Aviation Investigation Final Report

Location:	Groton, Connecticut	**Accident Number:**	ERA20LA287
Date & Time:	August 17, 2020, 22:36 Local	**Registration:**	N41382
Aircraft:	Piper PA34	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	3 Minor
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

During an instructional flight, the pilot receiving instruction performed several landings at several airports before proceeding to the home base airport where he executed two touch-and go landings and remained in the airport traffic pattern. When abeam the approach end of the landing runway while on the downwind leg of the airport traffic pattern with the landing gear extended and 10° of flaps extended, the receiving instruction began to descend while turning onto the base leg of the airport traffic pattern. The flight instructor stated that at time he heard an engine sputter and verified the engine controls were in the proper position. He heard the engine sputter again and "felt the [airplane] jerk" and stated, "my controls." He maintained airspeed and verified the engine controls were full forward, retracted the flaps but decided to leave the landing gear extended due to the altitude and proximity to the airport. He verified the malfunction to be the right engine and felt it was developing some power, but with less output than the left. He briefly pitched nose down, then nose up, and when he noticed a high descent rate, he feathered the right propeller and placed the right mixture control to idle cutoff. He maneuvered for a forced landing on a street but collided with and remained suspended in the roof of a house.

Postaccident examination of both engines, their systems, left propeller, and left propeller governor revealed no evidence of preimpact failure or malfunction. There was no evidence or preimpact failure or malfunction of either fuel supply system.

While the flight instructor reported he moved the right propeller control to the feather position near the end of the flight, the right propeller blades were on the start locks and not feathered. Functional testing of the right propeller and operational testing of the right propeller governor revealed no preimpact failure or malfunction. Therefore, there was no mechanical reason why the right propeller blades would not feather if commanded before the engine rpm became too low and engaged the propeller start locks.

Probable Cause and Findings

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

The reported partial loss of right engine power for reasons that could not be determined based on available evidence.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Approach-VFR pattern base	Loss of engine power (partial) (Defining event)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

On August 17, 2020, about 2236 eastern daylight time, a Piper PA-34-200, N41382, was substantially damaged when it impacted a house near the Groton-New London Airport (GON), Groton, Connecticut. The flight instructor and pilot receiving instruction sustained minor injuries. An occupant of the house was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

According to the flight instructor, they departed GON about 1700 hours and flew direct to Bangor International Airport (BGR), Bangor, Maine, where they landed uneventfully, and the fuel tanks were filled. According to the flight instructor, the flight departed BGR around 2000 then proceeded to Augusta State Airport (AUG), Augusta Maine, (where the pilot receiving instruction performed one touch-and-go landing) then to Portland International Jetport (PWM), Portland, Maine (where the pilot receiving instruction performed three touch-and-go landings). After the last touch-and-go landing, the flight proceeded to GON where the pilot receiving instruction performed two touch-and-go landings to runway 23.

The flight departed and remained in the traffic pattern for the same runway, where, when abeam the approach end of runway 23 with the landing gear extended and 10° of flaps extended, the pilot receiving instruction began to descend while turning onto the base leg of the airport traffic pattern. The flight instructor stated that at the time he heard an engine sputter and verified the controls were in the proper position. He heard the engine sputter again, "felt the [airplane] jerk," and took control of the airplane. He maintained airspeed and verified the engine controls were full forward. He retracted the flaps but decided to leave the landing gear extended due to the altitude and proximity to the airport. He verified the malfunction to be the right engine and felt it was developing some power but with less output than the left. He briefly pitched nose down, then nose up, and when he noticed a high descent rate, he moved the right propeller control to the feather position and placed the right mixture control to idle cutoff. He looked for a place to land and maneuvered for landing on a street. While flaring to land, he felt a collision. The airplane came to rest suspended by the roof structure of a house.

Examination of the cockpit while the airplane was suspended on the roof was not performed by an Federal Aviation Administration inspector for safety concerns. A photograph of the throttle quadrant taken before the airplane was removed from the house revealed the left throttle control was full forward and the right throttle control was at the aft stop. The left propeller control was about 65% forward travel and the right propeller control was 75% forward travel.

The left mixture control was about 60% forward travel, while the right mixture control was at idle cutoff. The left cowl flap was closed while the right cowl flap was open. The left engine alternate air control was on, while the right engine alternate air control was off.

The airplane was recovered for further examination of the airframe, engines and their systems, propellers and propeller governors. Following removal from the house, the FAA inspector reported fuel was present at both fuel strainers and oil was present in each engine.

Examination of the airplane following recovery revealed all engine controls for both engines remained attached to their respective attach points at each servo fuel injector and propeller governor. Flight control continuity for the ailerons, elevator, and rudder was confirmed except where the control cables were cut for recovery. The flap handle was in the down/stowed position, consistent with the flaps being retracted. Both auxiliary fuel pump switches were in the on position, and both electrically tested satisfactory. Both fuel tanks of both wings were breached and did not contain any fuel, and neither fuel strainer contained any residual fuel.

The left fuel selector was in the ON position and the right fuel selector was in the CROSSFEED position. No obstructions of the fuel supply lines were noted. Both CROSSFEED drains were checked and about 6 ounces of fuel drained from the bottom of the airframe. The fuel odor and viscosity were consistent with 100LL, but the liquid was cloudy and was not tinted blue. Testing detected no water in the fuel sample. Operational testing of each fuel selector revealed no evidence of preimpact failure or malfunction.

Examination of the left and right engines and their systems revealed no evidence of preimpact failure or malfunction. Both propeller governors and propellers were examined at the manufacturer's facility with virtual oversight provided by the National Transportation Safety Board. Examination of the left propeller revealed impact damage that precluded functional testing. Disassembly of the propeller revealed no evidence of preimpact failure or malfunction. The damage to the propeller blades was consistent with the engine not developing high power at impact.

Visual examination of the right propeller revealed the blades appeared to be on the start locks. Although the amount of engine oil drained from the right cylinder was not quantified, it was greater than the amount if the propeller was in the feathered position. This was consistent with the propeller blades being in low pitch and that the governor had not dumped the oil to the engine. Following removal of the start lock/feather stop sleeve assembly and when air pressure was removed, both blades moved to the feather position. Cycling of the propeller blades from feather to low pitch was performed several times using shop air with no discrepancies noted. No evidence of preimpact failure or malfunction was noted to the propeller, and the blades exhibited minimal damage consistent with the engine not developing power at impact. The right propeller was not disassembled.

Operational testing of the left propeller governor revealed several minor out-of-tolerance conditions (such as control lever travel, high rpm setting 40 rpm too low, and relief pressure 1 psi too high). All other checks, including feather check, were within limits. Operational testing of the right propeller governor revealed all checks, including feather check, were within

limits. Only one setting (high rpm setting) was 21 rpm too low. Neither propeller governor was disassembled.

Flight instructor Information

Certificate:	Commercial; Flight instructor; Remote	**Age:**	25,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
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 1 Without waivers/limitations	**Last FAA Medical Exam:**	October 8, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 4, 2019
Flight Time:	1545 hours (Total, all aircraft), 443 hours (Total, this make and model), 1393 hours (Pilot In Command, all aircraft), 154 hours (Last 90 days, all aircraft), 22 hours (Last 30 days, all aircraft)		

Student pilot Information

Certificate:	Private	**Age:**	23,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	October 28, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 1, 2020
Flight Time:	10 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N41382
Model/Series:	PA34 200	**Aircraft Category:**	Airplane
Year of Manufacture:	1974	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	34-7450114
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	July 9, 2020 100 hour	**Certified Max Gross Wt.:**	4200 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	20641.3 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	IO-360-C1E6
Registered Owner:	Upgrade Incorporated	**Rated Power:**	200 Horsepower
Operator:	Upgrade Incorporated	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	GON,9 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	22:56 Local	**Direction from Accident Site:**	217°
Lowest Cloud Condition:	Few / 1500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	Unknown / Unknown
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	Unknown / Unknown
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	21°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bangor, ME (BGR)	**Type of Flight Plan Filed:**	None
Destination:	Groton, CT (GON)	**Type of Clearance:**	VFR flight following
Departure Time:	20:02 Local	**Type of Airspace:**	

Airport Information

Airport:	Groton-New London Airport GON	**Runway Surface Type:**	Asphalt
Airport Elevation:	9 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	23	**IFR Approach:**	None
Runway Length/Width:	5000 ft / 150 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	1 Minor	**Aircraft Explosion:**	None
Total Injuries:	3 Minor	**Latitude, Longitude:**	41.350833,-72.024169

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	Dennis Oparowski; FAA/FSDO; Windsor Lockts, CT Jonathon Hirsch; Piper Aircraft, Inc.; Vero Beach, FL Les Doud; Hartzell Propeller; Piqua, OH
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=101811