Aviation Investigation Final Report

Location:	Fruitland, Utah	**Accident Number:**	WPR16LA114
Date & Time:	May 20, 2016, 11:00 Local	**Registration:**	N50NE
Aircraft:	MICHAEL BURTON Calidus	**Aircraft Damage:**	Substantial
Defining Event:	Turbulence encounter	**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

After fueling the gyroplane, the private pilot and passenger embarked on a cross-country flight over rugged and mountainous terrain. The pilot reported that, as the gyroplane approached a ridge, about 200 ft above its peak, it encountered strong downdrafts and then descended into a box canyon. Unable to climb the gyroplane to clear terrain, the pilot guided it over a river at the base of the canyon until he could see a landing spot on the shore. As he approached the site and initiated the landing flare, the right wheel struck a boulder, and the gyroplane rolled over and then came to rest in the river. The canyon in which the gyroplane came to rest was at an elevation of about 7,300 ft mean sea level (msl), and the canyon walls rose about 1,000 ft above the accident site to the north and south. The gyroplane's demonstrated maximum operating altitude was 10,000 ft, and the pilot's intended flight route would have required clearing mountain peaks that were at an elevation of 8,200 ft msl.

The pilot reported that there were no mechanical malfunctions or failures with the gyroplane. Local wind conditions, along with the rugged terrain, likely resulted in mechanical turbulence and strong downdrafts along the flight route, and it is likely that the weather conditions affected the gyroplane's ability to achieve a positive climb rate. Given the weather conditions and the gyroplane's maximum operating altitude of 10,000 ft, the pilot demonstrated improper judgment by attempting such a flight. The pilot stated that he could have avoided the accident if he had approached the mountain ridge at a higher altitude.

The accident site was inaccessible to first responders, which resulted in the pilot's blood being drawn about 5 hours following the accident. Toxicological testing revealed strong evidence that he had used marijuana at some point before the accident. Although he had no significant active drug (tetrahydrocannabinol [THC]) in his blood at the time it was drawn, it could not be determined how much THC was in this blood at the time of the accident. Therefore, it could not be determined if impairment due to marijuana use contributed to the pilot's poor decision-making.

Probable Cause and Findings

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

The pilot's improper judgment in conducting a flight in a gyroplane over mountainous terrain near its demonstrated maximum operating altitude and his subsequent failure to maintain adequate clearance with terrain during cruise flight in turbulent weather conditions.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Altitude - Not attained/maintained
Aircraft	Climb capability - Attain/maintain not possible
Environmental issues	Mountainous/hilly terrain - Effect on operation
Environmental issues	Terrain induced turbulence - Effect on operation
Personnel issues	Use of medication/drugs - Pilot

Factual Information

History of Flight

Enroute-cruise	Turbulence encounter (Defining event)
Enroute-cruise	Loss of lift
Emergency descent	Off-field or emergency landing
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

On May 20, 2016, about 1100 mountain daylight time, an experimental amateur-built Michael Burton (AutoGyro GmbH) Calidus, N50NE, collided with mountainous terrain near Fruitland, Utah. The gyroplane was registered to the builder and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The private pilot and passenger were seriously injured, and the gyroplane sustained substantial damage. The cross-country personal flight departed Duchesne Municipal Airport, Duchesne, Utah, about 1015, with a planned destination of Spanish Fork Airport-Springville-Woodhouse Field, Spanish Fork, Utah. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot reported that they departed from Glenwood Springs Municipal Airport, Glenwood Springs, Colorado, earlier that morning and stopped at Duchesne for fuel. They then departed west towards Spanish Fork on a route over the Wasatch Mountain Range. As they approached the last ridge, about 200 ft above its peak, they encountered strong downdrafts and the gyroplane descended 500 ft and into a box canyon. Unable to out-climb the terrain, the pilot guided the gyroplane over a river at the base of the canyon until he could see a landing spot on the shore. As he approached the site and initiated the landing flare, the right wheel struck a boulder and the gyroplane rolled over, coming to rest in the river.

A witness, who was fishing in the river, called 911 after climbing to a peak where he was able to acquire cell phone reception. Due to the remoteness of the site, the pilot and passenger were not recovered until later in the afternoon.

The gyroplane came to rest within a canyon, at an elevation of about 7,300 ft mean sea level. The canyon walls rose about 1,000 ft above the accident site to the north and south. The projected route of flight would have required clearance over rugged 8,200 ft peaks, about 5 miles north of the 9,420 ft summit of Baldy Mountain.

About the time of the accident, a weather observation station located at Carbon County Regional Airport/Buck Davis Field, 37 miles south-southeast of the accident site and at an elevation of 5,957 ft, reported wind from 170 degrees at 20 knots gusting 25 knots. About the same time, at Provo Municipal Airport, 38 miles west at an elevation of 4,497 ft, wind was reported from 130 degrees at 15 knots, gusting to 22 knots.

The gyroplanes Pilot Operating Handbook specified a maximum demonstrated operating altitude of 10,000 ft. The pilot reported that the gyroplanes maximum gross weight was 1,256 pounds, and the that

the weight at the time of the accident was 1,100 pounds.

The pilot stated that the gyroplane did not experience any mechanical malfunctions or failures, and that the accident could have been avoided if he had approached the mountain ridge at a higher altitude.

The Federal Aviation Administration Bioaeronautical Research Laboratory performed toxicology tests on a sample of blood that was collected from the pilot at 1546 on the day of the accident. Results identified 0.0111 ug/ml of tetrahydrocannabinol carboxylic acid (THC-COOH) in his blood. Tetrahydrocannabinol carboxylic acid (THC-COOH) is the primary metabolite of tetrahydrocannabinol (THC), the main psychoactive compound in marijuana. The report did not document the presence of THC. The reporting cutoff for THC was 0.001 ug/ml.

Pilot Information

Certificate:	Private	**Age:**	57,Male
Airplane Rating(s):	None	**Seat Occupied:**	Front
Other Aircraft Rating(s):	Gyroplane	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	January 8, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 25, 2016
Flight Time:	285 hours (Total, all aircraft), 235 hours (Total, this make and model), 215 hours (Pilot In Command, all aircraft), 120 hours (Last 90 days, all aircraft), 60 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MICHAEL BURTON	**Registration:**	N50NE
Model/Series:	Calidus	**Aircraft Category:**	Gyroplane
Year of Manufacture:	2014	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	C00240
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	May 20, 2016 Condition	**Certified Max Gross Wt.:**	1256 lbs
Time Since Last Inspection:	25 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	350 Hrs at time of accident	**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:	KPUC,5921 ft msl	**Distance from Accident Site:**	33 Nautical Miles
Observation Time:	16:53 Local	**Direction from Accident Site:**	160°
Lowest Cloud Condition:	Few / 7000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	20 knots / 25 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.81 inches Hg	**Temperature/Dew Point:**	18°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	DUCHESNE, UT (U69)	**Type of Flight Plan Filed:**	None
Destination:	SPANISH FORK, UT (U77)	**Type of Clearance:**	None
Departure Time:	10:30 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	40.124168,-111.001663(est)

Administrative Information

Investigator In Charge (IIC):	Simpson, Eliott
Additional Participating Persons:	Lyndsay Carlson; Federal Aviation Administration FSDO; Salt Lake City, UT
Original Publish Date:	May 1, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=93217