# Aviation Investigation Final Report

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| **Location:** | Newport, Pennsylvania | **Accident Number:** | ERA20LA320 |
| **Date & Time:** | September 17, 2020, 12:54 Local | **Registration:** | N336C |
| **Aircraft:** | Stinson 108 | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Loss of engine power (total) | **Injuries:** | 1 Minor, 1 None |
| **Flight Conducted Under:** | Part 91: General aviation - Instructional | | |

## Analysis

The flight instructor stated that he and the pilot fueled the airplane, departed, and flew for about 1.5 hours when, while cruising at 3,500 ft, the engine "started to sputter." He checked the magnetos, adjusted the mixture, switched fuel tanks, and pumped the primer and throttle. When he pumped the primer, the engine would "run for about 5 seconds then quit," and the propeller continued to windmill. Unable to restore power to the engine, he elected to execute a forced landing to a field. During the landing rollout, the airplane impacted a berm resulting in substantial damage to the fuselage. Postaccident examination of the engine revealed that although the cockpit mixture knob was set to full rich, the carburetor mixture control cable was disconnected at the carburetor and the carburetor mixture lever on the carburetor was in idle cutoff position. The hardware that would have attached these components was not located. Given this information, it is likely that hardware holding the mixture control cable to the mixture control arm loosened and departed during flight, allowing the disconnected mixture control arm to migrate to the cut-off position, resulting in a total loss of engine power. Since both the accelerator pump and the primer system bypass the carburetor and delivers some fuel directly to the engine even when the mixture control is in the "cutoff" position, this would explain why the instructor reported momentary bursts of power when he pumped the primer or throttle.

## Probable Cause and Findings

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

A total loss of engine power during cruise flight due to a disconnected carburetor mixture

control cable which allowed the carburetor mixture lever to migrate to the cut-off position during flight.

## Findings

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| **Aircraft** | Fuel control/carburetor - Malfunction |

## Factual Information

### History of Flight

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| **Enroute-cruise** | Loss of engine power (total) (Defining event) |
| **Enroute-cruise** | Off-field or emergency landing |

On September 17, 2020, at 1254 eastern daylight time, a Stinson 108-2 airplane, N336C, was substantially damaged when it was involved in an accident near Newport, Pennsylvania. The flight instructor sustained minor injuries and the pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

According to the flight instructor, he and the pilot fueled the airplane, departed, and flew for about 1.5 hours when, while cruising at 3,500 ft, the engine "started to sputter." He checked the magnetos, adjusted the mixture, switched fuel tanks, and pumped the primer and throttle. When he pumped the primer, the engine would "run for about 5 seconds then quit," and the propeller continued to windmill. Unable to restore power to the engine, he elected to execute a forced landing to a field. During the landing rollout, the airplane impacted a berm.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that it was intact and came to rest upright. The main landing gear collapsed, and the firewall and forward fuselage were impact damaged. One propeller was bent aft and exhibited chordwise scratching. The inspector noted fuel in both wing tanks and the fuel appeared absent of water and debris. The cockpit mixture control was selected to full rich (IN).

The engine and its accessories were examined under the supervision of an FAA inspector in the field at the accident site, and again after the airplane was recovered to a hangar. The spark plugs were removed and visually examined with no anomalies noted. Both magnetos were present and securely installed and connected. The magneto to engine timing was within specifications and both magnetos produced spark at all towers when rotating the engine by hand. Rotation of the engine's crankshaft produced compression on all cylinders, and normal valvetrain movement was observed when the crankshaft was rotated. Fuel was present throughout the fuel system and was absent of water and debris. Fuel was also present in the gascolator and the carburetor float bowl. Air was blown through the fuel cap vent tubes to the carburetor fuel supply hose and the vents and fuel lines were found to be free of obstruction. The carburetor screen was free from obstruction. The carburetor mixture control cable was found disconnected at the carburetor. The carburetor mixture lever on the carburetor was found in idle cutoff position. The attaching hardware that would have connected the mixture control cable connector fitting to the carburetor mixture arm was not located.

## Flight instructor Information

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| **Certificate:** | Commercial; Flight instructor | **Age:** | 72,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Right |
| **Other Aircraft Rating(s):** | Glider | **Restraint Used:** | Lap only |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | Airplane multi-engine; Airplane single-engine; Instrument airplane | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | May 2, 2020 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | June 1, 2019 |
| **Flight Time:** | (Estimated) 15000 hours (Total, all aircraft), 30 hours (Total, this make and model), 50 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft) | | |

## Pilot Information

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| **Certificate:** | Private | **Age:** | 32,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | Lap only |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 3 Without waivers/limitations | **Last FAA Medical Exam:** | June 6, 2018 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 66 hours (Total, all aircraft), 1 hours (Total, this make and model), 20 hours (Pilot In Command, all aircraft), 4 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Stinson | **Registration:** | N336C |
| **Model/Series:** | 108 2 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1947 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal; Utility | **Serial Number:** | 108-3336 |
| **Landing Gear Type:** | Tailwheel | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | December 1, 2019 Annual | **Certified Max Gross Wt.:** | 2230 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 2691 Hrs as of last inspection | **Engine Manufacturer:** | Franklin |
| **ELT:** | Installed, activated, did not aid in locating accident | **Engine Model/Series:** | 6A4-165-B4 |
| **Registered Owner:** | On file | **Rated Power:** | 165 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | RVL,818 ft msl | **Distance from Accident Site:** | 23 Nautical Miles |
| **Observation Time:** | 12:55 Local | **Direction from Accident Site:** | 293° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 9 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / | **Turbulence Type Forecast/Actual:** | None / None |
| **Wind Direction:** | | **Turbulence Severity Forecast/Actual:** | N/A / N/A |
| **Altimeter Setting:** | 30.03 inches Hg | **Temperature/Dew Point:** | 22°C / 15°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Connellsville, PA (VVS ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Blairstown, NJ (1N7) | **Type of Clearance:** | None |
| **Departure Time:** | 11:00 Local | **Type of Airspace:** | Class G |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Minor, 1 None | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Minor, 1 None | **Latitude, Longitude:** | 40.519443,-77.166664(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Spencer, Lynn |
| **Additional Participating Persons:** | Gary Banas; FAA/FSDO; Harrisburg, PA |
| **Original Publish Date:** | September 21, 2022 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class 3 |
| **Note:** | The NTSB did not travel to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=101987 |