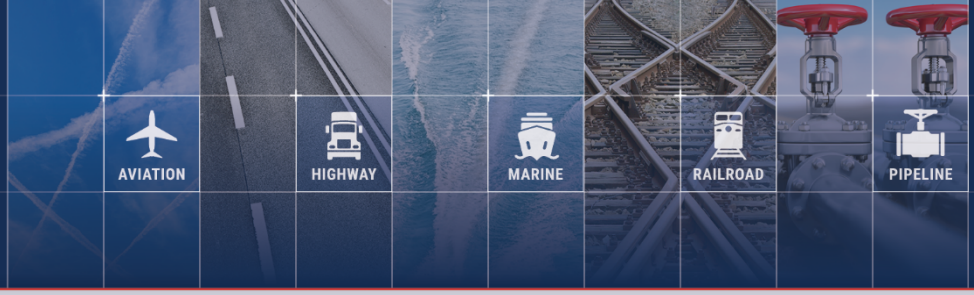

Aviation Investigation Final Report

Location:	WALLINGFORD, Connecticut	**Accident Number:**	NYC94FA135
Date & Time:	July 24, 1994, 17:00 Local	**Registration:**	N6842N
Aircraft:	MOONEY M20C	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

THE PILOT AND PASSENGER HAD CONDUCTED A 30 TO 40 MINUTE LOCAL FLIGHT IN THE PILOT'S AIRPLANE, AND RETURNED TO THE AIRPORT. THE PILOT HAD THE AIRPORT REFUELER PUT 10 GALLONS OF FUEL INTO THE LEFT WING TANK ONLY. THE PILOT TOLD THE REFUELER HE WAS TRYING TO DRY OUT THE RIGHT TANK TO PERFORM MAINTENANCE ON IT. THE PILOT AND PASSENGER THEN DEPARTED IN THE AIRPLANE FOR ANOTHER FLIGHT. SEVERAL MINUTES AFTER TAKEOFF, THE AIRPLANE WAS OBSERVED INBOUND TO THE AIRPORT AT A LOW ALTITUDE, FLYING OVER PROPERTY OWNED BY THE PILOT. THE ENGINE WAS HEARD TO COUGH AND THEN STOP. THE AIRPLANE THEN PERFORMED A LEFT 180 DEGREE TURN AND NOSED INTO THE GROUND. THE AIRPLANE IMPACTED IN A OPEN FIELD OWNED BY THE PILOT. EXAMINATION REVEALED THE FUEL TANKS WERE RUPTURED ON IMPACT, AND THE FUEL SELECTOR WAS SET TO THE LEFT TANK. NO ENGINE OR AIRFRAME ANOMALIES WERE NOTED. THE ENGINE WAS NOT EQUIPPED WITH A FUEL PRIMER SYSTEM.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's decision to exhaust the fuel supply in the selected tank in-flight, and his failure to maintain the minimum stall speed during engine out conditions. This resulted in a complete loss of engine power and the inadvertent stall and impact with the ground. A factor in this accident was the inadequate altitude in which the pilot exhausted the fuel.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: CRUISE

Findings
1. FLUID,FUEL - EXHAUSTION
2. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
3. (F) ALTITUDE - INADEQUATE - PILOT IN COMMAND

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

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

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

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

Findings
6. TERRAIN CONDITION - OPEN FIELD

Factual Information

HISTORY OF FLIGHT

On July 24, 1994, about 1700 eastern daylight time, a Mooney M20C, N6842N, owned and piloted by Dominic S. Nigro, was destroyed when it impact the ground in an open field, 1/2 mile southeast of the Meriden Markham Municipal Airport (MMK), Meriden, Connecticut. The pilot and passenger were fatally injured. Visual meteorological conditions prevailed and no flight plan had been filed for the flight operating under 14 CFR 91.

Witnesses stated that the pilot and passenger had taken off from the airport in N6842N at approximately 1600, and landed about 30 to 40 minutes later. The pilot then asked the airport lineman to fuel the airplane. The MMK lineman on duty at that time, Matthew Moneymaker, stated, "...He told me to put 10 gallons into his left tank because he was trying to dry out the right tank to do some type of work on it. He then paid for the gas and departed..."

Mr. Nigro and the passenger departed in N6842N from MMK, at approximately 1650. About 5 to 10 minutes later several witnesses observed the airplane flying low, in a northwesterly direction. One witness stated:

"...We are three properties north of where the plane crashed...I heard a plane and looked up at it because it sounded low...I saw the plane flying toward the airport...it was very low because there is a two family house to the south of us and it seemed to have come from 'behind' it instead of over it...I heard the engine cough and then stop. I waited for it to start again as they usually do because I have heard them stop and start all the time before. This one did not start. After it coughed and stopped the plane just sort of did a 'U-turn' to the left and then went nose down. I heard it crash and saw a plume of dirt..."

The airplane impacted in an open field on property owned by the pilot. The accident occurred during the hours of daylight at approximately 41 degrees, 31 minutes north latitude, and 72 degrees, 50 minutes west longitude.

PERSONNEL INFORMATION

The pilot, Mr. Dominic S. Nigro, held a Private Pilot Certificate with a rating for airplane single engine land.

His most recent Federal Aviation Administration (FAA) Third Class Medical Certificate was issued on January 24, 1994.

Mr. Nigro's pilot log book was located; however, the last regular entry was in July, 1990.

Utilizing the pilot's log book and the hours accumulated on N6842N during the period of time since the last pilot log entry, Mr. Nigro's total flying time was estimated to be 980 hours. He had approximately 755 hours of flight experience in this airplane.

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was examined at the accident site on July 24 and 25, 1994. The examination revealed that all major components of the airplane were accounted for at the scene. The airplane came to rest over a 3 foot deep depression in an open field, on an approximate magnetic bearing of 125 degrees.

An impact ground scar, approximately the length of the airplane's wing span, was observed 6 feet to the west of, and almost perpendicular to, the right wing tip of the airplane wreckage. The axis of the southeastern half of the impact scar was on a magnetic bearing of 150 degrees. The axis of the northwestern half impact scar was on a magnetic bearing of 310 degrees. Pieces of green lens glass were found at the northern end of the impact scar, and pieces of red lens glass were found scattered along 8 feet of the southern end of the impact scar.

The left and right wings remained attached to the main fuselage. The leading edges of both wings were similarly dented and crushed upward and aft. The left wing leading edge was crushed upward at approximately a 45 degree angle, with the left wing tip section curled upward about 75 degrees. The right wing leading edge was crushed upward at approximately a 30 degree angle. The integral sealed fuel tanks were ruptured, but there was a strong odor of fuel at the wreckage site on the evening of July 24, 1994.

The tail section, containing the horizontal and vertical stabilizers, was partially separated from the empennage and hanging downward. The break was just forward of the horizontal stabilizers.

Flight control continuity was not established. Rudder and elevator control was traced through the attached torque tubes to the section where the tail was separated from the fuselage. The left and right aileron torque tubes were both severed and crushed in their respective center wing sections.

The main landing gear was found partially extended into the depression below the main fuselage. The landing gear uplocks were observed deformed, and the gear actuators and landing gear handle indicated a gear retracted position. The nose strut and wheel were also in the retracted position.

The flap handle was broken off; however, the flap handle position, the flap indicator, and the actuators indicated the flaps were in the retracted position.

The propeller hub and blades were located in an impact hole, immediately west of the long

ground scar. Both blades were perpendicular to the long ground scar and the propeller blade pointing to the long ground scar was buried in the dirt. The propeller spinner was imbedded 8 to 10 inches in the ground, and was crushed inward. Scratches on the spinner were fore and aft. There were no rotational scratches visible on the spinner.

The propeller blades did not display any chord wise twisting. The propeller blade pointing to the ground scar was slightly bent at the end and contained several small nicks on the leading edge. On the forward side of the blade were chord wise scratches the entire length. The last 5 inches of the blade tip had a slight "S" bend, with a nick at the tip. The other blade displayed no bending and there were no nicks on the leading edge of the blade. Chord wise scratches were on the inner 2/3 of the forward side of the blade. The outer 1/3 on the blade was not scratched.

There were no hard objects in the vicinity of the impact hole that the propeller blades could have come in contact with; however, the engine cowling displayed an inward tearing hole, similar to the end of the propeller blade tip. In the area directly below the cowling hole, a 1 inch diameter hole was observed in the top of engine case.

The engine remained attached to the fuselage. The left magneto, carburetor, oil filter base, engine driven fuel pump, number two cylinder drain back fitting and the propeller governor were broken off. The oil sump, ignition harness and the vacuum pump were destroyed. The exhaust system and the number two intake pipe were crushed. Fuel was not observed in the separated carburetor or in the fuel lines near the engine. The engine was not equipped with a separate starting fuel primer system. The fuel strainer was not found in the wreckage debris. The engine was removed from the wreckage for further examination.

The engine compartment of the fuselage was pushed aft into the instrument panel which extended into the pilot and passenger compartment. The windshield was found in numerous pieces scattered between the nose of the wreckage and the propeller impact hole. The fuel selector was observed to be set to the left tank. The electric fuel boost pump and switch were destroyed. Examination of the remainder of the cockpit area produced no useful information due to impact damage.

Cardboard boxes found in the baggage and rear seat area contained cans of lubrication, starting fluid, and seven cans of spray paint. Additionally, a one gallon can of methyl-ethyl-ketone, two quarts of oil, several bottles of wax, and numerous paper towels and oily rags were removed from the same area.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on Mr. Dominic Nigro, on July 25, 1994, by Dr. H. Wayne Carver II, of the Office of the Chief Medical Examiner, Farmington, Connecticut. The results indicated that Mr. Nigro died of, "multiple blunt traumatic injuries."

The toxicological testing report from Richard D. Pinder, the Director of the Toxicology Laboratory, Farmington, Connecticut, revealed negative for carbon monoxide, ethanol and drugs for Mr. Dominic Nigro.

TESTS AND RESEARCH

The engine was removed from the accident scene and shipped to Textron-Lycoming, Williamsport, Pennsylvania. The engine was examined on August 22, 1994, by the NTSB Investigator-In-Charge (IIC), and the Lycoming party to the investigation. The engine was installed "new" in N6842N, in April 1968. The engine had accumulated 1,943 hours since new, at the time of the accident. It had not been overhauled or remanufactured.

The examination revealed that the propeller flange had broken off of the crankshaft at the engine nose seal. The crankshaft could not be rotated by the use of hand tools due to the crankshaft pressure against the case at the nose seal. The case bolts were loosened and the case partially split open using a chisel. The engine was then rotated using the main gear in the accessory section. The valve train operated normally when rotated except for the number two intake valve. Compression was obtained on all four cylinders using the "thumb method."

The number two cylinder valve train assembly was located adjacent to the hole in the engine case. The number two valve tappet was found in the lower section of the engine case, along with pieces of blue painted sheet metal. The sheet metal and color of paint was similar to that found on the engine cowling.

All connecting rods and pistons were free on their respective bearings.

The left magneto mounting bracket was broken off at the case. Both magnetos were bench tested and performed satisfactorily. All spark plugs appeared grayish in color, except for the lower number two plug, which was oily.

Numerous blue stains were observed on the inside of the intake manifold, intake ports, and tubes. The number four intake tube gasket extended into the intake port opening. The number four exhaust pipe gasket had been leaking exhaust onto the number four spark plug.

ADDITIONAL INFORMATION

The airplane wreckage was released, minus the engine, on July 25, 1994, to John McDevitt, a representative of the owners insurance company. The engine was released on August 22, 1994, and shipped to the Meriden Markham Airport.

Pilot Information

Certificate:	Airline transport; Foreign; Private; Student	**Age:**	65,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Airship; None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter; None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	January 24, 1994
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	980 hours (Total, all aircraft), 755 hours (Total, this make and model), 890 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MOONEY	**Registration:**	N6842N
Model/Series:	M20C M20C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Transport; Experimental (Special)	**Serial Number:**	680129
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	January 6, 1994 Annual	**Certified Max Gross Wt.:**	2575 lbs
Time Since Last Inspection:	55 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1943 Hrs	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-360
Registered Owner:	ALICE M. NIGRO	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	HFD ,19 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	16:45 Local	**Direction from Accident Site:**	40°
Lowest Cloud Condition:	Scattered / 3000 ft AGL	**Visibility**	12 miles
Lowest Ceiling:	Broken / 10000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	23°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	MERIDEN , CT (MMK)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	16:50 Local	**Type of Airspace:**	Airport advisory area;Class G

Airport Information

Airport:	MERIDEN MARKHAM MUNICIPAL MMK	**Runway Surface Type:**	
Airport Elevation:	103 ft msl	**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Pearce, Robert
Additional Participating Persons:	JAMES BROWN; WILLIAMSPORT , PA JOHN D CHERIS; WINDSOR LOCKS , CT
Original Publish Date:	February 14, 1995
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=38682