Aviation Investigation Final Report

Location:	Cleveland, North Carolina	**Accident Number:**	ERA19FA154
Date & Time:	April 22, 2019, 09:15 Local	**Registration:**	N625J
Aircraft:	Wheeler EXPRESS SERIES 2000	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot departed in the experimental amateur-built airplane in visual meteorological conditions for a flight to another airport for an avionics upgrade. Shortly after departure, a witness reported that he heard an airplane's engine and that, when he saw the airplane it quickly rolled inverted. Another witness located close to the accident site reported that he saw the airplane heading straight down. He heard loud engine noises that changed pitch, and then the airplane fell below a tree line and did not reappear. The disposition of the wreckage was consistent with the airplane impacting terrain with significant energy and at a steep vertical angle. All the airplane's major components were accounted for at the accident site and examination of the airframe and engine revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation.

The airplane's manual contained a statement warning against performing aerobatics in the airplane, and specifically warned that the airplane would rapidly build speed when in a nose down attitude. Based on the witness statements that describe maneuvers (the airplane rolling inverted) and a steep descent toward the ground prior to the accident, it is possible that the pilot was maneuvering the airplane before losing control and impacting the ground in a rapid descent.

Based on the results of postmortem toxicological testing, the pilot was taking the sedating antihistamine diphenhydramine. This over the counter drug carries the warning that use may impair mental and/or physical ability required for the performance of potentially hazardous tasks. Compared to other antihistamines, diphenhydramine causes marked sedation. However, no blood was available for testing, and the investigation was unable to determine if the pilot had impairing levels of the potentially impairing medication diphenhydramine in his body around the time of the accident. It is likely that some or all of the ethanol identified by the toxicological testing was from sources other than ingestion.

Probable Cause and Findings

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

A loss of control and impact with terrain while maneuvering.

Findings

Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Maneuvering	Loss of control in flight (Defining event)

HISTORY OF FLIGHT

On April 22, 2019, about 0915 eastern daylight time, an experimental, amateur-built Wheeler Express Series 2000, N625J, was destroyed when it was involved in an accident near Cleveland, North Carolina. The pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

According to the airplane owner, the pilot planned to depart Statesville Regional Airport (SVH), Statesville, North Carolina, and fly the airplane to Twin Lakes Airport (8A7), Mocksville, North Carolina, for an avionics upgrade. The pilot departed SVH at 0901. The owner stated that he watched the airplane depart runway 28, travel west, and then turn back to the east before he lost sight of it. Around 0900, a witness who was located 4.5 miles northeast of SVH reported that he heard an airplane's engine. When he saw the airplane, he could see that the right wingtip was down. The airplane then rolled quickly inverted while heading eastward. A second witness located 1 mile east of the accident site stated that around 0910, he saw what he thought might be a radio-controlled airplane heading straight down, that he heard loud engine noises that changed pitch. The airplane then fell below the tree line and did not reappear. He later realized that he might have witnessed the accident when he heard that an airplane had crashed.

The accident airplane's owner arrived at 8A7 about 1040, and the airplane had not arrived. He made several phone calls to the pilot without success. He returned to SVH to see if the pilot had returned while other pilots at 8A7 departed in airplanes to search the area. At 1300, the Federal Aviation Administration (FAA) issued an alert notice for the missing airplane, which was found in a field 4 hours later.

AIRPLANE INFORMATION

The Owner's Flight Manual, Maneuver Limits, stated that:

> *Aerobatics that may impose high loads should not be attempted. The important thing to remember in flight maneuvers is that the airplane is very clean aerodynamically and will build speed with the nose down…Intentional spins are prohibited.*

WRECKAGE AND IMPACT INFORMATION

All the airplane's major components were found at the accident site. Both wings were highly fragmented and were found on the right and left side of the main wreckage near their mounting locations. The wings

were detached from the fuselage, and both flaps and ailerons had completely separated. The upper and lower wing skins were fragmented, and pieces were found near the main wreckage.

The empennage was displaced upward and forward and had come to rest slightly aft of the main wreckage. The rudder, vertical stabilizer, and horizontal stabilizer were fragmented.

Control continuity was confirmed from all flight control surfaces to their respective cockpit controls through overload breaks and fractures. The cockpit throttle control assembly was separated, and the throttle control lever was found extended fully aft in the closed (idle) position, and the throttle shaft handle was bent about 90° in the direction of the instrument panel. The cockpit mixture control assembly was found in the full-forward, full-rich mixture position.

The engine crankcase was broken in multiple locations with significant impact-related damage on the front of the crankcase. The six cylinders remained attached to the engine; however, the Nos. 5 and 6 cylinders were only partially attached. All the engine accessory components were separated from the crankcase except for the fuel pump, oil pump, and starter adapter. One of the magnetos and most of the throttle and fuel metering assembly were not found.

The propeller hub remained intact and displayed impact damage. Two of the three propeller blades were broken from the hub; one of the propeller blades was not found. The propeller blade that remained attached to the hub displayed significant S-bending, twisting, and leading-edge gouging. A large portion of the blade tip was separated and found in the impact crater. The remaining propeller blade had broken from the hub at the propeller blade shank, and a portion of the tip was separated. The blade displayed twisting deformation as well as leading-edge gouging.

Both airplane entry door locking assemblies were found with their locking pins in the closed/locked position.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed by the Office of Chief Medical Examiner, Raleigh, North Carolina. The cause of death was multiple blunt force injuries.

Toxicology testing of the pilot’s tissue specimens performed at the FAA's Bioaeronautical Sciences Laboratory detected 0.053 grams per heptagram of ethanol in muscle tissue samples but not in the liver tissue. The over the counter pain medication naproxen, commonly marketed as Aleve, was detected in the muscle and liver. The over the counter heartburn medication ranitidine, commonly marketed as Zantac, was detected in the muscle. Diphenhydramine, commonly marketed as Benadryl, is available over the counter in many products used to treat colds, allergies, and insomnia, and was detected in muscle and liver. No blood was available for testing.

Pilot Information

Certificate:	Airline transport; Flight instructor	**Age:**	66,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider; Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane; Instrument helicopter	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	April 18, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 17040 hours (Total, all aircraft), 15 hours (Total, this make and model), 80 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Wheeler	**Registration:**	N625J
Model/Series:	EXPRESS SERIES 2000 No Series	**Aircraft Category:**	Airplane
Year of Manufacture:	2002	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	990009-M
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	February 1, 2019 Condition	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:	4 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	268 Hrs at time of accident	**Engine Manufacturer:**	TCM
ELT:		**Engine Model/Series:**	IO-550-N
Registered Owner:	On file	**Rated Power:**	310 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:	SVH,967 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	09:20 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	13°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Statesville, NC (SVH)	**Type of Flight Plan Filed:**	None
Destination:	Mocksville, NC (8A7)	**Type of Clearance:**	None
Departure Time:	09:01 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	35.755001,-80.635002(est)

Administrative Information

Investigator In Charge (IIC):	Wentz, Peter
Additional Participating Persons:	Robert W Reynolds; FAA CLT FSDO; Charlotte, NC Kurt Gibson; Continental Aerospace Technologies; Mobile, AL
Original Publish Date:	December 3, 2020
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99295