



# Aviation Investigation Final Report

|                                |                                      |                         |             |
|--------------------------------|--------------------------------------|-------------------------|-------------|
| <b>Location:</b>               | Wildwood, New Jersey                 | <b>Accident Number:</b> | ERA19TA042  |
| <b>Date &amp; Time:</b>        | November 10, 2018, 15:30 Local       | <b>Registration:</b>    | N78870      |
| <b>Aircraft:</b>               | Mooney M20C                          | <b>Aircraft Damage:</b> | Substantial |
| <b>Defining Event:</b>         | Fuel starvation                      | <b>Injuries:</b>        | 1 Serious   |
| <b>Flight Conducted Under:</b> | Part 91: General aviation - Personal |                         |             |

## Analysis

The pilot reported that the airplane contained 21 gallons of fuel in the left fuel tank and 3 gallons of fuel in the right fuel tank before the flight. The pilot performed the engine start, taxi, runup, and takeoff with the fuel selector on the right fuel tank. During the initial climb, at an altitude between 100 and 200 ft above ground level, the engine sputtered and then lost all power. With about 1,700 ft of runway remaining, the pilot entered a right turn, and the airplane impacted the ground left of the runway, resulting in substantial damage to the right wing, the left horizontal stabilizer, and left elevator.

Postaccident examination of the airplane found that the right fuel tank contained no fuel, and the left fuel tank contained about 20 gallons. The fuel selector was found in the left tank position. It is likely that, during the accident sequence, the pilot moved the fuel selector to the left tank position; but the airplane's low altitude at the time of the loss of power provided insufficient time to restore fuel flow before impact. The circumstances of the accident are consistent with a total loss of engine power due to fuel starvation as a result of the pilot's mismanagement of the available fuel. Contributing to the accident was the pilot's decision to initiate a 180° turn following the loss of power despite the runway remaining.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's improper fuel management, which resulted in a total loss of engine power due to fuel starvation during the initial climb. Contributing to the accident was the pilot's decision to initiate a 180° turn following the loss of power.

## Findings

|                  |                                  |
|------------------|----------------------------------|
| Personnel issues | Use of equip/system - Pilot      |
| Aircraft         | Fuel - Fluid management          |
| Personnel issues | Decision making/judgment - Pilot |

# Factual Information

## History of Flight

|                      |                                    |
|----------------------|------------------------------------|
| Initial climb        | Fuel starvation (Defining event)   |
| Uncontrolled descent | Collision with terr/obj (non-CFIT) |

On November 10, 2018, about 1530 eastern standard time, a Mooney M20C, N78870, was substantially damaged when it was involved in an accident near Wildwood, New Jersey. The private pilot was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, the left fuel tank contained about 21 gallons of fuel, and the right fuel tank contained about 3 gallons. He used the right fuel tank for engine startup, taxi, runup and takeoff.

A video recorded by a witness captured most of the flight. The airplane took off from runway 28, which was 4,998 ft long. About 7 seconds after liftoff, the landing gear were in the fully retracted position. About 15 seconds after liftoff, at an altitude of about 150 ft above ground level, the engine began to “sputter” and then stopped. About 21 seconds after liftoff, while still over the runway and with about 1,700 ft of runway remaining, the airplane began a descending 180° turn to the right and impacted a drainage ditch left of runway 10.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed substantial damage to the outboard 3 ft of the right wing, as well as the left horizontal stabilizer and the left elevator. No fuel was found in the right-wing fuel tank, and about 20 gallons of fuel was recovered from the left-wing fuel tank. The fuel selector valve was found in the left fuel tank position.

The airplane’s most recent annual inspection was 14 months before the accident. According to FAA airman records, the pilot held a private pilot certificate. His most recent FAA third-class medical examination was performed on June 3, 2016, at which time he reported 900 hours of total flight experience.

## Pilot Information

|                                  |   |  |              |
|----------------------------------|---|--|--------------|
| <b>Certificate:</b>              | Private                                     | <b>Age:</b>                              | 75, Male     |
| <b>Airplane Rating(s):</b>       | Single-engine land                          | <b>Seat Occupied:</b>                    | Left         |
| <b>Other Aircraft Rating(s):</b> | None  | <b>Restraint Used:</b>                   | Unknown      |
| <b>Instrument Rating(s):</b>     | None  | <b>Second Pilot Present:</b>             | No           |
| <b>Instructor Rating(s):</b>     | None  | <b>Toxicology Performed:</b>             | No           |
| <b>Medical Certification:</b>    | Class 3 With waivers/limitations            | <b>Last FAA Medical Exam:</b>            | June 3, 2016 |
| <b>Occupational Pilot:</b>       | No  | <b>Last Flight Review or Equivalent:</b> |              |
| <b>Flight Time:</b>              | (Estimated) 900 hours (Total, all aircraft) |  |              |

## Aircraft and Owner/Operator Information

|                                      |                                |                                       |                 |
|--------------------------------------|--------------------------------|---------------------------------------|-----------------|
| <b>Aircraft Make:</b>                | Mooney                         | <b>Registration:</b>                  | N78870          |
| <b>Model/Series:</b>                 | M20C                           | <b>Aircraft Category:</b>             | Airplane        |
| <b>Year of Manufacture:</b>          | 1964                           | <b>Amateur Built:</b>                 |                 |
| <b>Airworthiness Certificate:</b>    | Normal                         | <b>Serial Number:</b>                 | 2885            |
| <b>Landing Gear Type:</b>            | Retractable - Tricycle         | <b>Seats:</b>                         | 4               |
| <b>Date/Type of Last Inspection:</b> | September 13, 2017 Annual      | <b>Certified Max Gross Wt.:</b>       | 2575 lbs        |
| <b>Time Since Last Inspection:</b>   |                                | <b>Engines:</b>                       | 1 Reciprocating |
| <b>Airframe Total Time:</b>          | 3538 Hrs as of last inspection | <b>Engine Manufacturer:</b>           | Lycoming        |
| <b>ELT:</b>                          |                                | <b>Engine Model/Series:</b>           | O-360-A10       |
| <b>Registered Owner:</b>             |                                | <b>Rated Power:</b>                   | 180 Horsepower  |
| <b>Operator:</b>                     | On file                        | <b>Operating Certificate(s) Held:</b> | None            |

## Meteorological Information and Flight Plan

|   |                                  |   |                  |
|---|----------------------------------|---|------------------|
| <b>Conditions at Accident Site:</b>     | Visual (VMC)                     | <b>Condition of Light:</b>                  | Day              |
| <b>Observation Facility, Elevation:</b> | WWD,23 ft msl                    | <b>Distance from Accident Site:</b>         | 0 Nautical Miles |
| <b>Observation Time:</b>                | 15:55 Local                      | <b>Direction from Accident Site:</b>        | 87°              |
| <b>Lowest Cloud Condition:</b>          | Few / 6000 ft AGL                | <b>Visibility</b>                           | 10 miles         |
| <b>Lowest Ceiling:</b>                  | None                             | <b>Visibility (RVR):</b>                    |                  |
| <b>Wind Speed/Gusts:</b>                | 16 knots / 25 knots              | <b>Turbulence Type Forecast/Actual:</b>     | /                |
| <b>Wind Direction:</b>                  | 290°                             | <b>Turbulence Severity Forecast/Actual:</b> | /                |
| <b>Altimeter Setting:</b>               | 30.13 inches Hg                  | <b>Temperature/Dew Point:</b>               | 7°C / -6°C       |
| <b>Precipitation and Obscuration:</b>   | No Obscuration; No Precipitation |   |                  |
| <b>Departure Point:</b>                 | Wildwood, NJ (WWD )              | <b>Type of Flight Plan Filed:</b>           | None             |
| <b>Destination:</b>                     | Whiteville, NC (CPC )            | <b>Type of Clearance:</b>                   | None             |
| <b>Departure Time:</b>                  | 15:29 Local                      | <b>Type of Airspace:</b>                    |                  |

## Airport Information

|                             |                     |                                  |                                |
|-----------------------------|---------------------|----------------------------------|--------------------------------|
| <b>Airport:</b>             | Cape May County WWD | <b>Runway Surface Type:</b>      | Asphalt                        |
| <b>Airport Elevation:</b>   | 21 ft msl           | <b>Runway Surface Condition:</b> |                                |
| <b>Runway Used:</b>         | 28                  | <b>IFR Approach:</b>             | None                           |
| <b>Runway Length/Width:</b> | 4998 ft / 150 ft    | <b>VFR Approach/Landing:</b>     | Forced landing;Traffic pattern |

## Wreckage and Impact Information

|                            |           |                             |                           |
|----------------------------|-----------|-----------------------------|---------------------------|
| <b>Crew Injuries:</b>      | 1 Serious | <b>Aircraft Damage:</b>     | Substantial               |
| <b>Passenger Injuries:</b> | N/A       | <b>Aircraft Fire:</b>       | None                      |
| <b>Ground Injuries:</b>    | N/A       | <b>Aircraft Explosion:</b>  | None                      |
| <b>Total Injuries:</b>     | 1 Serious | <b>Latitude, Longitude:</b> | 39.007778,-74.914169(est) |

## Administrative Information

|  |   |                             |   |
|--|---|-----------------------------|---|
| <b>Investigator In Charge (IIC):</b>     | Brazy, Douglass   |                             |   |
| <b>Additional Participating Persons:</b> | Stephan Koza; FAA/FSDO; Phildephia, PA  |                             |   |
| <b>Original Publish Date:</b>            | August 26, 2021   | <b>Investigation Class:</b> | 3 |
| <b>Note:</b>                             | The NTSB did not travel to the scene of this accident.  |                             |   |
| <b>Investigation Docket:</b>             | <a href="https://data.nts.gov/Docket?ProjectID=98627">https://data.nts.gov/Docket?ProjectID=98627</a> |                             |   |

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).