Aviation Investigation Final Report

Location:	Rogers, Minnesota	**Accident Number:**	CEN20FA096
Date & Time:	February 22, 2020, 11:11 Local	**Registration:**	N3266Q
Aircraft:	Beech A36	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Radar data indicate that the airplane was in cruise flight about 1,000 ft above ground level (agl) when it climbed about 300 ft and decelerated from about 170 to 110 knots groundspeed. The airplane subsequently turned away from populated areas and descended at 70 to 75 knots groundspeed with a steady vertical speed. About 100 ft agl, the airplane turned right and impacted forested terrain, which resulted in a postcrash fire. The flight profile was consistent with a power loss, followed by a forced landing attempt.

Examination at the accident site revealed the flexible fuel hose b-nut connecting the firewall fuel outlet fitting to the inlet fitting on the engine-driven fuel pump was only finger tight, and green 'torque putty' did not align between the b-nut shoulder of the outlet fitting and the fuel pump's inlet. Both findings were consistent with improper torque application during maintenance. The loose b-nut could have resulted in allowing air to enter the fuel line which would result in a loss of engine power.

Examination at the recovery facility and an engine test run revealed no other anomalies that would have precluded normal engine operation. The engine was installed about 4 months prior to the accident and had accumulated about 21 hours. No maintenance was recorded after the inspections that were conducted in conjunction with the engine installation.

An autopsy revealed the pilot had moderate-to-severe atherosclerosis, but there was no evidence of any acute or past coronary event. While the pilot was at increased risk for an acute cardiac event, there was no evidence this occurred, and the pilot's coronary artery disease was determined to not be a factor in the accident.

Probable Cause and Findings

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

Inadequate maintenance that resulted in improper torque to the engine-driven fuel pump inlet fitting, which led to a loss of engine power and forced landing into unsuitable terrain.

Findings

Aircraft	(general) - Incorrect service/maintenance
Personnel issues	Installation - Maintenance personnel
Environmental issues	Tree(s) - Effect on equipment

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Landing	Collision with terr/obj (non-CFIT)

On February 22, 2020, about 1111 central standard time, a Beech A36 airplane, N3266Q, was destroyed when it was involved in an accident near Rogers, Minnesota. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to air traffic control (ATC) data, the flight departed at 1100 from Flying Cloud Airport (FCM), Eden Prairie, Minnesota and was destined for Breezy Point Airport (8MN3), Breezy Point, Minnesota. After takeoff from FCM, the airplane turned northwest and climbed to 2,000 ft mean sea level (msl). No radio communications occurred after the airplane exited FCM airspace.

While in cruise flight, the airplane climbed from 2,000 to 2,300 ft msl and decelerated from about 170 to 110 knots groundspeed. The airplane subsequently turned left away from populated areas and descended with a steady vertical speed at 70 to 75 knots groundspeed. At 1,100 ft msl (200 ft agl), the airplane turned right and the last ATC data recorded was 1,000 ft msl (100 ft agl), 72 knots groundspeed, and 243°.

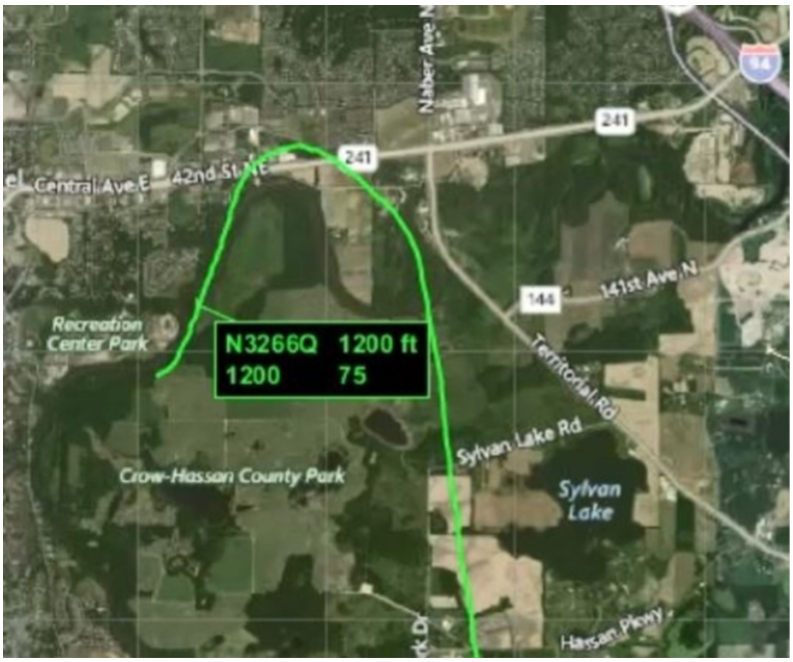

Figure 1 – Flight Path of Accident Airplane

A witness observed the airplane flying at low altitude toward the southwest and subsequently noted that the airplane's bank angle increased, followed by a rapid descent. The airplane impacted forested terrain and a post-crash fire occurred.

Pilot Information

Certificate:	Commercial	**Age:**	60,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	June 20, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 1, 2018
Flight Time:	4507 hours (Total, all aircraft), 207 hours (Total, this make and model), 7 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3266Q
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:	1995	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-2966
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 17, 2019 Annual	**Certified Max Gross Wt.:**	3651 lbs
Time Since Last Inspection:	18 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2921.9 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	C91A installed, not activated	**Engine Model/Series:**	IO-550-R
Registered Owner:	On file	**Rated Power:**	310 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

According to maintenance records, the originally installed IO-550-B engine was removed and a model IO-550-R engine was installed on October 17, 2019, in accordance with supplemental type certificate #SA10145SC-D. After installation a 60-minute engine run was completed, followed by a break-in run for 130 minutes. The engine oil was changed, and filters were inspected, with no defects noted.

No maintenance entries were recorded after October 17, 2019. A review of flight data from FlightAware indicated the airplane was airborne about 16.5 hours after the new engine was installed.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KMIC,861 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	119°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	1°C / -3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Minneapolis, MN (FCM)	**Type of Flight Plan Filed:**	None
Destination:	Breezy Point, MN (8MN3)	**Type of Clearance:**	None
Departure Time:	11:00 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	45.198055,-93.652778

The airplane came to rest upright, with the cabin area and both wings fire damaged. The left wing was separated by tree impact, with the left-wing outboard section located about 20 ft

from the main wreckage. The right-wing outboard section was separated and folded under the main wreckage.

The three-blade constant speed propeller remained attached to the crankshaft propeller flange, with no damage to the leading edges of the blades. All three blades had rearward bending that began about 12" outboard of the blade roots. The propeller spinner had no spiral damage. A tree branch near the wreckage had 45-degree cuts consistent with propeller chopping.

The engine's top cowling was separated and exposed the engine. The flexible fuel hose b-nut that connected the firewall fuel outlet fitting to the fuel inlet fitting on the engine-driven fuel pump was found to be finger tight. The green torque putty did not align between the fuel pump's inlet fitting and the b-nut shoulder of the outlet fitting. The fuel hose b-nut and outlet fitting were disassembled, with no anomalies noted.

The fuel mixture control on the engine driven fuel pump was at the full rich stop, with the assembly hardware secure. The throttle control cable was secured to the throttle arm located on the throttle body. The engine driven fuel pump drive coupling was intact and the pump operated smoothly when manually rotated.

The fuel system was fire damaged, and the fuel boost pump switch was not located. Disassembly of the fuel selector valve revealed it to be in the left tank position and no obstructions were found in the fuel strainer screen. Both fuel filler caps were installed in their respective filler neck in the wings.

The horizontal stabilizers, elevators, vertical stabilizer, and rudder remained attached. Flight control continuity was confirmed to the extent possible due to fire damage. Both flap actuators were in the retracted position and all landing gear were retracted. Cockpit instruments were fire damaged and no readings were possible.

An engine test run was conducted at the manufacturer's facility with NTSB oversight. Nominal parameters were observed during the engine run, which was abbreviated to 3-minute intervals based on concerns of an observed fatigue crack in the propeller flange. During cylinder compression testing after the engine run, #1 to #6-cylinder compression was measured at 60/80, 65/80, 70/80, 69/80, 70/80, 72/80 psi respectively.

Medical and Pathological Information

According to the autopsy report, the cause of death in the pilot was multiple blunt force injuries. The medical examiner identified focally severe atherosclerosis in the pilot's right

coronary artery (75-80%) and left anterior descending coronary artery (75%). No other significant natural disease was identified. FAA Forensic Sciences Laboratory toxicology testing was negative for ethanol and tested for drugs.

Administrative Information

Investigator In Charge (IIC):	Folkerts, Michael
Additional Participating Persons:	Nikolas Halatsis; Flight District Standards Office; Minneapolis, MN Mike Council; Continental Aerospace Technologies; Mobile, AL Andrew Hall; Textron Aviation; Wichita, KS
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Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=100978