Aviation Investigation Final Report

Location:	SMYRNA, Tennessee	**Accident Number:**	MIA95FA226
Date & Time:	September 21, 1995, 04:25 Local	**Registration:**	N309MA
Aircraft:	MITSUBISHI MU-2B-35	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

A WITNESS STATED HE OBSERVED THE AIRPLANE ON CLIMBOUT FROM RUNWAY 32. THE AIRPLANE STARTED A RIGHT TURN ESTIMATED AT ABOUT 30 TO 45 DEGREE ANGLE OF BANK. THE AIRPLANE STOPPED CLIMBING AND BEGAN DESCENDING. SUBSEQUENTLY, IT COLLIDED WITH A TREE LINE, WHILE IN A RIGHT BANK, AND THEN IT IMPACTED THE GROUND. WEATHER CONDITIONS AT THE TIME OF ACCIDENT WERE DESCRIBED BY THE WITNESS AS VERY DARK, WITH NO AMBIENT LIGHT OR VISIBLE HORIZON. EXAMINATION OF THE AIRFRAME, FLIGHT CONTROL SYSTEM, ENGINE ASSEMBLY, AND PROPELLER ASSEMBLY REVEALED NO EVIDENCE OF A PRECRASH FAILURE OR MALFUNCTION. THE AUTOPILOT WAS FOUND IN THE OFF POSITION, AND THE AUTOPILOT CIRCUIT BREAKERS WERE NOT TRIPPED. THE PILOT AND PASSENGER WERE SERIOUSLY INJURED AND HAD NO MEMORY OF THE FLIGHT. A RADIO TRANSCRIPT REVEALED THAT AFTER TAKING OFF, THE FLIGHT HAD MADE ONE RADIO TRANSMISSION TO REQUEST AN IFR CLEARANCE.

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 A PROPER CLIMB RATE AFTER TAKEOFF, AND HIS INADVERTENT ENTRY IN A DESCENDING SPIRAL, WHICH HE FAILED TO CORRECT. FACTORS RELATING TO THE ACCIDENT WERE: DARKNESS, AND THE PILOT BECOMING SPATIALLY DISORIENTED DURING THE INITIAL CLIMB WHILE ATTEMPTING TO OBTAIN AN IFR CLEARANCE.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: TAKEOFF

Findings
1. (F) LIGHT CONDITION - DARK NIGHT
2. AUTOPILOT - NOT USED - PILOT IN COMMAND
3. (C) PROPER CLIMB RATE - NOT MAINTAINED - PILOT IN COMMAND
4. (C) SPIRAL - INADVERTENT - PILOT IN COMMAND
5. (F) SPATIAL DISORIENTATION - PILOT IN COMMAND
6. (C) DESCENT - NOT CORRECTED - PILOT IN COMMAND
7. OBJECT - TREE(S)

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On September 21, 1995, about 0425 central daylight time, a Mitsubishi, MU-2B-35, N309MA, registered to Topflight Turbines Inc., leased to Corporate Flight Management Inc., operating as a 14 CFR Part 91 positioning flight, crashed after takeoff in the vicinity of Smyrna, Tennessee. Visual meteorological conditions prevailed and an IFR flight plan was filed. The airplane was destroyed. The commercial pilot and the pilot-rated customer service agent sustained serious injuries. The flight originated from Smyrna Airport about 2 minutes before the accident.

A witness stated he observed the airplane on climbout from runway 32 which is located about 3/4 of a mile from his house. The airplane started a right turn estimated at about a 30-to 45-degree angle of bank, stopped climbing, started a descent and was heard colliding with the terrain. The witness stated it was very dark, with no ambient light or visible horizon.

The pilot-in-command and pilot-rated customer service agent were both interviewed and stated they have no memory of the accident flight.

Transcripts of recorded transmission revealed that N309MA attempted to contact Nashville approach at 0424:19, to obtain an IFR clearance to Louisville, Kentucky. There were no other known radio communications from N309MA, and there was no radio transmission from Nashville approach to N309MA. Review of Nashville ATCT continuous data recording radar revealed N309MA was observed on radar at 04:24:00, climbing through 900 feet msl on a heading of 334 degrees. At 04:24:32, N309MA was at 1,600 feet msl on a heading of 009 degrees. At 04:24:45, N309MA had descended to 1,000 feet msl on a heading of 067 degrees. No radar returns were received from N309MA at 04:24:50.

PERSONNEL INFORMATION

Review of Corporate Flight Management flight training records revealed the pilot completed transition training in the MU-2B on May 7, 1995, and was qualified as a pilot-in-command on May 8, 1995. All airman competency and proficiency checks, had been recorded by Corporate Flight Management as conducted to include current use of single pilot autopilot authority. Additional information pertaining to the pilot is contained in NTSB Form 6120.4.

AIRCRAFT INFORMATION

Review of the aircraft logbooks revealed no discrepancies on the autopilot. Additional information pertaining to the airplane is contained in NTSB Form 6120.4

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time of the accident. Official sunrise was 0631. The altitude of the moon was 10.3 degrees and the percent of illumination of the moon was 12 percent.

WRECKAGE AND IMPACT INFORMATION

The wreckage of N309MA was located about 1/2 mile south of Jones Mill Road in a corn field in the vicinity of Smyrna, Tennessee.

Examination of the crash site revealed the airplane collided with a tree line in a descending right turn on a heading of 095 degrees. The left wing collided with trees 35 feet above the base of the tree. The right wing collided with trees 25 feet above the base of the tree. The airplane continued forward separating the left spoiler, left and right stabilizer, left and right outboard flap, right outboard wing, and left and right fuel tip tanks before the main fuselage collided with the ground, 472 feet from the initial point of impact. The fuselage slid down the crash debris line on a heading of 099 degrees, turned sideways, rolled over, and rotated around its vertical axis to the right tail first, separating the right propeller system from the propeller flange. The fuselage continued to rotate around its vertical axis to the right separating the left and right engine assembly, and wing center section. The main fuselage came to rest on its right side 1,231 feet from the initial point of impact on a heading of 172 degrees. The remaining wreckage was scattered along the crash debris line extending 1,356 feet from the initial point of impact (tree line.) The main fuel tank, and the left and right fuel tip tanks were ruptured. There was a strong odor of fuel present extending along the crash debris line, and there was no postcrash fire.

Examination of the airframe and flight control systems revealed no evidence of a precrash mechanical failure or malfunction. The autopilot was found in the off position and the autopilot circuit breakers were not tripped open.

Examination of the left and right engine assemblies revealed the type and degree of damage indicative of engine rotation and operation at the time of impact. (See Allied-Signal Aerospace Company, Garret Engine Division, TEARDOWN REPORT OF TWO MODEL TPE331-6-252M TURBOPROP ENGINES SERIAL NUMBERS P-20194C AND P- 20200C.)

Examination of the left and right propeller assemblies revealed no evidence of a precrash failure or malfunction. The right propeller blades had evidence of bending and twisting. The left propeller blades had evidence of forward bending. (See Hartzell Propeller Inc., Propeller Teardown Report.)

MEDICAL AND PATHOLOGICAL INFORMATION

The pilot, sustained serious injuries. Toxicology studies of specimens was performed by

Vanderbuilt University Medical Center, Department of Pathology, Nashville, Tennessee. These studies were negative for alcohol, neutral, acidic, and basic drugs.

The pilot-rated passenger, sustained serious injuries. Toxicology studies of specimens was performed by Vanderbuilt University Medical Center, Department of Pathology, Nashville, Tennessee. These studies were negative for alcohol, neutral, acid, and basic drugs.

TEST AND RESEARCH

Review of Corporate Flight Management Operations Manual, Flight Rules, Limitations and Procedures (c) states, "At airports which do not have operating ATC facilities and it is not otherwise possible for the flight crew to obtain an IFR clearance, the flight may takeoff and depart under VFR". The control tower at the Smyrna Airport is operational from 0800 to 2000. Nashville clearance delivery is available on frequency 121.7 when the tower is closed. There is no recorded record on file with Nashville ATCT that N309MA attempted to pick up his IFR clearance on the ground. Review of Nashville ATCT daily record of facility operation does not indicate a problem with any navigational aides or radio frequencies for the time period 0500 UTC to 0459 UTC.

Review of the FAA Facility Operations Manual and Air Traffic Procedures Handbook indicates frequencies and interphones in a facility shall be continuously monitored. At the time of the accident the Nashvillle ATCT was in a normal midnight configuration with all positions of operations combined in the tower cab. A review of the voice recordings by the Nashville Air Traffic Manager for the time period of the accident, revealed that a transmission from N309MA was received at the departure radar west position located in the TRACON; however, no determination was made as to the exact frequency that was used by N309MA. The Air Traffic Manager for Nashville ATCT stated no transmissions were received in the tower.

Advisory Circular 60-4 describes spatial disorientation.

ADDITIONAL INFORMATION

The airplane wreckage was released to Mr. Michael A. Noblin, Director of Maintenance, Corporate Flight Management Inc., on September 23, 1995. The left and right engine and propeller assembly was released to Mr. Max R. Allen, Allen Aero Service, Jefferson, Georgia, on November 27, 1995.

Pilot Information

Certificate:	Commercial	**Age:**	32,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):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	September 27, 1994
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	2140 hours (Total, all aircraft), 112 hours (Total, this make and model), 2020 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MITSUBISHI	**Registration:**	N309MA
Model/Series:	MU-2B-35 MU-2B-35	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	602
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	August 25, 1995 100 hour	**Certified Max Gross Wt.:**	10800 lbs
Time Since Last Inspection:	50 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	4304 Hrs	**Engine Manufacturer:**	GARRETT
ELT:	Installed, not activated	**Engine Model/Series:**	TPE-331-6-25
Registered Owner:	TOPFLIGHT TURBINES	**Rated Power:**	840 Horsepower
Operator:	CORPORATE FLIGHT MANAGEMENT	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	FJTA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	BNA ,599 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	04:59 Local	**Direction from Accident Site:**	320°
Lowest Cloud Condition:	Unknown	**Visibility**	3 miles
Lowest Ceiling:	Broken / 2800 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	18°C / 18°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	(MQY)	**Type of Flight Plan Filed:**	IFR
Destination:	LOUISVILLE , KY (SDF)	**Type of Clearance:**	None
Departure Time:	04:23 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 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	35.98001,-86.510231(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Carrol
Additional Participating Persons:	CURTIS L WILKES; NASHVILLE , TN RALPH SORRELLS; DALLAS , TX ROGER W STALLKAMP; PIQUA , OH ALAN LUBES; PHOENIX , AZ
Original Publish Date:	February 14, 1996
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=37667