Aviation Investigation Final Report

Location:	Monroe, North Carolina	**Accident Number:**	MIA01FA151
Date & Time:	June 6, 2001, 17:35 Local	**Registration:**	N4780H
Aircraft:	Mooney M-20J	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot had been airborne for about 15 minutes and while en route had informed FAA Charlotte departure control that he was having electrical problems, saying that he needed to "get down nearest airport no emergency yet.". The controller responded informing the pilot of an airport that was about 2 miles behind him, or the Monroe Airport, which was about 6 miles ahead, which had more services. At 1730:57, the pilot reported the airport in sight, and the controller cleared him for the visual approach, stating that that runway 23 was in use, and telling the pilot to descend at his own discretion. At 1732:05 pilot then acknowledged the controller's communications transmission saying, "roger two three," and that was the last radio communication between the controller and the pilot. At 1735:46, the crew of a Hawker corporate jet, N942DS, which was departing from Monroe Airport reported to FAA Air traffic Control that N4780H had just crashed, and that there was smoke and fire at the scene of the crash. Witnesses stated that they observed N4780H approach Monroe Airport from the northeast, and saw it turn to the left, beyond runway 23, about 200 yards from the end of the runway, in a left descending turn. After the initial left descending turn, the witnesses said the pilot made a right descending turn toward the runway as if to get on a left downwind approach for runway 23, and during the turn the airplane had descended below the treeline. The witnesses said that as the airplane approached the trees it assumed a nose high pitch attitude, and they heard a noise as the bottom of the airplane slapped the trees. After the airplane slapped the trees they said the pitch attitude was increased to a near vertical pitch attitude, and airplane then pitched over nose first, and descended almost straight down, disappearing below the trees. Postcrash examination of the airframe, flight controls, and engine did not reveal any evidence of preaccident failures or malfunctions.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot in command's failure to maintain airspeed while maneuvering to avoid objects, resulting in a stall/mush and collision with the terrain during uncontrolled descent. Contributing to the accident was the improper approach to land and his failure to maintain the proper altitude on approach.

Findings

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

Findings
1. (C) PLANNED APPROACH - IMPROPER - PILOT IN COMMAND
2. (C) ALTITUDE - IMPROPER - PILOT IN COMMAND
3. MANEUVER TO AVOID OBSTRUCTIONS - ATTEMPTED - PILOT IN COMMAND
4. OBJECT - TREE(S)

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

Findings
5. (C) AIRSPEED(VS) - NOT MAINTAINED - PILOT IN COMMAND
6. STALL/MUSH - INADVERTENT - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
7. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On June 6, 2001, about 1735 eastern daylight time, and Mooney M20J, N4780H, registered to and operated by a private individual, as a Title 14 CFR Part 91 personal flight, crashed while approaching to land at Monroe, North Carolina. Visual meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan was filed. The commercial-rated pilot, and two passengers received fatal injuries, and the airplane was destroyed. The flight departed from Charlotte, North Carolina, the same day, about 1720.

According to the FAA Charlotte Air Traffic Control Tower's record of communications, the pilot of N4780H had filed an IFR flight plan from Charlotte, North Carolina, to Jacksonville, North Carolina, and at 1730:24, while en route, and after having missed radio communication calls from the FAA Charlotte departure controller, the pilot responded informing the controller that he was having electrical problems. The pilot further stated to the controller that he may need to "get down" to the nearest airport, but added that it was not an emergency yet. At 1730:31 the FAA controller responded telling the pilot of an airport that was about 2 miles behind him, or the Monroe Airport, which was about 6 miles ahead, which had more services available. At 1730:40, the pilot responded indicating that he would rather proceed to the Monroe Airport. At 1730:57, the pilot reported the airport in sight and he will go direct. At 1731:59, the controller cleared the pilot for the visual approach, stating that he believed that runway 23 was in use, and telling the pilot to descend at his own discretion. At 1732:05, the pilot then acknowledged the controller's communications transmission saying, "roger two three," and that was the last radio communication between the controller and the pilot.

FAA radar data showed that FAA air traffic control last observed the accident airplane at 1734:03, at an altitude of 800 feet. At 1735:46, the crew of a Hawker corporate jet, N942DS, which was departing from Monroe Airport reported to FAA Air traffic Control that N4780H had just crashed, and that there was smoke and fire at the scene of the crash.

Witnesses stated that they observed N4780H approach Monroe Airport from the northeast, and saw it turn to the left, beyond runway 23, about 200 yards from the end of the runway, in a left descending turn. They said that they did not observe any smoke or signs of an onboard fire as the airplane approached. Pilots who were engaged in various activities at the airport at the time said that they did not hear any radio calls on the Unicom frequency announcing the accident airplanes arrival at the Monroe Airport, and further stated that they observed the airplane enter the airport traffic area with the pilot executing unusual, or "odd" traffic pattern entry maneuvers. They said that after an initial left descending turn, the airplane entered a right descending turn toward the runway, as if being positioned for a left downwind approach for runway 23, and during the turn the airplane descended below the treeline. The witnesses said

that as the airplane approached the trees it transitioned to a nose-high pitch attitude, as if the pilot was maneuvering to avoid the trees, and they heard a noise as the bottom of the airplane "slapped" the trees. After the airplane slapped the top of the trees, they said the airplane's pitch attitude was increased to near vertical, while the airplane was at an altitude of about 800 to 1000 feet. According to witnesses, the airplane then pitched over nose first, and descended almost straight down, disappearing below the trees, followed by black smoke which billowed above the trees.

PERSONNEL INFORMATION

According to FAA records, the pilot held an FAA commercial pilot certificate, with airplane single and multiengine land instrument airplane, rotorcraft-helicopter, and instrument helicopter ratings, last issued on May 1, 2000. He held a FAA third-class medical certificate, issued on August 23, 1999, with the stated limitation that he must have glasses available for near vision. At the time of the medical examination, the pilot reported to the FAA that he had accumulated a total of 2,500 flight hours in the military, and 40 civilian flight hours. The NTSB did not obtain the pilot's logbook, however, a representative from the pilot's insurance company stated that in January 2000, the pilot had reported on his insurance application having had about 2,500 hours total flight experience, with no experience in the make and model in which the accident occurred at the time of his application for insurance.

FAA records indicate that the pilot-rated passenger held an FAA airline transport certificate with an airplane multiengine land rating, issued on December 31, 1990, and he reported his flight experience as having had 3,600 total flight hours in the military. FAA records also showed that the pilot-rated passenger's medical certificate was a first class certificate, last issued on May 10, 1991.

AIRCRAFT INFORMATION

N4780H is a 1979 Mooney M-20J, whose serial number is 24-0871. The airplane was equipped with a 200 horsepower, IO-360-A3B6D engine, serial number L-20862-51A, manufactured by Textron Lycoming. The airplane records provided to the NTSB by the pilot's wife, showed that an annual inspection had been completed, and the airplane returned to service on February 6, 2001. At the time of inspection the recorded tachometer time was 1946.0, hours, and the total engine time since major overhaul was 979.0.

The airplane was equipped with a McCauley propeller, model number 290D5-E/T17, and it had accumulated a total of 595.9 hours since major overhaul.

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time. The Monroe Airport 1753 surface weather observation was sky clear, visibility 10 statute miles, winds from 210 degrees at 6 knots, temperature 86 degrees F, dew point temperature 66 degrees F, altimeter setting 30.00

inHg.

WRECKAGE AND IMPACT INFORMATION

N4780H came to rest on the front lawn, oriented about 345 degrees magnetic, at the entrance of a business located at 2011 Rocky River Road North, Monroe, North Carolina. The airplane had initially impacted the asphalt driveway entrance to the business and had slid across the driveway onto the front lawn, colliding with a small tree, and an electric sewer flow meter box, and erupting into flames a short distance from the business' main building. At the time of the impact when the postcrash fire ensued, a person who was working in the building stated that he heard the impact, and looked out the window and saw the fireball, and at the time of the impact, the building's main electrical circuit breaker became activated and electrical service to the building was terminated.

The debris field and ground scarring associated with the accident indicated a general direction of travel of about 045 degrees magnetic, with the airplane having initially impacted in a nose low, left banked flight attitude, consistent with the signatures and scarring that was found. The distance from the initial impact mark to the main wreckage was about 70 feet, and there had been a small gouge in the driveway which lead from that initial impact point to a 50-foot diameter section of lawn where the burned airplane fuselage came to rest.

The outboard section of the left wing had broken off and the left aileron had been dislodged from the wing, and was found in the general burned area, apart the burned out main wreckage. The detached portion of the right wing showed burn/sooting marks on the underside which had been in contact with the burned grass. Both the broken portion of the left wing, as well as the detached left aileron, exhibited signs consistent with overstress at the points where they had detached during impact with the ground. Along with the ground scars, the damaged parts of the wing and the aileron exhibited an upward curl, consistent with that wing having impacted the ground first. The remainder of the left wing remained attached to the fuselage and was largely consumed by fire.

The right wing exhibited some leading edge accordion type damage and it had all wing mounted control surfaces attached. The inboard portion of the right wing from the wing root through the fuel tank had been burned. The empennage also had been badly damaged in the postimpact fire and had been bent to the left, but it remained attached.

The cockpit and center section had been consumed by the postcrash fire. The fire had damaged cockpit displays, gages, switches, circuit breakers, wiring, cabling, upholstery and other cabin contents. No precrash findings indicative of electrical failure or malfunction were found. In addition, the cabin area had incurred extensive impact damage, with the engine and instrument panel areas being pushed back into the cabin. All components of the aircraft which are necessary to sustain flight were located in the immediate vicinity of the main wreckage. Examination of the airplane's flight control system revealed that there was continuity about the pitch, roll, and yaw axes, and no evidence was found of preimpact failure or malfunction to the

flight controls.

When first viewed at the scene, the engine was in an inverted position at the left front side of the main wreckage with the steel tube mounts having separated from the firewall. The engine exhibited severe fire damage, and its core appeared to be intact, with engine accessories having been destroyed or damaged in the postcrash fire that had ensued. The alternator was examined, and no evidence of precrash failure or malfunction was found. The propeller had separated from the engine, and the crankshaft had fractured at the flange. The propeller exhibited heavy impact and fire damage with both blades being found loose in the hub. One propeller blade exhibited forward bending and the other displayed "S" type forward bending, consistent with engine rotation at impact. The propeller governor had also incurred severe fire damage and its mount was securely attached and the top section burned away exposing the remaining internal metal components, however, the drive coupling had remained attached.

The fuel system's hoses, pump, and servo had incurred severe fire damage. The servo unit's mounting flange and the manifold had fractured, and the fuel pump, though fire damaged, had retained its internal steel parts. The fuel flow divider was free of blockage with its internal diaphragm intact, and the fuel inlet screen was also free of debris. The throttle was full open and the mixture control was midrange. The ignition harness was destroyed, and the Bendix dual magneto had separated on impact and had incurred severe fire damage, and was destroyed, except that the magneto drive gear and coupling had remained intact. The lubrication system's hoses and cooler had also been destroyed by the fire, however, what remained of the lubrication system exhibited no anomalies.

The valve covers and spark plugs were removed, the engine's drive train static position checked, and the engine borescoped. The spark plugs were dry and gray, with the wear and deposits consistent with normal engine operation The oil sump had been consumed in the postcrash fire, and attempts to rotate the engine was unsuccessful. The remains of accessory components and the rear case were then removed, and the crankshaft was rotated, establishing internal gear and valve train continuity. All four cylinders produced compression during engine rotation. The case was then split to examine power section components, and no evidence of any preimpact mechanical failure or malfunction with the engine was found.

MEDICAL AND PATHOLOGICAL INFORMATION

Pathologists with the Office of the Chief Medical Examiner, Chapel Hill, North Carolina, performed postmortem examinations on the pilot and passengers. The cause of death was attributed to blunt force trauma, and no findings which could be considered causal to this accident were reported.

The Office of the Chief Medical Examiner, Chapel Hill, North Carolina, performed toxicology studies on specimens obtained from the pilot. The specimens were tested for carbon monoxide and ethanol, and the study revealed the presence of less than 5 percent carbon monoxide in specimens from the pilot.

The FAA Toxicology Laboratory, Oklahoma City, Oklahoma, also performed toxicology studies on samples from the pilot. The samples were tested for carbon monoxide, cyanide, volatiles, and drugs. None of which were found to be present in samples obtained from the pilot.

The Office of the Chief Medical Examiner, Chapel Hill, North Carolina, performed toxicology studies on specimens obtained from the pilot-rated passenger. The specimens were tested for carbon monoxide and ethanol, and the study revealed the presence of less than 5 percent carbon monoxide in specimens from the pilot-rated passenger.

The FAA Toxicology Laboratory, Oklahoma City, Oklahoma, also performed toxicology studies on samples from the pilot-rated passenger. The samples were tested for carbon monoxide, volatiles, and drugs. Ephedrine, pseudoephedrine, and phenylpropanolamine were detected in the urine sample that was obtained from the pilot-rated passenger.

ADDITIONAL INFORMATION

On June 25, 2001, the NTSB released the wreckage of N4780H to Mr. Chris Cartwright, General Manager, Atlanta Air Salvage, Griffin, Georgia.

Pilot Information

Certificate:	Commercial	**Age:**	50,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	August 23, 1999
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2500 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	**Registration:**	N4780H
Model/Series:	M-20J	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-0871
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	February 6, 2001 Annual	**Certified Max Gross Wt.:**	2740 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Textron Lycoming
ELT:		**Engine Model/Series:**	Io-360-A3B6D
Registered Owner:	Gregory M. Russell	**Rated Power:**	200 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:	EQY,679 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	220°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	30°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Charlotte, NC (CLT)	**Type of Flight Plan Filed:**	IFR
Destination:	Jacksonville, NC (OAJ)	**Type of Clearance:**	IFR
Departure Time:	16:20 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Monroe Airport EQY	**Runway Surface Type:**	Asphalt
Airport Elevation:	679 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	23	**IFR Approach:**	Visual
Runway Length/Width:	5500 ft / 100 ft	**VFR Approach/Landing:**	Precautionary landing;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	35.018054,-80.620002

Administrative Information

Investigator In Charge (IIC):	Lovell, John
Additional Participating Persons:	Leon H McRae; FAA FSDO; Charlotte, NC Edward G Rogalski; Textron Lycoming; Bellview, FL
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Last Revision Date:	
Investigation Class:	Class
Note:	
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