



National Transportation Safety Board Aviation Accident Final Report

Location:	Cody, WY	Accident Number:	DEN04MA015
Date & Time:	10/29/2003, 0854 MST	Registration:	N791FE
Aircraft:	Cessna 208B	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

ARTCC asked the pilot of Airspur 8773 if he would be able to execute the VOR instrument approach. The pilot said he could, but he wanted to "hold for awhile to see if [the weather] gets a little better" [according to the METAR, visibility was 1.75 statute miles and there was a 200-foot overcast ceiling]. He was cleared to hold north of the VOR at 12,000 feet msl. While holding, the pilot filed the following PIREP indicating light rime icing. Shortly thereafter, he was cleared for the approach. Three witnesses saw the airplane on the downwind leg, just past midfield, at an estimated altitude of 500 feet. Shortly thereafter, one of them heard the engine "spool up to high power...[like reversing] the pitch of the propeller to slow down," and he thought the airplane had landed. Five witnesses said the airplane emerged from the overcast and banked "sharply to the left, then back to the right, then back to the left, then took a hard bank to the right," rolled inverted and struck the highway just south of the airport perimeter. The airplane slid down the embankment and out into a lake, becoming partially submerged. Witnesses said it was "snowing hard" and the highway was covered with 1 to 2 inches of slush. Wreckage examination revealed the flaps were down 30 degrees, the wing deice boots were "ribbed," and the inertial separator was open. According to the toxicological report, chlorpheniramine, desmethylsertraline, sertraline, and pseudoephedrine were detected in blood. In addition, chlorpheniramine, sertraline, phenylpropanolamine, and pseudoephedrine were detected in the urine. The urine also contained acetaminophen. Sertraline (trade name Zoloft) is a prescription antidepressant medication. According to the Guide for Aviation Medical Examiners, "The use of a psychotropic medication is considered disqualifying. This includes all... antidepressant drugs..." Chlorpheniramine is an over-the-counter sedating antihistamine used primarily for the treatment of allergies. Pseudoephedrine (trade name Sudafed) is a decongestant. Acetaminophen (trade name Tylenol) is an over-the-counter pain-reliever and fever-reducer. According to Dr. Stanley R. Mohler's "Medication and Flying: A Pilot's Guide," the adverse side effects of chlorpheniramine include drowsiness, dizziness, and lessened coordination. The side effects of pseudoephedrine are usually mild and infrequent, but may include sleepiness, dizziness, restlessness, headache, and perhaps some loss of coordination and alertness or confusion.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's failure to maintain aircraft control. Contributing factors include the pilot's failure to divert to an alternate airport, an inadvertent stall, and the snow and icing conditions.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: CIRCLING (IFR)

Findings

1. (F) WEATHER CONDITION - ICING CONDITIONS
2. (F) WEATHER CONDITION - SNOW
3. (F) FLIGHT TO DESTINATION ALTERNATE - NOT PERFORMED - PILOT IN COMMAND
4. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
5. (F) STALL - INADVERTENT - PILOT IN COMMAND
6. USE OF INAPPROPRIATE MEDICATION/DRUG - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Findings

7. TERRAIN CONDITION - ROADWAY/HIGHWAY
8. TERRAIN CONDITION - WATER

Factual Information

HISTORY OF FLIGHT

On October 29, 2003, at 0854 mountain standard time, a Cessna 208B, N791FE, registered to Federal Express Corporation (hereinafter referred to as FedEx) of Memphis, Tennessee, and operated by Corporate Air, Inc., of Billings, Montana, as Airspur flight 8773, was destroyed when it impacted terrain and water during a circling approach to Yellowstone Regional Airport (COD), Cody, Wyoming. The airline transport certificated pilot, the sole occupant on board, was fatally injured. Instrument meteorological conditions (IMC) prevailed, and an instrument flight rules (IFR) flight plan had been filed for the nonscheduled domestic cargo flight being conducted under Title 14 Code of Federal Regulations (CFR) Part 135. The airplane departed Natrona County International Airport (CPR), Casper, Wyoming, approximately 0730.

According to Federal Aviation Administration (FAA) documents, at 0800, the Salt Lake City Air Route Traffic Control Center (ARTCC) asked the pilot of Airspur 8773 if he would be able to execute the VOR (Very high frequency Omnidirectional Radio Range) instrument approach to Cody. The pilot said he could, but he wanted to "hold for awhile to see if [the weather] gets a little better" [according to the 0815 COD METAR (Aviation Routine Weather Report), the visibility was 1.75 statute miles and there was a 200-foot overcast ceiling]. He was cleared to hold north of the Cody VOR at 12,000 feet msl. At 0814, the pilot filed the following PIREP (Pilot Report) with the Casper Automated Flight Service Station (AFSS): "Over Cody; 0814; 12,000 feet; Cessna 208; sky condition, IMC; temperature, minus 04 degrees Celsius (C); turbulence, light; icing, light rime." According to the Cody Unicom operator, the pilot contacted him approximately 0830 and asked for the weather conditions. He told him, "I can barely see Beacon Hill, and [the] last known ceiling was 300 feet. UPS diverted without attempt(ing the instrument approach). Can't make out any ceiling because snow is too thick."

At 0833, the pilot told the Salt Lake City ARTCC he would make one additional holding circuit, and asked for clearance for the VOR approach. If he had to make a missed approach, he said he would divert to Billings, Montana. ARTCC cleared the pilot for the approach, and told him to either cancel his IFR flight plan or report making a missed approach. There were no further communications between ARTCC and Airspur 8773. Recorded radar data from the National Track Analysis Program (NTAP) depicted the airplane approaching and holding at COD VOR. It also depicted the instrument approach. The last radar contact was at 0846:08 when the airplane was downwind and nearly abeam the departure end of runway 04. Three FedEx employees saw the airplane on the downwind leg for runway 04, just past midfield, at an estimated altitude of 500 feet). Shortly thereafter, one of them heard the engine "spool up to high power...[like reversing] the pitch of the propeller to slow down," and he thought the airplane had landed.

Ten witnesses submitted written statements and their locations were plotted on a chart. Several of these witness' observations were nearly identical. Witness 1 observed the airplane emerge from a 200 foot ceiling. "It was rocking very badly from side to side. [It] rocked 2 to 3 times before diving 100 to 150 feet onto the highway and skidding into the lake." Witness 2 saw the airplane "bank to the left then back to the right, then back to the left, then took a hard bank to the right. The cockpit of the plane and right wing hit the road...[and the airplane] slid into the lake on its back and landed approximately 30 feet into the water." Witness 3, who was sitting in her office, saw the airplane's "right wing go down sharply. It came back up and the

left wing tipped down sharply. The left wing came up and the [air]plane flipped completely over." Witness 7 saw the airplane "waggle left and right, then roll upside down and...drop straight down." Witness 9 said the airplane "appeared to be trying to gain altitude but was shaky. I saw the wing dip to the right...and then to the left...then [it] flipped over to the right and landed upside down on the highway. It bounced and [slid] towards the lake." Witness 10 saw the airplane flying "low and slow (Witnesses 5 and 8 agreed that the airplane was flying "very low")...The plane was falling with its left wing towards the ground. It struck with the tip-bottom of the left wing and then the nose hit." Witness 4 said there were "no motor problems." Witness 5 said the engine was "cutting out and then accelerating." Witness 6 said "the change in the engine sound...[was] like an acceleration noise." Witness 8 said the "motor sounded good."

PERSONNEL INFORMATION

The pilot, age 37, held an airline transport pilot certificate with an airplane multiengine land rating, and commercial privileges in airplanes single engine land. He also held a flight instructor certificate with airplane single engine and instrument ratings. He held a second class airman's medical certificate, dated March 17, 2003, with the limitation, "Holder shall wear corrective lenses."

Three pilot logbooks --- covering the time periods from August 26, 1985 to January 16, 1989, January 18, 1989, to March 31, 1994, and April 4, 1994, to March 24, 2001, respectively --- were made available for NTSB for examination. The following total flight time (in hours) were recorded:

Airplane Single-Engine Land: 8,666.7

Airplane Multi-Engine Land: 1,219.8

Turbo-Prop: 4,623.5

Complex: 3,873.3

Night: 3,572.1

Actual Instrument: 1,143.0

Simulated Instrument (Hood): 113.0

Flight Simulator: 67.2

Cross Country: 8,718.9

Dual Received: 283.6

As Flight Instructor: 1,038.8

Total Time: 9,896.5

The pilot had logged no less than 4,640 hours in a Cessna 208. In the remarks section of his logbooks, he noted his icing experience in the Cessna 208, ranging from trace icing to over an inch of ice accumulation.

Corporate Air records indicated the pilot had logged 11,094 total flight hours, of which approximately 1,366 hours in the Cessna 208: 187 hours in the previous six months, 75 hours in the last 90 days, and 19 hours in the last 30 days. He had successfully completed a pilot proficiency check on April 16, 2003.

AIRCRAFT INFORMATION

N719FE (s/n 208B0289), a model 208B "Grand Caravan," was manufactured by the Cessna Aircraft Company in 1991, and delivered to Federal Express that December. It was equipped with a Pratt & Whitney PT6-114A free turbine engine (s/n PS 19166), rated at 675 horsepower, and a McCauley three-blade, constant-speed, full-feathering and reversible propeller.

The airplane was certificated for flight into known icing conditions. Deicing equipment included boots on the horizontal and vertical stabilizers, wing and wing struts, and cargo pod. Anti-icing equipment include heated pitot-static and stall warning systems, windshield and propeller.

The airplane was maintained under an Approved Aircraft Inspection Program (AAIP). The last inspection was on October 1, 2003. At that time, the airframe and engine had accrued 6,885.1 flight hours, 6,599 landings, and 5,833 engine cycles. The propeller had accrued 4,471.6 flight hours. The airplane had flown approximately 64 hours since this last inspection.

METEOROLOGICAL INFORMATION

The following METARs were recorded at COD at 0717, 0815, and 0855, respectively:

Wind, 360 degrees at 9 knots; visibility, 6 statute miles; ceiling, 800 feet overcast; temperature, 03 degrees C.; dew point, -02 degrees C.; altimeter setting, 29.38; remarks, light rain.

Wind, 350 degrees at 6 knots; visibility, 1-3/4 statute miles; ceiling, 200 feet broken, 300 feet overcast; temperature, 01 degree C.; dew point, -03 degrees C.; altimeter setting, 29.40; remarks, light snow.

Wind, calm; visibility, 1 statute mile; ceiling, 200 feet broken, 1,000 feet overcast; temperature, 01 degree C.; dew point, -02 degrees C.; altimeter setting, 29.44; remarks, light snow.

SIGMET (Significant Meteorology) XRAY 6 was issued at 0705 and valid until 1205, covered the entire route of flight. It called for occasional severe turbulence below 15,000 feet msl due to moderate to strong winds over rough terrain. Low level wind shear and strong updrafts were also possible.

The pilot of a United Parcel Service Cessna 402 submitted a written statement for inclusion in this report. He said he had accumulated trace to light rime ice when he was approximately 20 miles north of COD, and while in holding over the COD VOR at 10,000 feet. Because of the weather, he elected to divert to Worland, Wyoming. He said he broke out of the clouds south of COD and the wing ice quickly sublimated. He did not file an icing PIREP with FSS.

Witnesses 4, 5, and 6 said that it was "snowing hard" at the time of the accident. Witnesses 2 and 9 said the roads were "slushy," and the latter said weather conditions were "bad." Witness 10 said weather conditions were "poor...very wet with some snow-rain mix slush on the road about 1 to 2 inches [deep]." A Wyoming State Highway patrolman said some drivers reported "silver dollar" size snowflakes sticking to their windshields at about the time of the accident. Fire and rescue workers reported 2 inches of slush on the road when they arrived at the accident site.

AIDS TO NAVIGATION

There were no reported difficulties with aids to navigation.

COMMUNICATIONS

On October 23, 2003, 6 days before the accident, a powerful solar flare was recorded. The energy particles caused worldwide communication difficulties. The transcript between the ARTCC sector 16 controller and Airspur 8117 revealed several unclear transmissions that required repetitive communications that had to be repeated, due to unclear transmissions. ARTCC attributed these unclear transmissions to the effects of the solar flare.

WRECKAGE AND IMPACT INFORMATION

The National Transportation Safety Board arrived in Cody on October 29. The on-scene investigation began on October 30, and terminated on October 31, 2003.

The initial ground impact point was located in the middle of the eastbound lane of U.S. Highway 14, a four-lane, east-west highway, located just south of COD airport. The debris field began at this point and continued in a southeasterly direction into Alkali Lake. A ground scar extended from the southern edge of the highway to the lake. The airplane came to rest inverted approximately 40 feet offshore. Due to wind, weather, traffic, and water current, the exact location of debris following impact could not be determined. Rescue personnel towed the airplane to shore and removed the pilot. The airplane remained partially submerged in water. The engine, along with the nose landing gear, separated from the airplane and was submerged.

The engine and aircraft were removed from the lake on the morning of October 30, 2003, and transported to a hangar for further examination. The right side of the fuselage, at the cowling attachment point, was crushed down and in. The right door broke off from the airplane during the impact sequence and was found on the highway. The right wing remained attached to the airplane. The right flap was down. The trailing edge of the right aileron was wrinkled and the outboard trailing edge was bent down. The wing tip was crushed in and the leading edge was crumpled in an accordion-like manner. The pitot tube was bent and the landing light was shattered. The empennage remained attached to the airplane. The horizontal stabilizer was unremarkable. The elevator trim was set at 1-1/2 degrees up trim. The rudder and vertical stabilizer were crushed. Control continuity was established from all flight control surfaces to their respective cockpit controls. The left wing was crushed and torn 2 feet inboard from the stall indicator. The wing boots had a "ribbed" appearance. The inertial separator was open. The left flap was between 10 to 15 degrees and crushed in. The flap jackscrew was at 30 degrees down. An Emergency Locator Transmitter (ELT) was on board the airplane. It was in the ARMED position and had activated on impact. Due to the airplane being submerged in the water, the signal was not detected until October 30, after the wreckage had been retrieved. Examination of the airplane's systems showed no preimpact anomalies.

The following instruments were documented at the accident site:

Altimeter: 8,750 feet

Kollsman window setting: 29.41

Magnetic Compass: Destroyed

Heading Indicator: 110 degrees

The Power Analyzer and Recorder (PAR), Global Positioning System (GPS), and the annunciator panel were retained for further testing and examination.

On November 5, 2003, the engine bleed valve was examined at Beegles Aircraft Company in Greeley, Colorado. No anomalies were noted.

MEDICAL & PATHOLOGICAL INFORMATION

Several foil packages of Allergy Sinus Gel caps (containing acetaminophen, chlorpheniramine maleate, and pseudoephedrine), and a bottle of Claritin-D 24-hour ER were found in the pilot's flight bag.

The Yellowstone Pathology Institute, Inc., in Billings, Montana, performed an autopsy on the pilot on October 29, 2003. There was no evidence of pre-existing medical conditions that would have been causal to the accident.

A toxicological screen was performed by FAA's Civil Aeromedical Institute (CAMI). According to CAMI's report (#200300322001), 0.007 (ug/ml, ug/g) chlorpheniramine, 0.044 (ug/ml, ug/g) desmethylsertraline, 0.027 (ug/ml, ug/g) sertraline, and pseudoephedrine were detected in blood. In addition, chlorpheniramine, sertraline, phenylpropanolamine, and pseudoephedrine were detected in the urine. The urine also contained 13.31 (ug/ml, ug/g) acetaminophen.

Sertraline (trade name Zoloft) is a prescription antidepressant medication.

Desmethylsertraline is a metabolite of sertraline. According to the Guide for Aviation Medical Examiners, "The use of a psychotropic medication is considered disqualifying. This includes all... antidepressant drugs..." The pilot did not indicate the use of sertraline on any of his applications for airman medical certificates. Chlorpheniramine is an over-the-counter sedating antihistamine used primarily for the treatment of allergies. Pseudoephedrine (trade name Sudafed) is a decongestant. Phenylpropanolamine is a metabolite of pseudoephedrine. Acetaminophen (trade name Tylenol) is an over-the-counter pain-reliever and fever-reducer.

According to Dr. Stanley R. Mohler's "Medication and Flying: A Pilot's Guide," the adverse side effects of chlorpheniramine include drowsiness, dizziness, and lessened coordination. The side effects of pseudoephedrine are usually mild and infrequent, but may include sleepiness, dizziness, restlessness, headache, and perhaps some loss of coordination and alertness or confusion.

TEST AND RESEARCH

The holding pattern and instrument approach flown by the pilot of N791FE were retrieved from the National Track Analysis Program (NTAP). This recorded radar data are included as exhibits to this report.

The airplane was equipped with a Power Analyzer and Recorder (PAR), p/n SLZ7850, manufactured by Avionics Specialties, Inc., (ASI), of Charlottesville, Virginia. It was sent to ASI where, on November 11, 2003, under the auspices of an FAA accident investigator, the following data that was recorded on the day of the accident was recovered:

Date: 29 Oct 2003

Time: 15:54:54 [Z]

Eng: TT (Inter-Turbine Temperature): 696 C.

TRQ (Torque): 1,716 FLB (foot pounds)

NG (Gas Generator RPM): 98.5%
 NP (Propeller RPM): 1,877 RPM
 FF (Fuel Flow): 398 PPH (pounds per hour)
 Ship: PALT (Pressure Altitude): 5,252 FT
 IAS (Indicated Airspeed): 68 KTS
 OAT (Outside Air Temperature): -3 C.

The Global Positioning Unit (GPS), a Bendix/King KLN 89B (p/n 066-01148-0101) was sent to Honeywell, Inc., in Olathe, Kansas, for examination. Due to the unit being submerged in the lake, the alkali present in the water damaged the battery, and no information was obtainable.

The Cessna Annunciator Panel (p/n 2670104-1) was sent to the Cessna Aircraft Company in Wichita, Kansas, for examination under the auspices of an FAA representative. The light bulb filaments were examined and were unremarkable.

ADDITIONAL DATA

In addition to the Federal Aviation Administration, parties to the investigation included Federal Express Corporation, Corporate Air, Inc., and the Cessna Aircraft Company.

The wreckage was released to the aircraft retrieval and salvage company, Beegles Aircraft Service, Inc., of Greeley, Colorado, on October 31, 2003.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	Age:	37, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last Medical Exam:	03/17/2003
Occupational Pilot:		Last Flight Review or Equivalent:	04/16/2003
Flight Time:	11094 hours (Total, all aircraft), 5821 hours (Total, this make and model), 10815 hours (Pilot In Command, all aircraft), 75 hours (Last 90 days, all aircraft), 19 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Cessna	Registration:	N791FE
Model/Series:	208B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	208B0289
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	10/01/2003, AAIP	Certified Max Gross Wt.:	8750 lbs
Time Since Last Inspection:	63.6 Hours	Engines:	1 Turbo Prop
Airframe Total Time:	6885 Hours	Engine Manufacturer:	Pratt & Whitney Canada
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	PT6A-114A
Registered Owner:	Federal Express Corporation	Rated Power:	675 hp
Operator:	Corporate Air	Air Carrier Operating Certificate:	Air Cargo
Operator Does Business As:	Federal Express	Operator Designator Code:	HSYA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	COD, 5098 ft msl	Observation Time:	0835 MST
Distance from Accident Site:	2 Nautical Miles	Direction from Accident Site:	40°
Lowest Cloud Condition:	Thin Broken / 200 ft agl	Temperature/Dew Point:	1°C / -2°C
Lowest Ceiling:	Broken / 200 ft agl	Visibility	1.25 Miles
Wind Speed/Gusts, Direction:	Calm	Visibility (RVR):	
Altimeter Setting:	29.41 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	Casper, WY (CPR)	Type of Flight Plan Filed:	IFR
Destination:	Cody, WY (COD)	Type of Clearance:	IFR
Departure Time:	0730 MST	Type of Airspace:	Class E

Airport Information

Airport:	YELLOWSTONE REGIONAL (COD)	Runway Surface Type:	Asphalt; Water
Airport Elevation:	5098 ft	Runway Surface Condition:	Ice; Slush covered; Snow--wet
Runway Used:	NA	IFR Approach:	Circling; VOR/DME
Runway Length/Width:		VFR Approach/Landing:	Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	44.501667, -109.035556

Administrative Information

Investigator In Charge (IIC):	Arnold W Scott	Adopted Date:	09/29/2004
Additional Participating Persons:	Robert D Hardwick; FAA Flight Standards Field Office; Casper, WY Tom Moody; Cessna Aircraft Company; Wichita, KS William H Bartlett; Corporate Air; Billings, MT Dennis L Evans; Federal Express; Memphis, TN Robert L Drake; FAA Headquarters; Washington, DC		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.