



Aviation Investigation Final Report

Location:	Stroud, Oklahoma	Accident Number:	CEN22FA016
Date & Time:	October 18, 2021, 15:34 Local	Registration:	N419LB
Aircraft:	AutoGyro Cavalon	Aircraft Damage:	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A witness reported that the pilot purchased the gyroplane in January 2020 and has been undergoing flight lessons. Two days before the accident was the pilot's first solo flight. On the day of the accident, the witness observed the gyroplane positioned heading to the north on a 300-yard, private, field. The wind was gusting from the south, which was a tailwind. The pilot added full engine power and the gyroplane started its takeoff roll toward the north. The gyroplane never lifted off the ground and impacted a barbed wire fence at the end of the field. The witness proceeded toward the accident site, and he observed that the pilot was ejected from the gyroplane. The gyroplane came to rest upright with the engine still running. After calling for help, he turned the engine off via cockpit controls.

The pilot's flight instructor reported that the pilot had about 20 total hours of flight training over the course of about a year. He would fly a few hours at a time with large gaps in-between. The pilot traveled a long distance to obtain the instruction and about 3 months prior to the accident, he elected to move the gyroplane closer to his home despite the instructor informing him he was not ready for solo flight. It is unknown if the pilot obtained additional flight instruction as advised.

On scene examination of the airframe did not reveal any anomalies that would have precluded normal operations. A large hole was noted in the forward windscreen; the seatbelts remained secured to the airframe, and they were not clasped. Since the pilot was ejected, it is likely he was not wearing a seatbelt.

The nearest weather reporting station was about 7 nautical miles northwest of the accident site. At the time of the accident, wind was from 160° at 8 knots, gusting to 17 knots, which would have been a tailwind. The AutoGyro Cavalon Pilot Operating Handbook states under Environmental Limitations "Maximum tailwind component for take-off and landing...5 knots."

The pilot’s toxicology results showed that he had used methamphetamine. His high methamphetamine blood level was consistent with methamphetamine abuse although the level does not indicate if he was experiencing early drug effects (possibly feeling alert, euphoric, and invulnerable, with a tendency to make high-risk decisions) or later effects (possibly feeling restless, disorganized, uncoordinated, and craving more drug). Toxicology results also showed that the pilot had used THC, although it is impossible to infer specific impairing effects from the measured levels of THC and its metabolites, or to predict how THC and methamphetamine effects may have interacted.

Given the pilot’s overall lack of experience, along with his decision to take off with a tailwind, it is likely he did not possess the necessary skill or experience to safely conduct solo flight. Therefore, it was impossible to determine whether impairment of his handling of the aircraft from drug effects contributed to the accident.

Probable Cause and Findings

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

The pilot’s lack of experience in the gyroplane and his decision to takeoff with a tailwind. As a result, the gyroplane did not generate enough lift to takeoff before it struck a barbed wire fence. Contributing to the accident was the pilot’s failure to wear a seatbelt, which would have reduced his level of injury.

Findings	
Environmental issues	Tailwind - Effect on operation
Environmental issues	(general) - Effect on operation
Personnel issues	Decision making/judgment - Pilot
Environmental issues	(general) - Effect on personnel

Factual Information

History of Flight

Takeoff	Collision with terr/obj (non-CFIT) (Defining event)
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On October 18, 2021, about 1534 central daylight time, an AutoGyro Cavalon gyroplane, N419LB, was substantially damaged when it was involved in an accident near Stroud, Oklahoma. The pilot was fatally injured. The gyroplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

A witness reported that the pilot purchased the gyroplane in January 2020 and has been undergoing flight lessons. Two days before the accident was the pilot's first solo flight. On the day of the accident, the witness observed the gyroplane positioned heading north on a 300-yard long, field. The witness stated the wind was gusting from the south, which was a tailwind. The pilot added full engine power and the gyroplane started its takeoff roll toward the north. However, the gyroplane never lifted off the ground and impacted a barbed wire fence at the end of the field. The witness proceeded toward the accident site, and he observed that the pilot was ejected from the gyroplane. The gyroplane came to rest upright with the engine still running. After calling for help, he turned the engine off via cockpit controls.

Pilot Information

Certificate:	None	Age:	66,Male
Airplane Rating(s):	None	Seat Occupied:	Unknown
Other Aircraft Rating(s):	None	Restraint Used:	None
Instrument Rating(s):	None	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	None None	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 20 hours (Total, all aircraft), 20 hours (Total, this make and model)		

The pilot's flight instructor reported that the pilot underwent about 20 total hours of flight training in about a year. The pilot did not live locally to the training facility so he would fly a few hours at a time with large gaps in between. The pilot's last flight lesson occurred about 3 months prior to the accident. According to the flight instructor, the pilot insisted on moving

the gyroplane home so he could fly it more. The flight instructor informed the pilot that he was not ready for solo flight and encouraged the pilot to find another instructor for continued training. The pilot said he had an instructor “lined up,” but did not mention who it was.

Aircraft and Owner/Operator Information

Aircraft Make:	AutoGyro	Registration:	N419LB
Model/Series:	Cavalon	Aircraft Category:	Gyroplane
Year of Manufacture:	2018	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	V00313
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	August 16, 2021 Continuous airworthiness	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	187.3 Hrs as of last inspection	Engine Manufacturer:	Rotax
ELT:	Not installed	Engine Model/Series:	914
Registered Owner:	On file	Rated Power:	115 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:	KCUH, 916 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	15:35 Local	Direction from Accident Site:	307°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots / 17 knots	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	160°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.01 inches Hg	Temperature/Dew Point:	22°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Stroud, OK	Type of Flight Plan Filed:	None
Destination:	Stroud, OK	Type of Clearance:	None
Departure Time:		Type of Airspace:	

The nearest weather reporting station was about 7 nautical miles northwest of the accident site. At the time of the accident, wind was from 160° at 8 knots, gusting to 17 knots.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	35.881312,-96.657354

The first identified point of impact was a barbed wire fence on the upslope side of an open field. About 100 ft beyond the fence were striations in the dirt consistent with rotor blade strikes. About 25 ft beyond the striations, the gyroplane came to rest upright, and parallel to the fence line.

All major components remained attached to the gyroplane. A large hole was observed in the front windscreen, otherwise, the cabin area remained mostly intact. The seatbelts remained

secured to the airframe, and they were not clasped. Flight control continuity was established from the cockpit controls to their respective flight control surfaces. The rotor head was bent aft about 45°, and both rotor blades remained attached at the hub. One blade was bent down at the root, and the second blade was fractured and separated about midspan. The propeller blades on the engine remained attached at the hub. One blade was fractured at the root and the other two were fractured about midspan. The propeller blade fragments were scattered throughout the debris field. Striations consistent with barbed wire fencing were noted along the left and right landing gear struts. A portion of wire was wedged at the top of the gear struts where they connect to the fuselage.

The AutoGryo Cavalon Pilot Operating Handbook states under Environmental Limitations “Maximum tailwind component for take-off and landing...5 knots”.

Medical and Pathological Information

The pilot did not have a Federal Aviation Administration (FAA) medical certificate. The Oklahoma Office of the Chief Medical Examiner performed his autopsy. According to the autopsy report, the cause of death was blunt force trauma, and the manner of death was accident. The autopsy identified mild atherosclerotic disease of the coronary arteries and cerebral vasculature. Concentric heart muscle thickening was present, with a normal heart weight. The autopsy did not identify other significant natural disease. The Office of the Chief Medical Examiner detected methamphetamine and the methamphetamine metabolite amphetamine in heart blood.

The FAA Forensic Sciences Laboratory also performed toxicological testing of postmortem specimens from the pilot. Methamphetamine was identified in urine and at 979 ng/mL in femoral blood. Amphetamine was identified in urine and at 75 ng/mL in femoral blood. Phenylpropanolamine and pseudoephedrine were detected in urine but not in femoral blood. Delta-9-THC (commonly known as THC) was identified in urine and at 2.6 ng/mL in femoral blood. The THC metabolite 11-hydroxy-delta-9-THC was identified in urine but not in femoral blood. The THC metabolite carboxy-delta-9-THC was identified in urine and at 6.1 ng/mL in femoral blood. Tamsulosin was detected in urine and femoral blood.

Methamphetamine is a central nervous system stimulant drug. Amphetamine is a metabolite of methamphetamine and is also a central nervous system stimulant. Both methamphetamine and amphetamine are available as prescription medications used to treat attention deficit hyperactivity disorder, narcolepsy, and occasionally obesity; each may also be a metabolite of certain other medications. Methamphetamine and amphetamine are Drug Enforcement Administration (DEA) Schedule II controlled substances, with a high potential for abuse and dependence. At low doses used as part of appropriate medical treatment, the drugs may improve reaction time, cognitive function, and fatigue, but may cause people to make higher-

risk choices. At higher doses, the drugs may have a variety of impairing effects on psychomotor function, cognition, and perception. The drugs typically carry warnings that they may impair the ability to engage in potentially hazardous activities such as driving a motor vehicle. Such impairment can result from drug or withdrawal effects. Both methamphetamine and amphetamine are considered “do not issue/do not fly” medications by the FAA.

Delta-9-THC, commonly known as THC, is the primary psychoactive chemical in cannabis and hashish, derived from the cannabis plant. THC is commonly smoked or ingested recreationally by users seeking mind-altering effects. It may also be used medicinally to treat illness-associated nausea and appetite loss. It is present as an undeclared contaminant in some commercial cannabidiol (CBD) extracts and oils that may be used by a variety of routes for a variety of reasons. In the body, THC is metabolized mainly to the psychoactive chemical 11-hydroxy-delta-9-THC, which is then further metabolized to the non-psychoactive chemical carboxy-delta-9-THC. Psychoactive effects of THC vary depending on the user, dose, and route of administration, and may impair motor coordination, reaction time, decision making, problem solving, and vigilance. THC is a DEA controlled substance, and the FAA considers it unsuitable for flying, regardless of state cannabis laws.

Administrative Information

Investigator In Charge (IIC):	Link, Samantha
Additional Participating Persons:	Tom LaNou; Federal Aviation Administration; Oklahoma City, OK
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Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=104119

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).