Aviation Investigation Final Report

Location:	Corsica, South Dakota	**Accident Number:**	CEN20LA309
Date & Time:	July 27, 2020, 10:45 Local	**Registration:**	N53163
Aircraft:	Cessna A188	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Aerial application		

Analysis

On the day of the accident, the pilot had flown for about 2.5 hours, practicing aerial application operations with loads of water. The accident occurred on his third flight of the day. According to witnesses, the pilot had just completed two passes over the field. After completing the second pass, the pilot entered a turn to return for another pass when the airplane suddenly nosed over and impacted the ground. The airplane was destroyed by the impact with the ground.

One of the witnesses noted that the airplane entered a descending spiral before impact. Two witnesses heard a loud noise from the airplane similar to a "backfire" or "an over-inflated tire bursting," before seeing it "nosedive." All three witnesses stated that the airplane appeared to be flying normally before the accident occurred.

A postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Toxicology testing showed evidence of the pilot's use of multiple potentially impairing drugs; however, no active substances were found in the pilot's blood following the accident. Therefore, it is unlikely that effects from the pilot's use of these substances contributed to the accident.

Based on the available information, it is likely that the pilot allowed the airplane's airspeed to decay during the turn and the airplane exceeded its critical angle of attack, which resulted in an aerodynamic stall and loss of control at an altitude too low for recovery.

Probable Cause and Findings

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

The pilot's exceedance of the airplane's critical angle of attack, which resulted in an aerodynamic stall and loss of control.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Angle of attack - Capability exceeded

Factual Information

History of Flight

Maneuvering-low-alt flying	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On July 27, 2020, about 1045 central daylight time, a Cessna A188 airplane, N53163, was destroyed when it was involved in an accident near Corsica, South Dakota. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 aerial application flight.

According to the operator, the pilot had started with the company about 3 months before the accident. On the day of the accident, the pilot flew about 2.5 hours practicing spray operations with loads of water. The accident occurred on his third flight of the day.

According to witnesses, the pilot had completed two passes over the field. After he completed the second pass, the pilot entered a turn to return for another pass when the airplane suddenly nosed over and impacted the ground. One of the witnesses noted that the airplane entered a descending spiral before impact. Two witnesses heard a loud noise from the airplane before seeing it "nosedive." The sound was similar to a "backfire" or "an over-inflated tire bursting." All three witnesses stated that the airplane appeared to be flying normally before the accident occurred.

Pilot Information

Certificate:	Commercial	**Age:**	50,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 1, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 23, 2020
Flight Time:	(Estimated) 314.8 hours (Total, all aircraft), 45.2 hours (Total, this make and model), 218.2 hours (Pilot In Command, all aircraft), 120.6 hours (Last 90 days, all aircraft), 47.8 hours (Last 30 days, all aircraft), 1.2 hours (Last 24 hours, all aircraft)		

The pilot received a Part 137 agricultural endorsement on May 8, 2020.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N53163
Model/Series:	A188 B	**Aircraft Category:**	Airplane
Year of Manufacture:	1974	**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	18801655
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	3300 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continential
ELT:	Not installed	**Engine Model/Series:**	IO 520
Registered Owner:	On file	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	Agricultural aircraft (137)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KMHE,1300 ft msl	**Distance from Accident Site:**	23 Nautical Miles
Observation Time:	15:53 Local	**Direction from Accident Site:**	23°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	320°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	27°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Corsica, SD (D65)	**Type of Flight Plan Filed:**	None
Destination:	Corsica, SD (D65)	**Type of Clearance:**	None
Departure Time:	10:25 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Corsica Municipal D65	**Runway Surface Type:**	
Airport Elevation:	1580 ft msl	**Runway Surface Condition:**	Vegetation
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:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	43.428333,-98.244445(est)

The airplane came to rest in a bean field. The forward fuselage was fragmented, and the aft fuselage was buckled consistent with impact forces. Both wings exhibited leading edge crush damage and localized deformation. The empennage remained attached to the fuselage. The flight control surfaces remained attached to the airframe.

A postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Medical and Pathological Information

Toxicology testing performed by the Federal Aviation Administration's Forensic Sciences Laboratory identified 1.3 ng/ml of carboxy-delta-9-tetrahydrocannabinal (THC-COOH) in the pilot's blood. THC-COOH is the primary inactive metabolite of tetrahydrocannabinal (THC). THC is the psychoactive compound in marijuana. In addition, THC-COOH, 11-hydroxy-delta-9-THC (an active metabolite of THC), pheniramine (a sedating antihistamine), and albuterol (an inhaled drug used to treat asthma) were identified in the pilot's urine.

Administrative Information

Investigator In Charge (IIC):	Rodi, Jennifer
Additional Participating Persons:	William Howell; FAA Flight Standards; Rapid City, SD Peter Basile; Textron Aviation; Wichits, KS
Original Publish Date:	May 6, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101679