



Aviation Investigation Final Report

Location:	Atkasuk, Alaska	Accident Number:	ANC18LA031
Date & Time:	April 11, 2018, 08:18 Local	Registration:	N814GV
Aircraft:	Cessna 208B	Aircraft Damage:	Substantial
Defining Event:	VFR encounter with IMC	Injuries:	1 Minor
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The pilot was on a visual flight rules flight transporting mail to a remote village. He reported that when he was about 15 minutes from the destination, he checked the automated weather observing system (AWOS) for updated weather information for the destination and recalled that the visibility was reported as 7 miles. However, the information he recalled was not consistent with what was actually reported by the AWOS; 18 minutes before the accident, the AWOS reported no more than 1 3/4 miles visibility.

As he descended the airplane from 2,500 ft to 1,500 ft in the terminal area, he observed reduced visibility conditions that would require an instrument approach procedure.

According to the pilot, while maneuvering toward the initial approach fix, he heard the autopilot disconnect, and the airplane began an uncommanded descent. He said that he remembered pulling on the control wheel and thought he had leveled off, but then the airplane impacted terrain, which resulted in substantial damage to the fuselage, vertical stabilizer, and rudder. He could not recall if he had heard terrain warnings or alerts before the impact.

An airplane performance study indicated that the airplane was in a continuous descent from 2,500 ft until the final data point about 12 ft above the surface; the airplane was not leveled off at any time during the descent. In the final 15 seconds of recorded data, the rate of descent increased from about 500 fpm to about 2,300 fpm before decreasing to 1,460 fpm at the last recorded data point.

Postaccident examinations of the airframe, engine, flight control, and autopilot components revealed no mechanical malfunctions or failures that would have precluded normal operation or affected flight controllability.

It is likely that the unexpected instrument approach procedure increased the pilot's workload as he maneuvered to set up for the approach. Further, when the autopilot disconnected, the airplane continued

to descend; although the pilot reported that he heard the autopilot disconnect, he did not arrest the airplane's descent rate. Given the low visibility conditions, it is likely that the pilot did not detect the airplane's descent, and the airplane descended into the terrain.

Probable Cause and Findings

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

The pilot's decision to continue a visual flight rules flight into an area of instrument meteorological conditions and his subsequent failure to level the airplane after the autopilot disconnected, which resulted in a collision with terrain.

Findings

Environmental issues	Below VFR minima - Decision related to condition
Personnel issues	Lack of action - Pilot
Personnel issues	Use of equip/system - Pilot

Factual Information

History of Flight

Enroute-descent	VFR encounter with IMC (Defining event)
Enroute-descent	Controlled flight into terr/obj (CFIT)

HISTORY OF FLIGHT

On April 11, 2018, about 0818 Alaska daylight time, a single-engine, turbine-powered Cessna 208B airplane, N814GV, impacted snow-covered terrain about 2 miles north of the Atkasuk Airport (PATQ), Atkasuk, Alaska. The airline transport pilot sustained minor injuries, and the airplane sustained substantial damage. The airplane was being operated by Hageland Aviation Services, Inc., dba Ravn Connect, Anchorage, Alaska, as a visual flight rules (VFR) commuter flight under 14 *Code of Federal Regulations* Part 135. Visual meteorological conditions (VMC) existed at the flight's point of departure, and company flight-following procedures were in effect. The flight departed about 0759 from the Utqiagvik (formerly *Barrow*) Airport (PABR), Utqiagvik Alaska, and it was destined for PATQ.

Utqiagvik and Atkasuk are about 58 miles apart, and the area between the towns is remote, flat, featureless, tundra-covered terrain, which is snow-covered in April.

The director of safety for the company stated that the purpose of the flight was to transport a load of U.S. Postal Service mail to Atkasuk. The accident pilot said that he departed from Utqiagvik with about 1,500 pounds of mail on board. He noted that weather conditions at the time of departure were clear skies, 9 miles visibility, and a light wind. After takeoff, the airplane climbed to 2,500 feet mean sea level (msl) and proceeded southbound toward Atkasuk.

The pilot said that as the airplane neared Atkasuk, he descended to about 1,500 feet msl with the autopilot engaged and then noticed an area of low fog around Atkasuk. He said that when the airplane was about 2 miles from the airport, he heard the audible autopilot disengagement annunciator tone sound, which was immediately followed by the pilot's control column pitching forward. The pilot said that he was unable to pull the control column back, and the airplane subsequently descended into instrument meteorological conditions. He said that the airplane continued to descend into the fog, before impacting the snow-covered tundra and nosing over. The pilot stated that he recalled "having the yoke back, the plane recovering, but impacting the ground before fully recovered."

During a later interview, the pilot stated that after descending from 2,500 ft to 1,500 ft, he lost sight of Atkasuk and decided to turn toward the initial approach fix for the RNAV runway 6 approach into PATQ "not to initiate the approach, but to set myself up for the approach in a way that I was going to get a pop-up clearance for the approach, either from center or from Barrow Flight Service...as a relay through them." He remembered hearing an audible tone indicating the autopilot had disconnected. He said that shortly thereafter, the airplane began an uncommanded descent. He said he felt resistance on the control wheel while trying to recover. He did not recall the control wheel pitching forward at all

during the descent. He further stated that he could not recall if he heard a Terrain Awareness and Warning System (TAWS) alert at any point.

When asked about the decision to get a clearance, he stated that he knew he would have to climb back up as the initial approach fix requires the airplane be at 2,000 ft. However, he added that in order to get a clearance, the minimum altitude for radio communication would be about 3,000 ft.

In a follow-up interview, the pilot stated that after being level at 1,500 ft he remembered hearing what he believed was the autopilot disconnect tone, followed by the airplane entering a "strong descent." He said "[t]he control wheel definitely went forward." He said that he remembered pulling on the control wheel and thought he had leveled off, but then the airplane impacted the terrain.

PERSONNEL INFORMATION

The pilot, age 60, held an airline transport pilot certificate with a multi-engine land rating and commercial pilot privileges for single-engine land airplanes. His most recent first-class Federal Aviation Administration medical certificate was issued on May 23, 2017 and was not valid for any class after May 31, 2018.

The pilot's personal logbooks were not obtained; however, the operator provided the following hours of flight experience for the pilot: 7,713 total hours, including 7,193 hours in single-engine airplanes; 230 hours in the Cessna 208 in the previous 90 days; 90 hours in the previous 30 days; and 5 hours in the previous 24 hours. His most recent pilot competency check conducted in accordance with 14 *CFR* 135.293 was completed on November 12, 2017.

AIRCRAFT INFORMATION

The accident airplane was manufactured in 2002. At the time of the most recent approved aircraft inspection program (AAIP) inspection on February 25, 2018, the airplane had a total time in service of 9,778.2 flight hours. At the time of the accident, the airplane had accrued 168 flight hours since the AAIP inspection.

The airplane was equipped with a Pratt and Whitney PT6A-114 turboprop engine rated at 675 horsepower. The engine had a total time in service of 3,950 hours.

The airplane was equipped with a Bendix/King (now Honeywell) KFC 225 automatic flight control system (AFCS). The system provided pitch, roll, and yaw damper control using gyros, servos, and an autopilot computer. The KC 225 flight computer provided pitch and roll guidance output commands to the pitch, roll, yaw, and trim servos. A total of 17 flight control components were removed from the airplane for testing postaccident.

The airplane was also equipped with a Honeywell KGP 560 general aviation enhanced ground proximity warning system (EGPWS) and automatic surveillance dependent-broadcast (ADS-B) "in and out" equipment.

METEOROLOGICAL INFORMATION

At 0753, PABR reported wind from 030° at 9 knots, visibility 9 statute miles (sm), sky clear under 12,000 ft, temperature -14°C, dew point -16°C, and an altimeter setting of 29.66 inches of mercury.

When the accident airplane departed PABR at 0759, an available METAR at PATQ was reporting wind from 340° at 5 knots, visibility 1 ¾ sm, in light snow and mist, temperature -19°C, dew point -21°C, and an altimeter setting of 29.65 inches of mercury. At 0818, PATQ reported wind from 340° at 4 knots, 3/4 mile visibility, light snow, mist, temperature -19° C, dew point -21°C, and an altimeter setting of 29.64 inches of mercury. Between 0730 and 0759, the visibility decreased from 7 sm to 1 ¾ sm at PATQ.

A North Slope Borough Search and Rescue helicopter pilot reported that, while en route from Utqiagvik to the accident site, he encountered ice fog, reduced visibility, and flat light conditions that made it difficult to discern topographical features on the snow-covered tundra. He noted that as the flight continued, both pilots noticed ice beginning to accumulate on the helicopter's windscreen, so the decision was made to abort the search and rescue flight, and the helicopter returned to Utqiagvik.

Beginning on March 19, 2018, the FAA noted that the local Atqasuk "Service A" (the telecommunications service (circuit) via which weather observations are disseminated from the PATQ AWOS) was inoperative during the days leading up to and including the accident day, which affected long-line dissemination of the PATQ AWOS observations and the Atqasuk FAA weather camera imagery. The FAA indicated that both VHF and telephone transmissions from the PATQ AWOS had been "serviceable." Review of historical PATQ weather observations revealed that the last observation disseminated longline to the public prior to the accident occurred at 1040 AKDT on March 18, 2018. A Notice to Airmen (NOTAM) that advised of the PATQ AWOS ceilometer being out of service was active between April 3, 2018, and April 21, 2018. This issue was first noted by the FAA on December 26, 2017. According to the FAA, there were no requirements to issue NOTAMs for Service A or FAA weather camera outages. Review of historical PATQ weather observations revealed that the last sky condition observation disseminated longline to the public before the accident occurred at 2145 on December 25, 2017. For additional weather information, see the weather study in the public docket for this accident.

The pilot stated that he checked the AWOS for updated weather as he was about 15 minutes from PATQ and the weather was reporting 7 miles visibility. In the 18 minutes before the accident, from 0800 until 0818, the visibility reported by the AWOS was never greater than 1 ¾ sm.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted the snow-covered tundra in a nose-low attitude before flipping and coming to rest inverted. The airplane sustained substantial damage to the fuselage, vertical stabilizer and rudder. The cockpit area was intact with the floorboards buckled upward and the glass broken. The instrument panel was slightly buckled outward. The right control column was missing, and the left control column was fractured at the base and the switch cap separated into two pieces. The top half of the vertical stabilizer was bent to the left and the rudder was completely buckled. The horizontal stabilizers sustained minor damage. The elevators could not be moved due to impact damage.

Flight control continuity was established from the cockpit to the ailerons, elevators, and the rudder rear bell crank. The autopilot bridle cables were attached and secure around the capstans. All bridle cables were in place and secured to their associated bell cranks. The pitch, roll, yaw, and pitch trim servos and

capstans were removed and all had freedom of rotation. The flaps were secure in the full-up position. The elevator trim actuators each measured about 1.95 inches, which correlates to a 0° deflection (neutral position).

MEDICAL AND PATHOLOGICAL INFORMATION

Postaccident Department of Transportation urine drug testing was negative for urinary metabolites of drugs of abuse.

The pilot stated in an interview that he received a "very slight bump" on the left top back of his head during the impact. He said he had no recollection of when he hit his head or what he may have hit. He stated that there was no period where he was unconscious.

Emergency room records from about 8 hours after the accident documented that the pilot was alert and awake and had suffered minor abrasions. The pilot denied loss of consciousness as a result of the accident. Other than superficial abrasions, the examination found no abnormalities. Specifically, the record documented normal mental activity and speech.

TEST AND RESEARCH

KFC 225 Automatic Flight Control System

The accident airplane's autopilot components were removed from the airplane and examined, tested, and downloaded at the manufacturer's facility. When power was applied, the autopilot system components passed the autopilot preflight test. The autopilot was engaged/disengaged without faults and the servo operation functioned properly. No error codes were generated.

When power was first applied, the flight computer indicator displayed 2,500 ft as the last selected altitude stored in the configuration module. Additionally, there were no logged errors between power cycle 63 and 89 (the accident power cycle) and there were no recorded error events between power cycles 33 and 89.

Of the flight control components removed and tested, no pre-impact malfunctions or anomalies were found that would have precluded normal operation. For additional information regarding the testing of the flight control system components, please see the airworthiness factual report in the public docket for this accident.

Aircraft Performance Study

The airplane's EGPWS unit was downloaded on May 2, 2018, at the Honeywell facility in Redmond, Washington. Multiple terrain-proximity alerts were generated shortly before the airplane impacted the ground, which triggered the system to retain 24 seconds of GPS-based speed and position information in its non-volatile memory before the loss of power to the unit. This information, together with ADS-B data was used to conduct an aircraft performance study.

The airplane departed PABR runway 7 about 0759, turned right to a ground track of about 196° (true), and climbed to about 2,300 ft msl. About 0817:00, the airplane started a descent from 2,300 ft, and a few seconds later made a slight right turn to a ground track of about 216°. The last ADS-B transmission from

the airplane was at 0818:27.8, when the airplane was descending through 850 ft msl about 260 ft per minute (fpm), at a groundspeed of 168 knots, and turning slightly right through 220°.

The first EGPWS data point was recorded at 0818:55.8 as the airplane was descending through 504 ft msl at 687 fpm; the groundspeed was 159 knots and the ground track was 241°. At 0819:00, the airplane started to roll right as it descended through 400 ft msl at 500 fpm. It reached a computed roll angle of about 29° 11 seconds later. Following a brief roll rate reversal, the roll angle increased to about 33° at 0819:17, and the ground track turned right to 276°. Shortly after, the descent rate increased, reaching about 2300 fpm at 0819:18. The EGPWS-recorded final track direction was 289°.

At 0819:15.8, the first of three EGPWS alerts was triggered. This was a "Mode 1 Pull Up" alert and would have resulted in an aural "pull up!" warning in the cockpit. Two additional EGPWS alerts were triggered at 0819:16.8 and 0819:18.8, consisting of "TCF Too Low Terrain" and "TAD Terrain Pull Up" alerts. These alerts would have resulted in aural "too low, terrain!" and "terrain, pull up!" warnings. Between 0819:18.8 and the last EGPWS data point recorded at 0819:19.8, the recorded rate of descent decreased from 2300 fpm to 1460 fpm. The GPS altitudes recorded at these points were 132 and 82 ft msl, respectively. The last recorded groundspeed was 158.5 knots.

The performance study indicated a continuous descent from about 2,500 ft msl to the last data point about 12ft above the surface. (See figure 1.)

ANC18LA031: Cessna 208B Caravan, N814GV, Atkasuk, AK, 04/11/2018

Altitude vs. time during final 3 minutes of flight

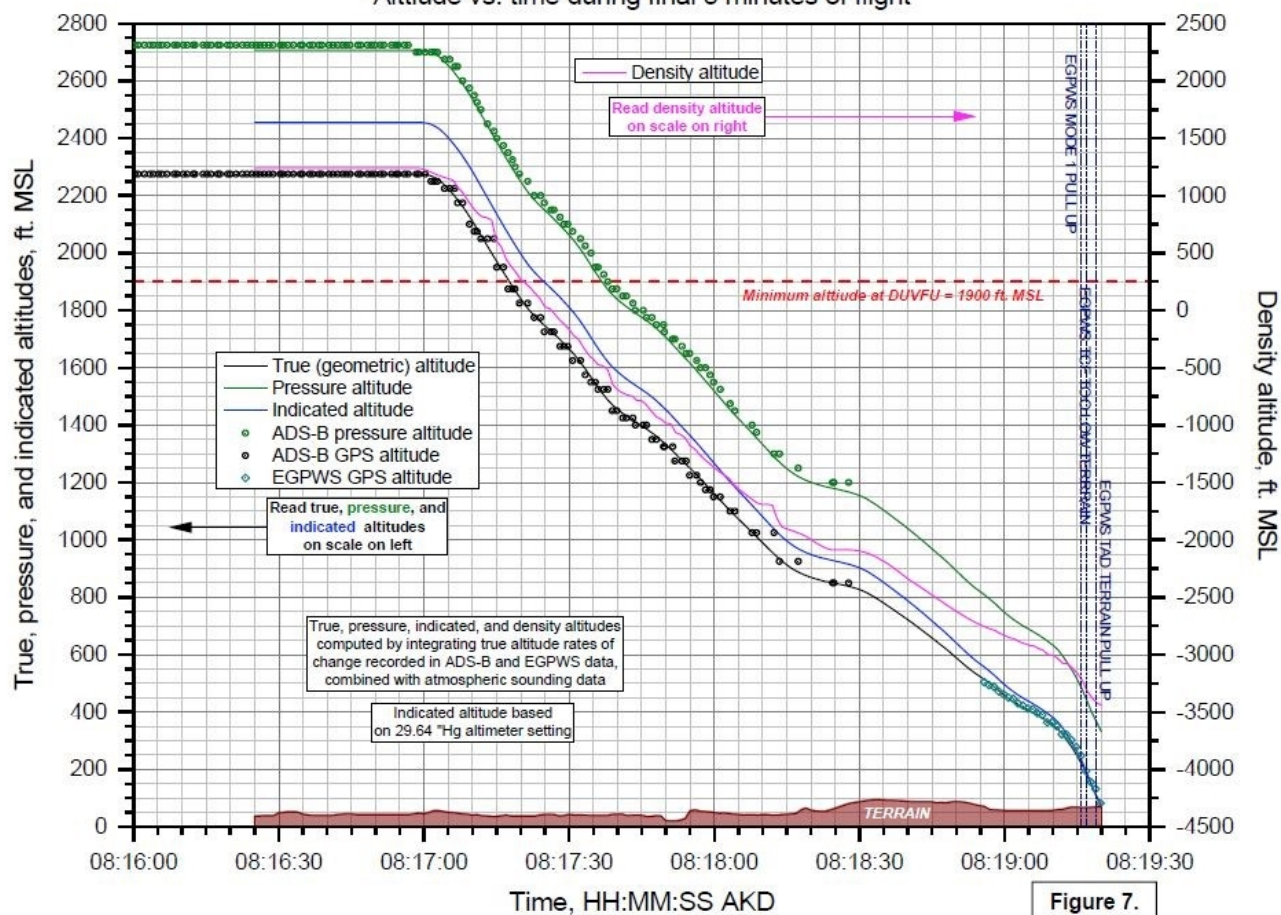


Figure 1. Airplane performance chart during last 3 minutes of flight.

The pilot stated that he did not recall hearing the EGPWS warnings. For additional information please see the aircraft performance study located in the public docket.

Pilot Information

Certificate:	Airline transport	Age:	60,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	May 23, 2017
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	November 12, 2017
Flight Time:	7713 hours (Total, all aircraft), 7628 hours (Pilot In Command, all aircraft), 230 hours (Last 90 days, all aircraft), 90 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N814GV
Model/Series:	208B	Aircraft Category:	Airplane
Year of Manufacture:	2002	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	208B0958
Landing Gear Type:	Tricycle	Seats:	8
Date/Type of Last Inspection:	February 25, 2018 Condition	Certified Max Gross Wt.:	9062 lbs
Time Since Last Inspection:	168 Hrs	Engines:	1 Turbo prop
Airframe Total Time:	9778.2 Hrs as of last inspection	Engine Manufacturer:	P&W CANADA
ELT:	C126 installed, not activated	Engine Model/Series:	PT6A-114A
Registered Owner:	ICECAP LLC TRUSTEE	Rated Power:	675 Horsepower
Operator:	HAGELAND AVIATION SERVICES INC	Operating Certificate(s) Held:	Commuter air carrier (135), On-demand air taxi (135)
Operator Does Business As:	Ravn Connect	Operator Designator Code:	EPUA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Unknown	Condition of Light:	Day
Observation Facility, Elevation:	PABR	Distance from Accident Site:	58 Nautical Miles
Observation Time:	07:53 Local	Direction from Accident Site:	360°
Lowest Cloud Condition:	Clear	Visibility	9 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	30°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.65 inches Hg	Temperature/Dew Point:	-14°C / -16°C
Precipitation and Obscuration:	In the vicinity - Low drifting - Fog		
Departure Point:	Utqiagvik, AK (PABR)	Type of Flight Plan Filed:	Company VFR
Destination:	Atkasuk, AK (ATK)	Type of Clearance:	None
Departure Time:	07:58 Local	Type of Airspace:	Class E

Airport Information

Airport:	ATQASUK EDWARD BURNELL SR MEMO ATK	Runway Surface Type:	Snow
Airport Elevation:	101 ft msl	Runway Surface Condition:	Unknown
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	70.489723,-157.504714(est)

Administrative Information

Investigator In Charge (IIC):	Williams, David
Additional Participating Persons:	Eric Wilson; FAA; Anchorage, AK Jay Eller; Honeywell Aerospace; Phoenix, AZ Michael Foster; Honeywell Aerospace; Phoenix, AZ Katie Rowell; Ravn Alaska; Anchorage, AK Ricardo Asensio; Textron Aviation; Wichita, KS Les Doud; Hartzell Propeller; Piqua, OH
Original Publish Date:	May 28, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=97021

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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](#).