National Transportation Safety Board
Aviation Accident Final Report

Location:	BATTLE CREEK, MI	**Accident Number:**	CHI96FA017
Date & Time:	10/21/1995, 2120 EDT	**Registration:**	N421TV
Aircraft:	Cessna 421C	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

While receiving radar vectors for an approach to land, the airplane (a Cessna 421C) departed controlled flight and impacted the terrain. Witnesses reported that they heard the engines operating before the plane crashed. During an investigation, no mechanical anomalies of the airplane were found. The pilot of a Boeing 727 reported that his airplane accumulated a 'quick load' of ice during his descent to land at the same airport within an hour of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's decision to fly in adverse weather (icing) conditions; the accumulation of airframe ice; and the pilot's failure to maintain adequate airspeed for the situation, which resulted in a loss of aircraft control. The icing condition was a related factor.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: APPROACH

Findings
1. (F) WEATHER CONDITION - ICING CONDITIONS
2. (C) FLIGHT INTO ADVERSE WEATHER - PERFORMED - PILOT IN COMMAND
3. (C) AIRFRAME - ICE

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. (C) AIRSPEED - INADEQUATE - PILOT IN COMMAND
5. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On October 21, 1995, at 2120 eastern daylight time, a Cessna 421C, N421TV, registered to Tango Victor 421, Corp., of Battle Creek, Michigan, impacted the terrain three miles west northwest of the Kellogg Airport, Battle Creek, Michigan. The airplane was destroyed during impact with the terrain and a post accident fire. The instrument rated private pilot sustained fatal injuries. Visual meteorological conditions prevailed at the time of the accident. An IFR flight plan was filed. The personal 14 CFR Part 91 flight originated from Broomfield, Colorado, at 1700.

The flight proceeded from the Broomfield, Colorado, Jefferson County Airport to the Battle Creek, Michigan, area in contact with the Federal Aviation Administration's (FAA) Air Traffic Control System. See the FAA Form 8020-6, Report of Aircraft Accident, attached to this report. At 2110, N421TV checked on with Kalamazoo Approach Control. The flight was given a ten degree left turn for the ILS Runway 23 approach, issued a descent clearance to 4,000 feet and issued the Battle Creek, Michigan, weather. At 2111, N421TV acknowledged. This was the last recorded communication with the accident airplane.

There were no known eyewitnesses to the impact. Several military men on the military reservation where the airplane impacted, reported hearing the noise of the engines just prior to hearing the noise of impact. Several eyewitnesses saw a fire on the ground following the sound of the impact. Several witnesses on the military reservation stated that the skies were overcast and light rain was falling at the time of the accident.

PERSONAL INFORMATION

The pilot was born June 9, 1937. He was the holder of a private pilot certificate with privileges for single and multiengine land airplanes with an instrument rating. His most recent biennial flight review was accomplished by virtue of earning his multiengine land airplane rating on May 22, 1994. He was the holder of a third class medical certificate issued June 10, 1994, with no limitations.

AIRCRAFT INFORMATION

The airplane was a Cessna 421C, N421TV, serial number 421C-0334. The most recent annual inspection was on March 3, 1995, at total time of 3,626.9 hours. At that time the "Hobbs" meter read 2,978.0. In the wreckage a "Hobbs" meter was found reading 3,129.6.

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the impact location as reported by witnesses. They stated that skies were overcast and light rain was falling when they heard the accident airplane, heard the impact and observed the fire. Two witnesses working for Battle Creek Aviation, at the Battle Creek Airport, stated that they talked with the crew of a Boeing 727 series airplane which landed within the hour of the accident and the captain said that they had picked up a "quick load" of ice on the descent into Battle Creek. He gestured with his hand as to approximate one-half inch of ice. A copy of their statement is attached to this report. No other pilot reports were available for the Battle Creek, Michigan, area during the period just prior to and after the accident.

COMMUNICATIONS

A transcript of the voice communications between N421TV and the Air Traffic Control Tower at Battle Creek is attached as an addendum to this report. According to those transmissions, the pilot of the accident airplane made no comment on weather conditions or the operation of the airplane. He did not indicate any difficulties receiving radio transmissions or complying with air traffic instructions. He did not indicate any problem with navigation equipment nor did he declare an emergency at any time.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted the terrain about three miles west northwest of the airport at Battle Creek, Michigan. The site was at Fort Custer, a Michigan National Guard facility. A copy of that chart is attached to this report indicating the location of the impact site.

The wreckage was on an approximate heading of 150 degrees magnetic. The area was in a clearing surrounded by a wooded area to the west and northwest. The terrain was rough and rolling. No evidence of a tree strike was seen. Much of the airframe was consumed by a post impact fire.

Both wing leading edges were crushed rearward to within a few inches of the main spar and were imbedded in the ground. An inventory of the airplane structure indicated that it was complete at the accident site. Debris was scattered in an area from 88 feet to the northwest rear of the tail of the airplane to 110 feet forward in a fan shaped area southeast of the main wreckage. Fire damage was prevalent in the area of the wings and engines. There was little fire damage to the tail section.

Rudder and elevator continuity was confirmed in the tail section. The rudder trim actuator rod was bent, but a 2.6 inch extension was measured. The elevator trim tab actuator was about 1.45 inch extension. The landing gear were retracted. The flaps were extended an unknown amount. The flap motor was located; however, the chain sprockets and shaft were broken off, precluding a flap actuator position check. The airplane was equipped with wing spoilers. Two plates which were identified as being from the spoiler system were located; however, flight position was not possible as they were displaced from their previous location in the wing. The airplane was equipped with wing and tail leading edge surface de-ice boots. One "B. F. Goodrich" de-ice flow valve was found. Both vacuum pump housings were found in the debris field. One vacuum pump drive was found, which was intact. The rotor of a "Sperry" GH-14 gyro horizon was visible through the broken case. The rotor was observed to have internal scoring. A second gyro rotor was also located from an unidentified instrument. This also had internal scoring.

The left engine was located in its appropriate position relative to the left wing, right side up, and partially embedded in the ground. All the cylinders were damaged and the crankcase was broken open. The reduction gear box and propeller were broken off, as was the sump. The internal rotating parts could be seen through the broken crankcase and no anomalies were noted other than impact damage. One propeller blade remained in the impact crater. The other two were separated from the hub and were forward of the main impact crater. The reduction gear and hub were located about 55 feet forward of the engine.

The right engine was found in its appropriate location relative to the right wing, right side up, but almost fully embedded in the ground. All the cylinders were damaged. The crankcase was broken open. The reduction gear box and propeller were broken off, as was the sump. Some of

the internal rotating parts could be observed through the crankcase opening and no anomalies were noted other than impact damage. Two of the propeller blades remained in the impact crater. The other was separated and found southeast of the engine.

MEDICAL AND PATHOLOGICAL INFORMATION

Toxicological examination of specimens from the pilot were negative for drugs screened. No autopsy was performed due to lack of suitable remains.

FIRE

A post impact fire was observed by eyewitnesses. There was no evidence of an in-flight fire found in the wreckage. The fire was predominate in the wings and engine area. There was scorching of the ground forward of the main impact area spreading out in a fan shaped pattern.

TESTS AND RESEARCH

A Report of Investigation, Recorded Radar Study, was prepared by the Office of Engineering of the NTSB. A copy of that report is attached to this report. The report indicates that the accident airplane descended to an altitude of 4,100 feet mean sea level at 2117:06. This was followed by a climb to 4,500 feet at 2118:42, followed by a descent to 4,200 feet at 2119:03, an ascent to 4,500 feet at 2119:06 and finally to 5,000 feet where the final data point was recorded at 2119:18. The speed was observed to decrease from approximately 240 knots to about 210 knots. The aircraft remained around this speed until the final minutes of data (2117:06 to 2119:06) where the speed decreased to less than 150 knots.

On July 25, 1996, at the McCauley Accessory Division of Cessna Aircraft, Vandalia, Ohio, the propellers were examined. The examination did not reveal any type of propeller failure prior to impact.

On July 24, 1996, at Continental Motors, Mobile, Alabama, the engines were examined. The examination did not reveal any type of engine failure prior to impact.

ADDITIONAL DATA/INFORMATION

Parties to the investigation were the Federal Aviation Administration, Flight Standards District Office, Grand Rapids, Michigan; Cessna Aircraft, Wichita, Kansas; and Continental Motors, Mobile, Alabama.

The wreckage was released to representatives of the owner on October 2, 1996.

Pilot Information

Certificate:	Private	**Age:**	58, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	06/10/1994
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	890 hours (Total, all aircraft), 218 hours (Total, this make and model), 768 hours (Pilot In Command, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N421TV
Model/Series:	421C 421C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	421C-0334
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	03/03/1995, Annual	**Certified Max Gross Wt.:**	7450 lbs
Time Since Last Inspection:	152 Hours	**Engines:**	2 Reciprocating
Airframe Total Time:	3779 Hours	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	GTSIO-520-L
Registered Owner:	TANGO VICTOR 421 CORP.	**Rated Power:**	375 hp
Operator:	TANGO VICTOR 421 CORP.	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Night/Dark
Observation Facility, Elevation:	BTL, 0 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	2045 EDT	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	**Visibility**	6 Miles
Lowest Ceiling:	Overcast / 1100 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	15 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	3°C / 1°C
Precipitation and Obscuration:			
Departure Point:	BROOMFIELD, CO (BJC)	**Type of Flight Plan Filed:**	IFR
Destination:	(BTL)	**Type of Clearance:**	IFR
Departure Time:	1700 CDT	**Type of Airspace:**	Class D

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	STEPHEN A WILSON	**Report Date:**	02/28/1997
Additional Participating Persons:	BRUCE L BOWERMAN; GRAND RAPIDS, MI ROBERT S WIECKOWSKI; GRAND RAPIDS, MI JOHN T KENT; MOBILE, AL J A HUTTERER; WICHITA, KS		
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.ntsb.gov/pubdms/.		