Aviation Investigation Final Report

Location:	Rainy Pass, Alaska	**Accident Number:**	CEN18FA386
Date & Time:	September 24, 2018, 10:32 Local	**Registration:**	N1738R
Aircraft:	Cessna U206	**Aircraft Damage:**	Destroyed
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The airline transport pilot was flying the airplane to a remote lodge to deliver cargo and return with passengers. The pilot and the chief pilot, who was also following the same route about 16 minutes later, had monitored the weather before and during the flight and recognized that the clouds were present but believed they could make the flight. The flight track data showed that the pilot flew at low altitudes as he flew into a winding valley leading toward a mountain pass. The chief pilot stated that, based on radio calls from the pilot, he was maneuvering around low clouds. The flight track showed that the accident airplane continued toward the mountain pass, then proceeded south past two mountain passes and into a box canyon. The airplane impacted steep mountainous terrain facing north, consistent with the pilot attempting a steep right turn to reverse course and exit the box canyon. Aviation weather cameras near the accident location showed low clouds and precipitation around the time of the accident. The chief pilot continued toward the destination but then elected to turn around as the low clouds hindered him from navigating through the valley. It is likely that the accident pilot encountered deteriorating weather as he flew through the valley toward mountainous terrain and attempted to exit the box canyon but was unable to maintain clearance from terrain as he performed the steep right turn. A postaccident examination of the engine, airframe, and recorded engine data did not reveal any anomalies that would have precluded normal operation.

Based on a review of the autopsy report and previous medical conditions, there was no evidence to suggest the pilot was impaired; therefore, the medical conditions were likely not a factor in this accident. Diphenhydramine was detected in the pilot's toxicology, but not quantified; therefore, the investigation was unable to determine if the pilot was impaired by diphenhydramine.

Probable Cause and Findings

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

The pilot's improper decision to continue the flight in deteriorating weather conditions, which resulted in an inadvertent entry into a box canyon and subsequent controlled flight into mountainous terrain.

Findings

Personnel issues	Identification/recognition - Pilot
Personnel issues	Decision making/judgment - Pilot
Personnel issues	Self confidence - Pilot
Personnel issues	Use of equip/system - Pilot
Personnel issues	Use of charts - Pilot
Personnel issues	Use of available resources - Pilot

Factual Information

History of Flight

Enroute	Controlled flight into terr/obj (CFIT) (Defining event)

On September 24, 2018, at 1032 Alaska daylight time, a Cessna U206G airplane, N1738R, impacted mountainous terrain about 13 miles west of Rainy Pass Lodge Airport (6AK), Rainy Pass, Alaska. The pilot was fatally injured and the airplane was destroyed. The airplane was registered to Laughlin Acquisitions LLC and was being operated by Regal Air as a Title 14 *Code of Federal Regulations* Part 135 on-demand cargo flight. Marginal visual meteorological conditions prevailed at the time of the accident and no flight plan had been filed. The flight departed Lake Hood Seaplane Base (LHD), Anchorage, Alaska, at 0930 and was en route to a private airstrip on the southwest side of the Alaska Range about 30 miles west of the accident site.

The operator reported that the purpose of the flight was to deliver about 400 lbs of lumber to the private airstrip, pick up two passengers, and return to LHD. The Regal Air chief pilot was flying the same flight path in another company Cessna 206 and departed 16 minutes after the accident pilot. He was in radio contact with the pilot throughout the flight and most of the communications were related to the weather conditions and cloud coverage along the route of flight, including that the weather conditions could change rapidly. The chief pilot also heard the accident pilot in radio communication with the owner of Rainy Pass Lodge, but he could only hear the pilot's side of the conversation. The chief pilot lost radio contact with the accident pilot about 1030 and assumed that he had proceeded into Rainy Pass and no longer had line of sight for radio contact.

The owner of Rainy Pass Lodge stated that he saw the accident airplane fly over his lodge and that he made radio contact with the pilot. He stated that he could see Long Lake Hills, which is about 8 miles southeast, and that the cloud coverage to the southeast was more significant than it was to the northwest near Rainy Pass, and it appeared to be dissipating. When the chief pilot reached Long Lake Hills, he did not feel comfortable continuing the flight due to the low clouds so he turned around and returned to LHD.

The operator was tracking the airplane's flight path using Spidertracks (figure 1) and noticed that the track stopped at 1031. A review of the Spidertracks flight data revealed that the airplane changed altitude multiple times, descending as low at 450 ft above ground level (agl) at some points. During the final 7 minutes of the flight the airplane's altitude was between 1,400 ft and 1,900 ft agl, with the final recorded point at 1,000 ft agl and descending. About 30 minutes after the track stopped and the operator was unable to contact the pilot, an Alert Notice was issued for the missing airplane, and the Alaska Air National Guard conducted an aerial search mission to locate the airplane. The wreckage was discovered near the end of a mountain valley on a steep mountain side about 3.5 miles southwest of the mouth of Goodman Pass and next to a box canyon.

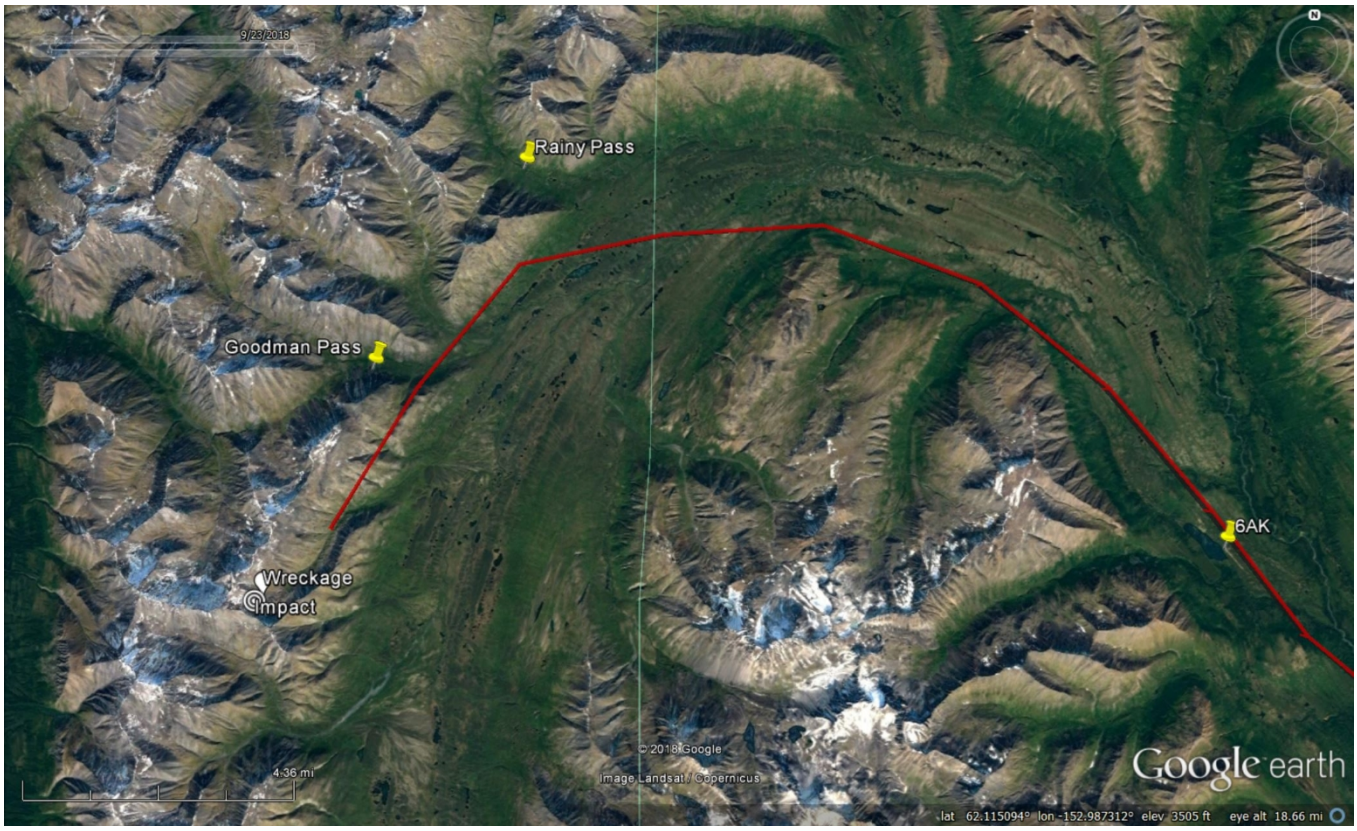

Figure 1 – Flight track from Spidertracks

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	66,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	October 20, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 25000 hours (Total, all aircraft), 291 hours (Last 90 days, all aircraft), 150.1 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

The Federal Aviation Administration (FAA) issued the pilot a second class special issuance medical certificate on October 20, 2017, with the limitation that he must wear corrective

lenses. The special issuance was for obstructive sleep apnea and was first granted in 2014.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N1738R
Model/Series:	U206 G	**Aircraft Category:**	Airplane
Year of Manufacture:	1978	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U20604588
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental Motors
ELT:	C126 installed, not activated	**Engine Model/Series:**	IO-520-F
Registered Owner:		**Rated Power:**	300
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KPTI,1858 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	18:58 Local	**Direction from Accident Site:**	85°
Lowest Cloud Condition:	Scattered / 1200 ft AGL	**Visibility**	7 miles
Lowest Ceiling:	Broken / 2700 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.53 inches Hg	**Temperature/Dew Point:**	6°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Anchorage, AK (LHD)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class E;Class G

The closest weather observation station to the accident site was located at 6AK. The human weather observer for 6AK reported the following observations. At 0848, wind from 160° at 12 knots gusting to 18 knots, visibility 7 miles, scattered clouds at 1,500 ft, overcast cloud layer at 4,000 ft, temperature

5°C, dewpoint 4°C, and barometric pressure of 29.56 inches of mercury. At 1058, wind from 140° at 10 knots, visibility 7 miles, scattered clouds at 1,200 ft, broken clouds at 2,700 ft, temperature 6°C, dewpoint 5°C, and barometric pressure of 29.53 inches of mercury.

The Alaska Aviation Weather Unit issued AIRMETs Sierra, Tango, and Zulu at 0724 for instrument flight rules (IFR) conditions and mountain obscuration in clouds and precipitation, for moderate turbulence below 12,000 ft and isolated severe turbulence within 8,000 ft agl, and for moderate icing conditions between 8,000 ft and flight level (FL) 180 with the freezing level between 4,000 and 5,000 ft. The accident site was located on the border of the forecast areas, which were valid at the time of the accident.

An area forecast indicated that, after 0700, scattered clouds at 500 ft msl, broken ceiling at 1,500 ft msl, and overcast skies at 3,500 ft msl with cloud tops to FL180 were expected with visibilities of 3 miles in light rain and mist. East of Sparrevohn, Alaska, (including the accident area) isolated ceilings of 3,500 ft msl were expected, and east of a line from Sparrevohn to Nikolai, Alaska, (including the accident area) surface winds from the east to southeast at 30 knots with gusts to 45 knots were forecast.

The flying weather chart indicated IFR conditions forecast for the accident site with areas of wind greater than 30 knots. Occasional to continuous moderate turbulence was forecast for the accident site between the surface and 12,000 ft msl.

The chief pilot stated that, on the day of the accident, he and the accident pilot had reviewed weather information beginning at 0800 until just before their departures. The weather information reviewed included the area forecasts and imagery from FAA's aviation weather cameras. In addition, they received text messages regarding the weather conditions at their intended destination. A pilot report relayed to them about 0815 reported 30 to 40 knot winds and low visibility. The accident pilot received an updated report about 0915 that the wind had decreased to 20 knots for the area near his destination, and he departed shortly after receiving this phone call. About 0940, while en route, the accident pilot radioed to the company for someone to review the weather cameras and provide an update on the weather along his route of flight. The chief pilot stated that he elected to takeoff with the expectation that both pilots would return if the weather was unsuitable.

Figures 2 and 3 are images from the cameras near 6AK that depict low layers of stratocumulus clouds surrounding 6AK around the accident time.

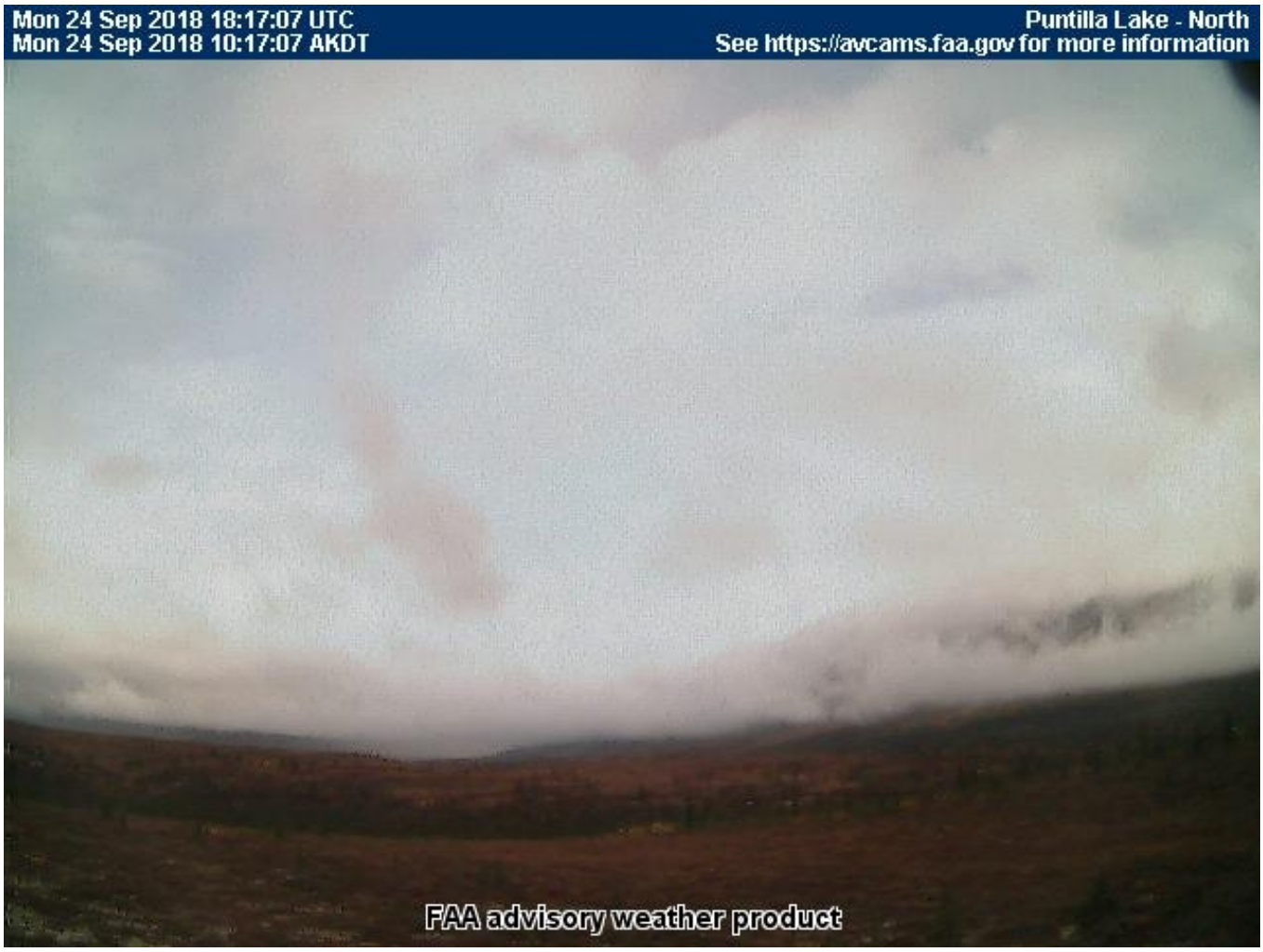

Figure 2 – Facing north at 1017 AKDT

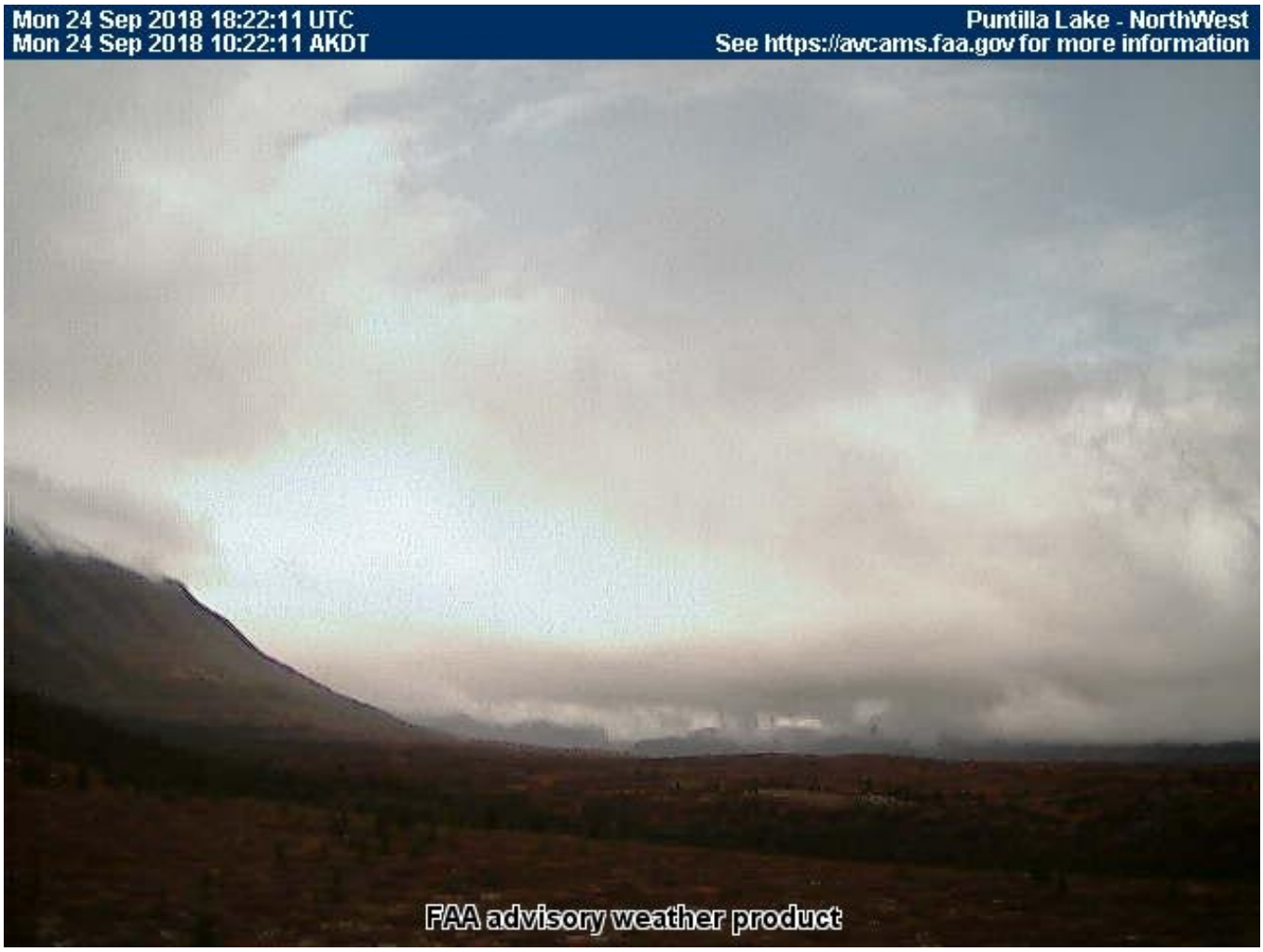

Figure 3 – Facing northwest at 1022 AKDT

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	62.072776,-153.184722

On September 26, the National Transportation Safety Board investigator-in-charge, an FAA inspector, and the Regal Air chief pilot traveled to the accident site via helicopter and documented the accident site and wreckage. The main wreckage was located about 4,400 ft mean sea level (msl) on the east side of a steep, loose rock-covered mountainside and was partially covered in snow. The initial impact point,

identified by the propeller assembly and cockpit debris, was located about 4,700 ft msl. Figure 4 shows a photo from about the same altitude and heading as the accident airplane's final Spidertracks point, which faces south into the box canyon. The figure shows the initial impact area circled in red. The mountain tops at the back of the box canyon were about 5,000 ft mean sea level.

Figure 4 – Accident location facing south, impact area circled in red

The first responders reported that the rescue helicopter's rotor wash blew the wreckage off its perch and it slid down the face of the slope to its final resting point. A debris path of airplane wreckage was found along the slope leading to the main wreckage.

A postaccident examination of the engine and airframe revealed significant impact damage signatures to the leading edges of the wings and the lower fuselage. The propeller assembly had separated from the crankshaft flange and the blades exhibited significant leading-edge gouges, chordwise scratches, and curled blade tips. The engine oil pan was evenly crushed upward into the bottom of the engine. The

examination did not reveal any mechanical malfunctions or anomalies that would have precluded normal operation.

The airplane was equipped with an engine data monitor (EDM) that recorded basic engine parameters, which included cylinder head temperatures, exhaust gas temperatures and fuel flow. A review of the EDM data did not reveal any anomalies.

Additional Information

Emergency Locator Transmitter

The Alaska Air National Guard, who conducted the search and rescue mission to locate the airplane, did not receive a signal from the airplane's emergency locator transmitter (ELT). During the wreckage examination, the ELT did not exhibit any significant damage and the antenna was still connected. The investigation was unable to determine why the ELT did not transmit after the accident.

Medical and Pathological Information

The pilot's sleep apnea report 1 month before his most recent medical exam (about 1 year before the accident), showed continuous positive airway pressure (CPAP) usage of 92% for greater than 6 hours, with a apnea-hypopnea index of 4.6, which denotes no sleep apnea. The pilot also reported chronic headaches, high blood pressure, and arthritis in the right knee. He reported the headaches had improved with CPAP usage.

The Alaska State Medical Examiner's Office, Anchorage, Alaska, conducted an autopsy of the pilot. The autopsy report concluded that the cause of death was multiple blunt-force injuries. The autopsy was unremarkable with no signs of natural disease.

Toxicological testing of urine and liver specimens by the FAA Forensic Sciences Laboratory detected an unquantified amount of diphenhydramine. Diphenhydramine is a sedating antihistamine available over the counter in many products used to treat colds, allergies, and insomnia. It's often marketed under the names Benadryl and Unisom. Diphenhydramine undergoes postmortem distribution and central levels may be three times higher than peripheral levels. Additionally, the non-sedating high blood pressure and migraine headache medication, propranolol, was detected in liver tissue, and acetaminophen and salicylate (found in aspirin) were detected in urine. Blood was not available for testing.

Administrative Information

Investigator In Charge (IIC):	Lindberg, Joshua
Additional Participating Persons:	Paula Huckleberry; Federal Aviation Administration; Anchorage, AK Bruce Schulte; Regal Air; Anchorage, AK Andrew Hall; Textron Aviation; Wichita, KS Kurt Gibson; Continental Motors; Mobile, AL Mike Laughlin; Regal Air; Anchorage, AK
Original Publish Date:	November 6, 2019
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98346