Aviation Investigation Final Report

Location:	GARFIELD, Colorado	**Accident Number:**	FTW97FA262
Date & Time:	July 11, 1997, 12:40 Local	**Registration:**	N5401K
Aircraft:	Ryan NAVION B	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Witnesses observed the airplane approaching Monarch Pass at low altitude and airspeed. One witness said the wings were 'wobbling.' The airplane banked left, descended, and struck a power pole before colliding with an abandoned mine building. The airplane burned after impact. Family members said the pilot was an experienced mountain pilot, and had made several trips across Monarch Pass, never flying less than 2,000 feet above the highest obstacle. They said two passengers were visiting the United States for the first time; they surmised the pilot was flying at a low altitude to give them a better view of the landscape.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the pilot to maintain adequate airspeed, during a turn to reverse direction, which resulted in a stall and collision with a pole and a building. High density altiitude was a related factor.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING - TURN TO REVERSE DIRECTION

Findings
1. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE
2. LOW ALTITUDE FLIGHT/MANEUVER - ATTEMPTED - PILOT IN COMMAND

3. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
4. (C) STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
5. OBJECT - UTILITY POLE
6. OBJECT - BUILDING(NONRESIDENTIAL)

Factual Information

HISTORY OF FLIGHT

On July 11, 1997, approximately 1240 mountain daylight time (mdt), a Ryan Navion B, N5401K, registered to BCW, Inc., was destroyed when it struck a power pole and collided with an abandoned mine building during an uncontrolled descent 2 miles west of Garfield, Colorado, near Monarch Pass. The private pilot and three passengers (two of whom were Italian nationals) were fatally injured. Visual meteorological conditions prevailed, and an IFR flight plan had been filed. The flight originated at Grand Island, Nebraska, at 0947 central daylight time.

According to family members, the airplane was en route from Manassas, Virginia, to a Navion fly-in at Grand Junction, Colorado, with an eventual destination of Salt Lake City, Utah. The airplane stopped at Grand Island, Nebraska, for fuel. According to a spokesperson at Grand Island Aviation, a fixed base operator, the pilot instructed the lineman to fill the main tanks using the right tank fuel filler, then to fill both tip tanks. The airplane was serviced with 50.7 gallons of 100-LL aviation grade gasoline (fuel invoice attached, see exhibits).

At 0841 central daylight time (cdt), the pilot telephoned the Columbus, Nebraska, Flight Service Station (FSS), obtained a weather briefing, then filed an instrument flight rules (IFR) flight plan to Colorado Springs, Colorado (attached to this report, see exhibits). On the flight plan, the pilot indicated the airplane was equipped with a transponder with altitude reporting capability; that it would be cruising at a true airspeed of 135 knots; the proposed departure time was 1500 UTC (1000 CDT), and the initial cruising altitude would be 6,000 feet. The route of flight was given as from Grand Island via V8 to the Hayes Center VORTAC, thence via V148 to Thurman VORTAC, thence via V169 to the Hugo VORTAC, thence via V108 to Colorado Springs, Colorado. The time en route was listed as 2 hours, 55 minutes, and the fuel on board was given as 5 hours.

The airplane departed Grand Island at 0947, and proceeded at 9,000 feet uneventfully until it arrived in the Colorado Springs area. At 1124 mdt, the pilot canceled his IFR flight plan with Denver Air Route Traffic Control Center, and requested VFR flight following service to Grand Junction. At 1135 the flight was handed off to Colorado Springs Approach Control. The pilot advised the controller that he would not be landing at Colorado Springs (as the flight plan had indicated), but would go around Restricted Area R-2601 and proceed through Monarch Pass. Asked if he intended to remain at 9,000 feet, the pilot replied, "While we have the altitude, we'll keep it."

At 1155, the flight was handed off to Pueblo Approach Control. The pilot was given the Pueblo altimeter setting of 29.89 inches of mercury and, when told that the Fort Carson restricted

areas were active, he requested and was given radar vectors around R-2601 A & B. At 1203, radar services were terminated when the airplane was 24 miles west of Pueblo. At 1208, the pilot contacted Denver Flight Watch and reported he was over Fremont County Airport at Florence, Colorado. He was again given the Pueblo altimeter setting, and was also given the Gunnison altimeter setting of 30.22 inches of mercury. This was the last communication with the pilot. The last radar contact with the airplane was when it was just west of Canon City, tracking along U.S. Highway 50 towards Monarch Pass.

There were several witnesses to the accident. Witness no. 1, Leon Golden, was in the Monarch campground when he saw an airplane approaching and flying in a south-southwest direction. He said the airplane made a "hard right turn" as if to reverse direction. In his opinion, the airplane had "plenty of altitude to clear the ridge." He heard the engine operating and it sounded fine to him.

Witness no. 2, Robert Hickman, was eastbound in his automobile and going downhill towards Salida when he saw a blue and white airplane approaching from the east, left of and parallel to the highway. He said he was attracted to the airplane because of its low flight path, "about 200 feet above tree line." The airplane then turned left (south), came down heading east, crashed and exploded. Although his windows were rolled down, he did not hear engine sounds. He said it was "apparent that at the low level the plane was flying, if it had not turned south it would have crashed into the mountain on left side (north)." The witness added that he saw the right wing separate from the airplane when it exploded.

Witness no. 3, Duncan Pelham, a former Air Force ground support equipment specialist, was driving westbound en route to Gunnison. He said he heard the airplane before he saw it. It passed over his head, then began "a medium to steep bank" to the left and seemed to "follow the contour" of the ridge. The airplane then descended to the ground and exploded. The witness added that it appeared to him that the wings were level at impact.

Witness no. 4, Adele Mercer, a private instrument-rated pilot with 300 hours total flight time, was also driving westbound when the airplane passed low over her head "less than 500 feet, flying slowly with its nose up, struggling for altitude." The wings "wobbled" and the airplane made a steep left bank before descending into the ground and exploding. She said there were "low clouds and mild virga" over the mountains to the north and south, but good visibility to the east and west (toward the pass).

PERSONNEL INFORMATION

The pilot possessed Private Pilot Certificate No. 001551541, dated February 13, 1963, and valid for single engine airplanes, and an Instrument Rating, dated August 6, 1968. According to Federal Aviation Administration documents, the pilot took the private pilot check ride in a Piper PA-22, N4898Z, and the instrument check ride in the Navion, N5401K. He also held a Class 3 Airman Medical Certificate, dated April 14, 1997, with the restriction, "Must wear glasses." At the time of his application for medical certification, the pilot estimated he had accumulated

5,000 hours total flight time, 75 hours of which were accrued in the previous six months.

Two pilot logbooks were located and examined. Logbook no. 2 was recovered from the wreckage. Logbook no. 1 was submitted by family members. Logbook no. 1 contained entries from March 25, 1986, to April 17, 1994. On the first page was the following entry: "Note - Logbook misplaced and presumed lost. No record of 1985-86 flying time. However, estimated time flown was 30 hours, estimated personal (flying) was 10 hours, estimated business was 10 hours." All but eight flights recorded in logbook no. 1 were in the Navion B. Those eight flights were made in a Piper PA-22, totaling 9:15 hours. Total time recorded in logbook no. 1 was 608:35 hours, to wit: 1986, 16:15; 1987, 47:45; 1988, 84:30; 1989, 89:00; 1990, 96:55; 1991, 94:55; 1992, 99:15; 1993, 71:45; 1994, 8:15 (incomplete).

Logbook no. 2 contained entries from April 17, 1994, to July 8, 1997. All but one flight recorded in logbook no. 2 were in the Navion B. That one exception was made in a Piper PA-22, and was for 3:00. Total time recorded in logbook no. 2 was 300:00 hours, to wit: 1994 (continued), 50:33; 1995, 120:45; 1996, 108:00; 1997, 20:45. Total documented flight between 1986 and 1997 was 908:35 hours.

The pilot's most recent biennial flight review (BFR) was accomplished on July 7, 1996, in the Navion. The flight lasted 2:15 hours, and one ILS and one VOR approach were conducted. In the previous six months, the pilot had logged 7:15 hours of actual instrument flight time and performed six ILS approaches. The pilot had not recorded any recent night flying.

AIRCRAFT INFORMATION

N5401K (s/n NAV-4-2301-B) was manufactured in 1951 by the Ryan Aircraft Corporation. At the time of the accident, it was equipped with a Textron Lycoming GO-435-C2E engine (s/n L-3301-11), rated at 260 horsepower, and a Hartzell HC 12x20-8C/933C Hydro-Selective variable pitch, 2-blade, aluminum alloy propeller.

The aircraft maintenance records were recovered from the wreckage. According to these records, the airframe and engine received an annual inspection on July 3, 1997, at a tachometer reading of 4,212.74 hours. At that time, the no. 6 cylinder was replaced due to low compression. As of that date, the engine had accumulated 1,321.4 hours since major overhaul. The overhaul was accomplished on December 8, 1981. On August 27, 1982, the engine was again disassembled to inspect for damage due to a broken oil line and resultant loss of oil pressure. No damage was found.

The tachometer was recovered from the wreckage and the scorched and sooted hour drum was removed and examined. The individual drums could not be turned. Using a pencil eraser to remove the soot, it was determined that one line of numbers read 3,118:44. This reading was prior to the annual inspection. The next line of numbers read 4,229:55, or 16:81 hours since the annual inspection. Eight days had elapsed between the time of the annual inspection and the accident.

METEOROLOGICAL INFORMATION

The nearest weather observation station was Gunnison, Colorado, located approximately 37 nm west of the accident site (attached, see exhibits). Its pertinent recorded observation is given on pages 3 and 4 of this report.

In addition, temperature is recorded on a thermograph at the summit of Monarch Pass (attached, see exhibits). At the time of the accident, the temperature at Monarch Pass was 59 degrees F.

WRECKAGE AND IMPACT INFORMATION

The accident site was located at the abandoned CF&I Steel Company's Old Madonna Mine. Evidence taken at the accident site indicates the airplane struck a power pole with its left wing. The left wing inboard panel, with a semicircle crush mark in the leading edge, was found at the base of this power pole. About 90 feet away, on a magnetic heading of 050 degrees, were impact marks on the abandoned mine building. These impact marks were approximately the same dimensions as the bottom portion of the airplane empennage. About 42 feet away, on a magnetic heading of 010 degrees, was the main body of wreckage.

All major airplane components were located and recovered. The left wing outboard panel, with tip tank attached, was located on the opposite side of the building. The right wing, with tip tank attached, was pulled out from the center fuselage and in front of the fuselage. Still attached at the right wing step was the outboard portion of the right seat track and carpeting. Flight control continuity was established.

Examination of the propeller disclosed one blade was still attached to the hub and was bent slightly aft approximately one inch at a point 5 inches from the tip. The other blade was bent aft approximately 8 inches approximately mid span. Some faint chordwise scratching on the cambered surfaces of the blades was noted.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy (P-97-106) was performed on the pilot by Dr. Don A. Rouge at St. Mary's Hospital, Pueblo, Colorado, on July 12, 1997. Toxicological screening (#9700155001) was performed by FAA's Civil Aeromedical Institute in Oklahoma City, Oklahoma. No cyanide, ethanol, or drugs were detected.

TESTS AND RESEARCH

On July 14, 1997, the engine was disassembled and examined at the facilities of Beegles Aircraft Service, Greeley, Colorado. No evidence was found that would have precluded the engine from developing power at impact.

ADDITIONAL INFORMATION

Family members said the pilot had made trips across Monarch Pass on previous occasions, and was an experienced mountain pilot. One of his sons said he had flown with his father across Monarch Pass, and he never flew less than 2,000 feet above the highest obstacle. These family members also said the female passenger aboard the airplane was the cousin of the pilot's wife. This was their first trip to the United States, and they speculated that it was possible the pilot was flying at low altitude to give them a better view of the landscape.

In addition to the Federal Aviation Administration, parties to the investigation included Textron-Lycoming Engines.

The wreckage was released to the adjuster for the pilot's insurance company on July 14, 1997.

Pilot Information

Certificate:	Private	**Age:**	64,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 14, 1997
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	5000 hours (Total, all aircraft), 75 hours (Last 90 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Ryan	**Registration:**	N5401K
Model/Series:	NAVION B NAVION B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	NAV-4-2301-B
Landing Gear Type:	Retractable - Tricycle	**Seats:**	5
Date/Type of Last Inspection:	July 3, 1997 Annual	**Certified Max Gross Wt.:**	2850 lbs
Time Since Last Inspection:	17 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4230 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	GO-435-C2E
Registered Owner:	BCW, INC.	**Rated Power:**	260 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	GUC ,7673 ft msl	**Distance from Accident Site:**	37 Nautical Miles
Observation Time:	12:55 Local	**Direction from Accident Site:**	255°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	19°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	GRAND ISLAND , NE (GRI)	**Type of Flight Plan Filed:**	IFR
Destination:	GRAND JUNCTION , CO (GJT)	**Type of Clearance:**	VFR on top
Departure Time:	09:47 Local	**Type of Airspace:**	Class E

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	4 Fatal	**Latitude, Longitude:**	38.550666,-106.289802(est)

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	HOWARD D LONG; DENVER , CO THOMAS V DEWOODY; DENVER , CO
Original Publish Date:	May 29, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=20043