Aviation Investigation Final Report

Location:	BAY MINETTE, Alabama	**Accident Number:**	ATL94FA056
Date & Time:	March 1, 1994, 11:15 Local	**Registration:**	N55MM
Aircraft:	CESSNA P210R	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation		

Analysis

THE PILOT RECEIVED A FULL WEATHER BRIEFING BEFORE THE IFR FLIGHT. CONVECTIVE THUNDERSTORM ACTIVITY WAS FORECAST FOR THE ROUTE OF FLIGHT, THERE WERE NUMEROUS THUNDERSTORMS IN THE AREA AT THE TIME OF DEPARTURE, AND A TORNADO WATCH WAS IN EFFECT AT THE TIME OF THE ACCIDENT. AFTER LEVELING AT FL210, HE REPORTED THAT CONDITIONS WERE 'GETTING ROUGH.' SHORTLY THEREAFTER, HE REPORTED PROBLEMS WITH THE AIRCRAFT GYRO SYSTEM, THEN SAID ALL GYRO'S WERE 'OUT.' HE ELECTED TO DESCEND IN AN ATTEMPT TO LOCATE VFR WEATHER. AS THE AIRCRAFT DESCENDED, RADIO & RADAR CONTACT WERE LOST. WRECKAGE WAS FOUND DISTRIBUTED OVER AN AREA ABOUT 4-1/2 MILES IN LENGTH. AN EXAM OF THE WRECKAGE REVEALED EVIDENCE THAT THE WINGS HAD FAILED IN AN UPWARD DIRECTION. DURING AN EXAM OF THE VACUUM POWERED ATTITUDE GYRO, NO ROTATIONAL SCRATCHING WAS FOUND ON THE GYRO OR IN THE GYRO HOUSING. AN EXAM OF THE LEFT VACUUM PUMP REVEALED THAT THE PLASTIC DRIVE COUPLING HAD SIGNS OF HEAT STRESS & MELTING, THAT THE INTERNAL VEINS WERE BROKEN & CRACKED & THAT THERE WAS A DEPOSIT OF CARBON MATERIAL INSIDE THE HOUSING. THE RIGHT VACUUM PUMP HAD EVIDENCE OF ROTATIONAL SCRATCHING. THE GYROS SHOULD HAVE OPERATED WITH 1 VACUUM PUMP IN OPERATION.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT'S FAILURE TO MAINTAIN CONTROL OF THE AIRCRAFT DUE TO SPATIAL DISORIENTATION, AND EXCEEDING THE DESIGN STRESS LIMITS OF THE AIRCRAFT. FACTORS RELATED TO THE ACCIDENT WERE: THE PILOT'S FLIGHT INTO KNOWN ADVERSE WEATHER CONDITIONS, OVERCONFIDENCE IN HIMSELF AND THE AIRPLANE, FAILURE OF

THE LEFT VACUUM PUMP, PARTIAL LOSS OF THE VACUUM SYSTEM, AND AN INOPERATIVE ATTITUDE INDICATOR.

Findings

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

Findings
1. (F) WEATHER CONDITION - LOW CEILING
2. (F) WEATHER CONDITION - THUNDERSTORM
3. (F) WEATHER CONDITION - TURBULENCE(THUNDERSTORMS)
4. (F) FLIGHT INTO KNOWN ADVERSE WEATHER - INTENTIONAL - PILOT IN COMMAND
5. (F) OVERCONFIDENCE IN PERSONAL ABILITY - PILOT IN COMMAND
6. (F) OVERCONFIDENCE IN AIRCRAFT'S ABILITY - PILOT IN COMMAND

Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE - NORMAL

Findings
7. (F) ENGINE ACCESSORIES,VACUUM PUMP - FAILURE
8. (F) VACUUM SYSTEM - FAILURE,PARTIAL
9. (F) FLIGHT/NAV INSTRUMENTS,ATTITUDE INDICATOR - INOPERATIVE

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Findings
10. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
11. (C) SPATIAL DISORIENTATION - PILOT IN COMMAND

Occurrence #4: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: DESCENT - UNCONTROLLED

Findings
12. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND
13. WING - OVERLOAD
14. WING - SEPARATION

Occurrence #5: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On March 1, 1994, about 1115 central standard time, a Cessna P210R, N55MM, was substantially damaged following an in-flight breakup and collision with terrain near Bay Minette, Alabama. The private pilot and his three passengers were fatally injured in the accident. The aircraft was being operated under 14 CFR Part 91 by the pilot. Instrument meteorological conditions existed at the time of the accident, and an instrument flight rules flight plan was in effect. The flight departed New Orleans, Louisiana at about 1026, and was destined for Sarasota, Florida.

The pilot of N55MM contacted the Deridder Automated Flight Service Station (AFSS) at 2234 on the evening of February 28, 1994. He received a full weather briefing, weather outlook, and filed an instrument rules flight plan to Sarasota, Florida.

At 0952 on March 1, 1994 the pilot of N55MM again called DeRidder AFSS and obtained a standard pilot weather briefing from New Orleans, Louisiana to Sarasota, Florida.

At 1054 a broadcast was made to the attention of all aircraft regarding the hazardous weather information for Alabama, Florida and the coastal waters. The broadcast stated that convective SIGMET one eastern, and convective SIGMET's 40,41,and 42 central were available on HIWAS flight watch, or through the flight service stations.

At 1055, after reaching flight level 210, the pilot reported that it was " a little rough".

At 1100 the pilot of N55MM stated that he was having a problem with the aircraft gyro's, and was descending.

At 1103 the pilot of N55MM sated that all the aircraft gyro's were "out", and that he was continuing to descend in an attempt to find an altitude suitable for flight under visual flight rules.

At 1107 the pilot of N55MM was advised that there were no areas reported by local stations which were suitable for flight under visual flight rules, and the pilot advised that he would attempt to level off at 11,000 feet and maintain direction.

At 1109 the pilot of N55MM was given a radio frequency change to contact Pensacola Approach control. The pilot never contacted Pensacola, and no further radio contact was made with the flight.

At 1112 radar contact with the aircraft was lost.

The aircraft wreckage was located in a wooded area, and parts of the wreckage were distributed over an area approximately four and one half miles in length.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with airplane single engine and instrument airplane ratings. He held a third class medical certificate with limitations for the use of glasses while acting as pilot.

Witnesses at the Weschester County Airport in White Plains, New York, the airport where the aircraft was based, related the following. On or about the first week of January 1994, Mr. Weiser telephoned early in the week, and asked that his aircraft be fueled and prepared for a flight on Saturday morning. During the evening, on the Friday prior to the proposed flight, there was a snow storm, and about six inches of snow fell at the airport over night. Upon reaching the airport on Saturday morning, the airport personnel found that the taxiway's and ramp areas were blocked with snow. There was heavy freezing rain falling, and the outside temperature was about 29 degrees. No aircraft at the airport were attempting to land or depart. Mr. weiser arrived at the airport about 1030 AM, and was very upset that his aircraft was not prepared for the flight. He insisted that airport personnel clear the ramp area and de-ice his aircraft for flight. Mr. Weiser's wife, and airport personnel attempted to persuade him that the ice accumulation rate was too high for safe flight, and he stated that his aircraft was certified for flight into known icing conditions. After cleaning the ice and snow from the ramp area, Mr. Weiser attempted to depart the airport. After taxiing the aircraft less than 100 yards, the aircraft became bogged up in the snow, and Mr. Weiser was forced to abandon his planned flight.

A witness at the Lakefront Airport in New Orleans, Louisiana reported the following. Mr. Weiser and his passengers arrived at the airport around 0930 on the morning of March 1, 1994. He stated that at the time Mr. Weiser arrived, there were numerous thunderstorms in the vicinity of the airport, and low visibility at the airport. He asked Mr. Weiser why he did not stay and depart the following day when the weather would be better, and Mr. Weiser stated that "it(the weather) was no problem, and he could handle it".

AIRCRAFT INFORMATION

The Cessna P210R is an all metal, six place, high wing, single engine airplane equipped with a cabin pressurization system and retractable tricycle landing gear and designed for general utility purposes.

This aircraft was also equipped with the flight into known icing equipment package. This package, in addition to other items for flight into know icing conditions, included the installation of a dual vacuum pump system. Each pump is isolated from the vacuum operated

instruments, system air filter, and suction gage by a check valve manifold which allows a single pump to operate the vacuum system, should one pump fail. There is a suction gauge located on the upper left side of the instrument panel and it incorporates two red warning buttons, marked L and R, which extend visibly in the event either or both pumps fail. It is stated in the Dual Vacuum Pumps Supplement of the Pilot's Operating Handbook, that flight with one pump inoperative is possible, however, flight into instrument flight rules and/or flight into known icing conditions is not recommended.

This aircraft was also equipped with an airborne color weather radar, and a stormscope. Both of these pieces of equipment were designed for the purpose of weather detection and avoidance.

The aircraft flight load factor limits with the flaps retracted are +3.8G, and -1.52G. The design load factors are 150% of the flight load factors.

METEOROLOGICAL INFORMATION

The National Weather Service Outlook for the accident area at the time of the accident stated that there was an upper level shortwave trough continuing eastward across central Texas and Oklahoma. At the surface an inverted trough of low pressure extended from just off the southeast Texas coast to east central Mississippi. Another trough of low pressure extended from central Mississippi to near Savannah, Georgia. The greatest concentration of thunderstorms would continue from southeast Texas eastward along the gulf coast and inland 150 miles.

The National Weather Service issued Convective SIGMET 1E at 1055 central standard time, valid for Alabama, and Florida. The SIGMET stated that from 50 miles east of Birmingham, Alabama to 60 miles west of Tallahassee, Florida to 40 miles south southeast of Meridian, Mississippi to 20 miles east southeast of Bigbee, Mississippi to 50 miles east of Birmingham, Alabama there was an area of embedded thunderstorms, moving from 260 degrees at thirty knots, with tops to 35,000 feet. Tornadoes, hail to 2 inches, and wind gust, to 70 knots were possible in southern Alabama and the Florida panhandle.

The National Weather Service issued Convective SIGMET 40C at 1055 central standard time, valid for Louisiana, Mississippi, Alabama, Florida, and coastal waters. The SIGMET stated there was a line of severe thunderstorms 20 miles wide, from 40 miles north northwest of Baton Rouge, Louisiana to 50 miles south southwest of Crestview, Florida.

At the time of the accident, this investigator was located at the Continental Motors Factory in Mobile, Alabama. The factory is approximately 15 miles southwest of the accident site. At the time of the accident the weather in the area was observed by this investigator to be as follows: Severe thunderstorms in all quadrants with heavy rain, frequent cloud to cloud and cloud to ground lightning with wind gusts up to about 25 knots, ceilings in the area were about 500 feet overcast and visibility in rain and fog was reduced to less than 1/2 mile. There was a tornado

watch in effect at the time, and reports of tornado sightings in the area.

WRECKAGE AND IMPACT INFORMATION

The wreckage was distributed over an area approximately four and one half miles in length. The approximate magnetic bearing of the wreckage path was 210 degrees. The general terrain features in the area were sparsely populated rolling hills of forest and small agricultural fields.(See Wreckage Distribution Map Attached to This Report for Detailed Distribution.)

The main wreckage came to rest in a forested area. The main wreckage consisted of the aircraft engine, fuselage, and empennage sections of the aircraft. The fuselage of the aircraft was compressed to a height of approximately 18 inches along the length of the fuselage from just aft of the engine firewall to the aft section of the cabin area. The landing gear and the flaps were found in the retracted position.

The aircraft engine was still attached to the fuselage. The propeller showed signs of chordwise scratching and twisting toward low pitch. There were several tree limbs in the area of the main wreckage which had been cut sharply at about a 45 degree angle.

Both the left and right wings were separated from the fuselage just outboard of the fuselage area. Both wings were in several pieces and distributed along the wreckage path. There was bending in an upward direction in the area of the fractures of the left and right main spar at the point closest to the fuselage.

There was continuity of the elevator and rudder cables into the cabin area of the aircraft. The right and left aileron cables were fractured in several places outboard of the cabin section of the aircraft. All fractures of the aileron cables had the appearance of horse tails and the individual strands of cable showed signs of necking at the fracture points.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of Mr. Weiser was conducted by Dr. Riddick of the Alabama Department of Forensic Sciences in Mobile, Alabama. Dr. Riddick stated that the cause of death of Mr. Weiser was multiple blunt forces.

A toxicological examination was conducted by Dr. Canfield of the Federal Aviation Administration Toxicology and Accident Research Laboratory in Oklahoma City, Oklahoma. No ethanol or other drugs were detected.

TEST AND RESEARCH

Examination of the electric turn and bank gyro revealed rotational scratches on the inside of the gyro housing, and the external surface of the gyro.

Examination of the vacuum powered attitude gyro did not reveal any rotational scratching on either the external surface of the gyro nor the internal surface of the gyro housing.

Examination of the vacuum driven directional gyro revealed light rotational scratching on the internal surface of the gyro housing and no rotation scratching on the external surface of the gyro.

Examination of the left vacuum pump revealed that the plastic drive coupling had signs of heat stress and melting. The internal veins were broken and cracked, and there was a deposit of carbon material inside the housing.

Examination of the right vacuum pump revealed rotational scratching on the external surface of the pump. There was no evidence of carbon deposits inside of the case. The plastic drive coupling did not exhibit any signs of heat stress or melting.

ADDITIONAL INFORMATION

The aircraft wreckage was released to Joel P. Clark of Clark Aviation in Bay Minette, Alabama on March 3, 1994. The aircraft, powerplant, propeller, and avionics log books for N55MM, as well as two pilot log books of Mr. Weiser, and the supplemental type certificate flight manual were released to Mr. Frank Granito, the attorney for Mr. Weiser's estate, on June 27, 1994.

Pilot Information

Certificate:	Private	**Age:**	57,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 1, 1992
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2080 hours (Total, all aircraft), 157 hours (Total, this make and model), 25 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	**Registration:**	N55MM
Model/Series:	P210R P210R	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000874
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	December 17, 1993 Annual	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:	26 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	882 Hrs	**Engine Manufacturer:**	CONTINENTAL
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520-CE1F
Registered Owner:	TRIPLE SIX SUGAR WHISKEY CORP.	**Rated Power:**	325 Horsepower
Operator:	WEISER, JOEL J.	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MOB ,218 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	11:28 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Unknown	**Visibility**	1 miles
Lowest Ceiling:	Broken / 800 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	19°C / 19°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	NEW ORLEANS , LA (NEW)	**Type of Flight Plan Filed:**	IFR
Destination:	SARASOTA , FL (61X)	**Type of Clearance:**	IFR
Departure Time:	10:26 Local	**Type of Airspace:**	Class E

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:	3 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	30.879539,-87.769721(est)

Administrative Information

Investigator In Charge (IIC):	Sasser, Roff
Additional Participating Persons:	THOMAS L MILLER; BIRMINGHAM , AL
Original Publish Date:	April 7, 1995
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=3286