Aviation Investigation Final Report

Location:	Tatum, Texas	**Accident Number:**	CEN21FA195
Date & Time:	April 19, 2021, 13:46 Local	**Registration:**	N801EC
Aircraft:	Cessna 340A	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

The pilot was planning to perform a functional test of the airplane's newly upgraded autopilot system. Automatic dependent surveillance-broadcast data showed that, after takeoff, the airplane turned east and climbed to 2,750 ft. Air traffic control information indicated that the controller cleared the pilot to operate under visual flight rules to the east of the airport. Communications between ground control, tower control, and the pilot were normal during the ground taxi, takeoff, and climb. Radio and radar communications were lost 6 minutes after takeoff, and no radio distress calls were received from the pilot. The airplane impacted wooded terrain about 3/4 mile to the east of the last recorded radar data point. Groundspeeds and headings were consistent throughout the flight with no abrupt deviations.

The airplane impacted the wooded terrain in a nose-down, near-vertical flight attitude. Most of the airplane, including the fuselage, wings, and empennage, were consumed by a postimpact fire. Both engines and propellers separated from the airplane at impact with the ground. Examination of the engines revealed no preaccident failures or malfunctions that would have precluded normal operations. Both propellers showed signs of normal operation. Flight control continuity was confirmed. The elevator trim cables stop blocks were secured to the cables and undamaged. They were found against the forward stop meaning the trim tab was at full down travel (elevator leading edge full down) which indicated that the airplane was trimmed full nose up at impact.

The airplane's cabin sustained fragmentation from impact and was consumed by fire; as a result, the autopilot system could not be examined. The investigation was unable to determine why the pilot lost control of the airplane.

Probable Cause and Findings

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

The pilot’s loss of airplane control for undetermined reasons.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute	Loss of control in flight (Defining event)
Unknown	Unknown or undetermined

On April 19, 2021, about 1346 central daylight time, a Cessna 340A airplane, N801EC, was destroyed when it was involved in an accident near Tatum, Texas. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 test flight.

According to information provided by a fixed-base operator (FBO) at the East Texas Regional Airport (GGG), Longview, Texas, the pilot intended to perform a functional test of a newly upgraded autopilot system. On the day of the accident, a mechanic at the FBO reported that he pulled out the airplane from the hangar, and that the pilot planned to get fuel and have the propellers balanced before the flight. According to the mechanic, he explained to the pilot that the autopilot should not be engaged until the airplane was at an altitude of at least 5,000 ft above ground level or higher, which was a standard procedure that the mechanic provided to all pilots who were testing an autopilot.

The pilot started the engines, and the airplane sat on the ramp for about 15 minutes. The pilot then shut down the engines and told the mechanic that he could not get the autopilot to work. The mechanic showed the pilot where the main autopilot and trim master switches were located andshowed him that the autopilot passed a self-test. The mechanic then told the pilot to try another autopilot self-test with engines running and, if the autopilot did not pass another self-test, to shut down. The pilot ran the engines for about 5 to 10 minutes and then departed.

According to air traffic control (ATC) information, the controller cleared the pilot to operate under visual flight rules to the east of the airport. Communications between ground control, tower control, and the pilot were normal during the taxi, takeoff, and climb. Automatic dependent surveillance–broadcast (ADS-B) data showed that the airplane took off from runway 13 at GGG about 1340. The data also showed that, after takeoff, the airplane was in a steady climb to the east of GGG. The airplane climbed to an altitude of 2,750 ft mean sea level (msl) and then descended to 2,675 ft msl. The last recorded data point, at 1346, showed that the airplane was heading east at an altitude of 2,675 ft msl and a groundspeed of 152 knots. The airplane impacted wooded terrain about 3/4 mile east of the last recorded data point. Groundspeeds and headings were consistent throughout the flight with no abrupt deviations (see figures 1, 2, and 3). Radio and radar communications were lost 6 minutes after takeoff. No radio distress calls were received from the pilot.

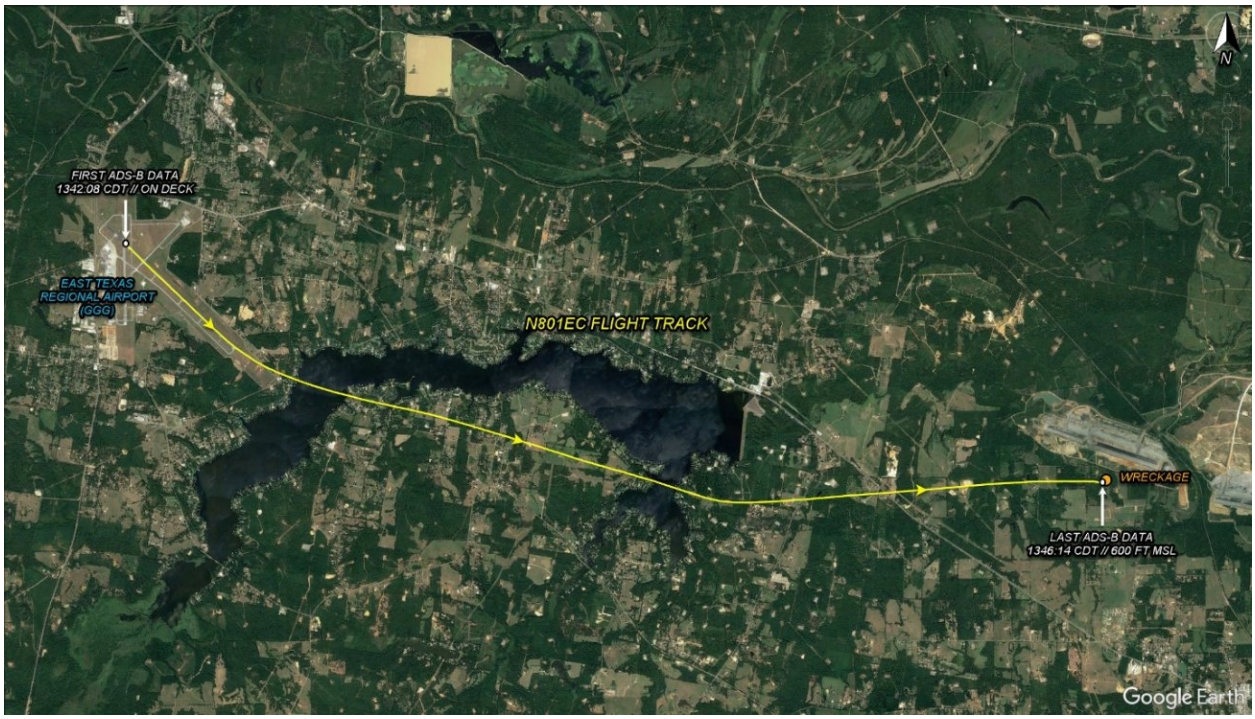

Figure 1. Airplane flightpath.

Figure 2. Flightpath elevation view.

Figure 3. Flight track with final data points.

A local resident about 1 mile from the accident site reported that, while inside his residence, he heard and felt a “boom” that shook the windows. His wife then saw black smoke rising immediately.

Pilot Information

Certificate:	Airline transport	**Age:**	74,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:**	
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	October 7, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 28665 hours (Total, all aircraft), 120 hours (Total, this make and model), 15 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N801EC
Model/Series:	340A	**Aircraft Category:**	Airplane
Year of Manufacture:	1977	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	340A0312
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 8, 2020 Annual	**Certified Max Gross Wt.:**	5990 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	6500 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520-N
Registered Owner:	On file	**Rated Power:**	335 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KGGG,373 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	13:53 Local	**Direction from Accident Site:**	282°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	21°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Longview, TX (GGG)	**Type of Flight Plan Filed:**	None
Destination:	Tatum, TX	**Type of Clearance:**	None
Departure Time:	13:40 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	East Regional GGG	**Runway Surface Type:**	
Airport Elevation:	365 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

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:**	32.35375,-94.54105

The accident site was located at an elevation of 361 ft msl. The airplane impacted wooded terrain in a nose-down, near-vertical flight attitude. The forward fuselage and cabin were embedded into the ground and were mostly consumed from a postimpact fire. The empennage and aft fuselage were folded forward over the cabin area and were charred and consumed by fire. Both left and right wings showed leading-edge aft crushing along their respective spans. Portions of both wings were charred, melted, and consumed by the fire (see figure 4).


Figure 4. Airplane wreckage.

Both the left and right engine nacelles were separated from the wings, and the engine and propeller assemblies were embedded in 3-ft-deep craters forward of the main airplane wreckage. The engines sustained heavy impact damage, and the propellers were fractured and separated at their crankshafts immediately aft of the flanges. All three blades on the left and right propellers were bent aft and showed leading-edge polishing and chordwise rubs and scratches.

Flight control continuity was confirmed. The elevator trim cables stop blocks were secured to the cables and undamaged. They were found against the forward stop meaning the trim tab was at full down travel (elevator leading edge full down) which indicated that the airplane was trimmed full nose up at impact.

The airplane's instrument panel, avionics, autopilot, and engine controls were broken out, fragmented, melted, and consumed by the postimpact fire. Avionics and instrument tubing and wiring behind the panel were melted and consumed by the fire. A functional test of the autopilot system could not be performed due to the damage that it sustained in the accident.

Examination of the engines revealed no preaccident failures or malfunctions that would have precluded normal operation.

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander		
Additional Participating Persons:	Jennifer Barclay; Textron Cessna; Wichita, KS Baker Nase; FAA FSDO North Texas; Irving, TX		
Original Publish Date:	September 7, 2023	**Investigation Class:**	3
Note:			
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=102942		