WHILE CLIMBING IN INSTRUMENT METEOROLOGICAL CONDITIONS (IMC) AFTER TAKEOFF. FACTORS RELATED TO THE ACCIDENT WERE: FOG, LOW CEILING, THE PILOT'S LACK OF RECENT INSTRUMENT EXPERIENCE, AND THE EXCESSIVE GROSS WEIGHT OF THE AIRPLANE.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: CLIMB - TO CRUISE

Findings

1. (F) WEATHER CONDITION - FOG
2. (F) WEATHER CONDITION - LOW CEILING
3. (F) AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND
4. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
5. (F) LACK OF RECENT INSTRUMENT TIME - PILOT IN COMMAND

Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: DESCENT - UNCONTROLLED

Findings

6. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND
7. WING - OVERLOAD
8. WING - SEPARATION

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On December 22, 1994, at 1152 central standard time, a Piper PA46-350P airplane, N133MA, was destroyed when it impacted the terrain shortly after departure from the Rochester Municipal Airport, Rochester, Minnesota. The private pilot and two passengers sustained fatal injuries. The personal flight originated about 1148 and was conducted under 14 CFR Part 91. An IFR flight plan was filed to Guntersville, Alabama, and instrument meteorological conditions prevailed.

The local controller in the Rochester Airport Air Traffic Control Tower cleared N133MA to take-off on runway 31. He issued a right turn to a heading of 090 when the airplane was approximately 1/4 mile past the departure end of the runway. He observed the airplane in the right turn. He last observed the airplane on the DBRITE scope about two miles north of the airport on "what appeared to be an east-south-east track."

The radar controller reported that he observed a radar target depart runway 31 and turn east. The automated radar terminal systems (ARTS) tag was acquired approximately one to two miles north of the airport. He was unable to establish radio contact and the ARTS tag dropped into "coast" status.

The tower manager reported in a telephone interview that he believed the ARTS tag would typically be acquired as the airplane climbed through an altitude of approximately 700 feet AGL. The ARTS II radar installed at the Rochester Airport does not include a recording capability.

A quality assurance representative at the Minneapolis Air Route Traffic Control Center (ARTCC) reported that the airplane was not recorded by the ARTCC radar. He said an airplane would have to climb to a few thousand feet AGL before it could be interrogated.

Several people heard the airplane prior to the impact, however, no eye witnesses were located. A private pilot, who was hunting north of the airport, described the engine noise, immediately prior to the impact, as very loud as when "an aircraft lands and reverses its prop."

During a telephone interview, the pilot of a Piper Cheyenne who departed on runway 31 immediately after the accident airplane, said he observed N133MA prior to departure but noted nothing abnormal. He reported the weather was about 200 feet overcast and the tops of the clouds were about 3,500 feet as he climbed through them. He said he experienced "nothing abnormal" and it was fairly calm with a slight left crosswind, no windshear, no turbulence, and no significant icing.

PERSONNEL INFORMATION

The pilot's logbook listed two instrument approaches and 5.2 hours of actual instrument flight in the previous 14 months.

WRECKAGE AND IMPACT INFORMATION

The NTSB on scene investigation began December 22, 1994, about 1700 central standard time. The wreckage was located about two miles north of the Rochester Municipal Airport, near 5435 31st Avenue SW. The wreckage path was on a heading of 260 degrees.

The first items in the wreckage path were fragments of the right flap. The right wing, outboard

of the production seam, was 137 feet west and 72 feet south of the flap fragments. The main impact crater was 309 feet from the flap fragments at N43-56.43 W92-30.34. An impression of the left wing, in the soil, extended south from the crater. A four foot impression of the inboard portion of the right wing extended to the north. The fuselage and pieces of the left wing were 27 feet past the crater. The inboard right wing and fragments of the left wing were strewn for 76 feet past the crater.

The fuselage was located on a heading of 250 degrees. The forward cabin area was destroyed with severe compression damage and accordion buckling along both sides. The left wing, which was located with the main wreckage, was fractured at station 116. The inboard section of the spar showed slight upward bending. The leading edge skin was separated outboard of station 116. The right wing was fractured between stations 117 and 120. Sections of the fractured spar from the right wing were retained for subsequent examination.

Examination of flight control continuity revealed no evidence of preimpact mechanical malfunction. The six and one half threads were exposed on the forward portion of the elevator trim jack screw. The aft fuselage, immediately forward of the empennage, was bent upward approximately 90 degrees. The horizontal stabilizer forward spar attach points were intact. The lower skin of the horizontal stabilizer exhibited slight downward buckling. The right tip of the horizontal stabilizer was bent upward and the left tip was bent downward.

The engine was located beneath the cabin area in an inverted, aft facing position. Examination of the engine revealed no evidence of preimpact malfunction. One propeller blade remained attached to the hub and was wrapped around the top of the engine. The other was recovered from within the main crater. Both blades exhibited torsional bending, leading edge gouges and chordwise scratches.

One vacuum pump was destroyed. The rotor and vanes were not located. In the other vacuum pump, the vanes were intact and remained in place in the rotor. The primary and standby attitude indicators and both turn and bank indicators exhibited rotational scoring on the drums of the gyros. The Kohlsman window in the primary altimeter was set to 30.21 and the altimeter indicated 1,220 feet.

220 pounds of luggage and personal effects were collected from in and around the cabin area. 100 pounds of antique lamps and servicing equipment were recovered from the forward baggage compartment. An antique brass cash register, wedged behind seat 2B, household items, and books recovered from the aft cabin area weighed a total of 139 pounds.

A line boy at the Rochester Airport reported he had "topped off" the airplane with fuel when it arrived there on December 11. He said the airplane remained in the back of a hangar until it departed on the day of the accident.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsy of the pilot was performed by the Olmsted County Coroner, 2300 Government Center, 151 Fourth Street S. E., Rochester, Minnesota 55904-3710. Toxicological testing was negative for all tests conducted.

TESTS AND RESEARCH

The airplane annunciator panel, autopilot annunciator panel, and fractured section from the right wing spar were recovered and examined by a National Resource Specialist at the NTSB laboratory in Washington, D. C. All bulb filaments exhibited little or no stretching. The spar

section exhibited features "typical of an upward bending overstress separation."

The autopilot servos and mounts, altitude alerter, primary attitude indicator, yaw computer, primary directional gyro, yaw rate gyro, and communications radios were examined at Allied Signal, Inc., Olathe, Kansas, under the supervision of an FAA Aviation Safety Inspector. The primary attitude gyro exhibited rotational scoring on the drum. All servo clutches were operative and no evidence of preimpact malfunction was reported.

Weight and balance data was acquired from the original aircraft record dated February 22, 1993. The aircraft logbook reflected the addition of a flight phone since that date. The maximum weight for takeoff specified in the pilot operating handbook is 4,300 pounds. The forward center of gravity limit, at the maximum gross weight is 143.3 inches.

	Weight	Arm	Moment
Basic Operating Weight	3067.1	134.7	413268
Pilot	170	135.5	23035
Passengers 1B	120*	135.5	16260
2A	178	177	31506
Baggage	220	198*	43560
	139	198*	27522
	100	88.6	8860
Zero Fuel Weight	3994.1	141.2	564011
Fuel, 120 Gallons	720	150.31	108223
Start, taxi, takeoff fuel	-18.	150.31	-2706
Total	4696.1	142.5	669528

* investigator's estimate

ADDITIONAL DATA/INFORMATION

Following the on-scene portion of the investigation, the wreckage was released to Mr. Pete McClure of Mid-America Consulting, Inc.

Parties to the investigation were the Federal Aviation Administration, Piper Aircraft Corporation, Allied Signal General Aviation Avionics, and Textron Lycoming.

Pilot Information

Certificate:	Private	Age:	57, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
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:	06/21/1994
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	2500 hours (Total, all aircraft), 96 hours (Total, this make and model), 10 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	PIPER	Registration:	N133MA
Model/Series:	PA-46-350P PA-46-350P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	4622133
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	09/20/1994, Annual	Certified Max Gross Wt.:	4300 lbs
Time Since Last Inspection:	26 Hours	Engines:	1 Reciprocating
Airframe Total Time:	106 Hours	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	TIO-540-AE2A
Registered Owner:	RYDERS REPLICA FIGHTER MUSEUM	Rated Power:	350 hp
Operator:	RYDERS REPLICA FIGHTER MUSEUM	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	RST, 1317 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1150 CST	Direction from Accident Site:	0°
Lowest Cloud Condition:	Partial Obscuration / 0 ft agl	Visibility	1 Miles
Lowest Ceiling:	Overcast / 400 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	14 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	1°C / 0°C
Precipitation and Obscuration:			
Departure Point:		Type of Flight Plan Filed:	IFR
Destination:	GUNTERSVILLE, AL (8A1)	Type of Clearance:	IFR
Departure Time:	0000	Type of Airspace:	Class C

Airport Information

Airport:	ROCHESTER MUNICIPALE (RST)	Runway Surface Type:	Concrete
Airport Elevation:	1317 ft	Runway Surface Condition:	
Runway Used:	31	IFR Approach:	None
Runway Length/Width:	7533 ft / 150 ft	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:	

Administrative Information

Investigator In Charge (IIC): WESLEY M ROBBINS, **Report Date:** 08/04/1995

Additional Participating Persons: L. JOHNSON W. TOURTILLOTT; MINNEAPOLIS, MN
TIM HARDEE; OLATHE, KS
GREGORY A ERIKSON; WAYNE, IL
CARLOS LATONI; VERO BEACH, FL

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.nts.gov/pubdms/>.

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