Aviation Investigation Final Report

Location:	Wadsworth, Ohio	**Accident Number:**	CEN21FA426
Date & Time:	September 18, 2021, 18:45 Local	**Registration:**	N6915G
Aircraft:	RANS S20	**Aircraft Damage:**	Destroyed
Defining Event:	Aircraft wake turb encounter	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot of the airplane was holding short of the runway for takeoff when he asked the pilot of an inbound helicopter to side-step to the taxiway so that the airplane could depart. The helicopter pilot reported that a side-step would have resulted in the helicopter flying directly over the airplane and that he side-stepped the helicopter toward the taxiway after clearing the airplane. An airport surveillance camera captured the airplane start the takeoff roll after the helicopter passed. Shortly after takeoff, the airplane entered a steep roll and impacted the runway. A postimpact fire ensued.

Toxicology testing of the pilot was positive for ethanol in blood, vitreous fluid, urine, gastric contents, and liver tissue. The ethanol in blood concentration (0.108 gm/dL) was associated with impairment, and alcohol consumption was fairly recent to the accident based on the concentration levels in the pilot's body.

The pilot completed building the airplane about 5 months before the accident. The engine had a history of high oil and cylinder head temperatures, which may have been a factor in the pilot's decision to depart so soon after the helicopter to reduce idling time on the ground.

Based on the available information, it is likely that the airplane encountered wake turbulence from the landing helicopter during takeoff, which resulted in the pilot's loss of control. It is likely that the pilot's impairment from ethanol 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 decision to depart shortly after a landing helicopter, which resulted in an encounter with the helicopter's wake turbulence and a loss of airplane control. Contributing to the accident was the pilot's impairment by his recent use of ethanol.

Findings

Aircraft	Lateral/bank control - Attain/maintain not possible
Personnel issues	Alcohol - Pilot
Environmental issues	Wake turbulence - Awareness of condition

Factual Information

History of Flight

Takeoff	Aircraft wake turb encounter (Defining event)
Takeoff	Loss of control in flight

On September 18, 2021, about 1845 eastern daylight time, a Rans S-20 airplane, N6915G, was destroyed when it was involved in an accident at Wadsworth Municipal Airport (3G3), Wadsworth, Ohio. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

A review of airport surveillance video revealed that a Sikorsky S-76 helicopter was on approach to Runway 2 as the accident airplane taxied to the runway. According to the helicopter pilot, the accident pilot requested that the helicopter side-step to the west of the runway to facilitate the airplane's departure.

A few seconds after the helicopter flew over the approach end of runway 2, the accident pilot taxied onto the runway and started the takeoff roll. Soon after liftoff, the airplane entered a steep roll, descended, and impacted the runway (see figure 1). A postimpact fire ensued.

Figure 1. Screenshot of airport surveillance video. Red arrow points to accident airplane.

Pilot Information

Certificate:	Private	**Age:**	64,
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	BasicMed Without waivers/limitations	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	517 hours (Total, all aircraft), 16 hours (Total, this make and model), 6 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	RANS	**Registration:**	N6915G
Model/Series:	S20	**Aircraft Category:**	Airplane
Year of Manufacture:	2021	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	05170072
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	April 20, 2021 Condition	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	22.1 Hrs at time of accident	**Engine Manufacturer:**	Covair
ELT:	Installed	**Engine Model/Series:**	
Registered Owner:	On file	**Rated Power:**	
Operator:	On file	**Operating Certificate(s) Held:**	None

The kit airplane was built by the pilot and the FAA granted a special airworthiness certificate in April 2021. According to maintenance records and a newsletter article written by the pilot, the airplane had a history of high engine oil and cylinder head temperatures.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KBJJ,1137 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	18:56 Local	**Direction from Accident Site:**	217°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	20°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	24°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wadworth, OH (3G3)	**Type of Flight Plan Filed:**	None
Destination:	Wadsworth, OH (3G3)	**Type of Clearance:**	None
Departure Time:	18:45 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Wadsworth Municipal 3G3	**Runway Surface Type:**	Asphalt
Airport Elevation:	973 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	2	**IFR Approach:**	None
Runway Length/Width:	3530 ft / 75 ft	**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:**	41.004559,-81.755136(est)

Most of the airplane was destroyed by the postcrash fire (see Figure 2).

Figure 2 – Airplane at Accident Site

Examination of the wreckage did not identify any pre-impact anomalies that would have precluded normal operation.

Medical and Pathological Information

Toxicology testing performed by the FAA Forensic Sciences Laboratory detected ethanol at 0.108 grams per deciliter (gm/dL) in the pilot's blood. Ethanol was detected in his vitreous fluid at 0.119 gm/dL, urine at 0.075 gm/dL, gastric contents at 0.484 gm/dL, and liver tissue at 0.072 grams per hectogram.

Additional Information

According to the Pilot's Handbook of Aeronautical Knowledge (FAA-H-8083-25B), Chapter 5, Avoiding Wake Turbulence:

A helicopter generates a down wash from its main rotor(s) similar to the vortices of an airplane…In forward flight, this energy is transformed into a pair of strong, high-speed trailing vortices similar to wing-tip vortices of larger fixed-wing aircraft. Helicopter vortices should be avoided because helicopter forward flight airspeeds are often very slow and can generate exceptionally strong wake turbulence.

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Alexander McAninch; FAA FSDO; Cleveland, OH
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Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=103903