



Aviation Investigation Final Report

Location: Concord, California Accident Number: WPR12LA070

Date & Time: December 27, 2011, 15:30 Local Registration: N4398K

Aircraft: Ryan Navion Aircraft Damage: Substantial

Defining Event: Fuel contamination **Injuries:** 2 Serious

Flight Conducted Under: Part 91: General aviation - Personal

Analysis

The pilot reported that shortly after takeoff, the engine lost power, and during the subsequent attempt to return to the airport, the airplane collided with the terrain. A postaccident examination of the engine fuel system revealed that the fuel in the accumulator sump and the carburetor inlet screen line were contaminated with debris and water. It is likely that the loss of engine power was due to this contamination as no further evidence of a mechanical malfunction or failure that would have precluded normal operation was found.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate preflight inspection of the airplane and the subsequent total loss of engine power as a result of debris and water contamination in the fuel system.

Findings

Aircraft Fuel - Fluid condition

Personnel issues Preflight inspection - Pilot

Aircraft (general) - Not serviced/maintained

Factual Information

History of Flight

Takeoff	Fuel contamination (Defining event)	
Emergency descent	Collision with terr/obj (non-CFIT)	

HISTORY OF FLIGHT

On December 27, 2011, about 1530 Pacific standard time (PST), a Ryan Navion, N4398K, experienced a loss of engine power shortly after takeoff from Buchanan Field Airport, Concord, California. The airplane subsequently landed hard on airport property and was substantially damaged. The owner/pilot was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The private pilot and passenger were seriously injured. Visual meteorological conditions prevailed, and no flight plan had been filed.

Witnesses reported that during takeoff from runway 32R, the airplane was about 250-300 feet above the runway when the engine sounded like it had lost power. The airplane was observed making a banking left turn as it descended toward the parallel runway 14R.

The pilot reported that during takeoff as the airplane approached the departure end of runway 32R, the engine quit without warning. He knew that at his current altitude a safe return to the runway was unlikely. He made a left turn away from the busy highway in front of him, and then realized he was headed towards a hangar and made another left turn with added left rudder to avoid the hangar. The pilot lost control of the airplane as it descended to the ground.

The airplane hit the ground in a flat, wings level attitude, and slid approximately 100 feet before coming to rest in the dirt area near the approach end of runway 14R.

TESTS AND RESEARCH

Investigators examined the wreckage at National Aviation Logistics, Madera, California, on January 11, 2012.

The airframe and engine were examined with no mechanical anomalies identified that would have precluded normal operation. A detailed examination report with accompanying pictures is contained in the public docket for this accident.

The fuel system for the Ryan Navion consists of two aluminum alloy fuel tanks, holding approximately 20 gallons each. An accumulator tank, mounted between the two tanks in the center of the fuselage and interconnected with each, has a capacity of approximately 3/4 gallon. Fuel from both main tanks is gravity fed into the accumulator. From the accumulator,

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fuel is supplied to the carburetor by an engine driven pump. An emergency electric fuel pump is provided supplying 12 pounds (lbs) fuel pressure for use on takeoff and landing, and in the event of an engine driven fuel pump failure.

Examination of the fuel system revealed that the fuel removed from the wing tanks was blue in color, with no sediment or contamination noted. The fuel sample obtained from the fuel line to the carburetor inlet screen was light blue and contained debris. The fuel sample from the accumulator sump was brown in color and had debris; it tested positive for water.

Pilot Information

Certificate:	Private	Age:	67,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	September 1, 2010
Occupational Pilot:	No Last Flight Review or Equivalent: August 23, 2010		
Flight Time:	1718 hours (Total, all aircraft), 1518 hours (Total, this make and model), 1698 hours (Pilot In Command, all aircraft), 11 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Ryan	Registration:	N4398K
Model/Series:	Navion	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	NAV-4-1398
Landing Gear Type:	Retractable - Tricycle	Seats:	5
Date/Type of Last Inspection:	January 20, 2011 Annual	Certified Max Gross Wt.:	2750 lbs
Time Since Last Inspection:	54 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	4717 Hrs as of last inspection	Engine Manufacturer:	CONT MOTOR
ELT:	Installed, not activated	Engine Model/Series:	E225 SERIES
Registered Owner:	On file	Rated Power:	225 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

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Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	CCR,18 ft msl	Distance from Accident Site:	
Observation Time:	15:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	15°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipit	ation	
Departure Point:	Concord, CA (CCR)	Type of Flight Plan Filed:	None
Destination:	Concord, CA (CCR)	Type of Clearance:	None
Departure Time:		Type of Airspace:	

Airport Information

Airport:	Concord/ Buchanan Field CCR	Runway Surface Type:	Asphalt
Airport Elevation:	18 ft msl	Runway Surface Condition:	Dry
Runway Used:	32R	IFR Approach:	None
Runway Length/Width:	4602 ft / 150 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	1 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Serious	Latitude, Longitude:	37.996112,-122.061111(est)

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Administrative Information

Investigator In Charge (IIC):

Additional Participating Persons:

Rick Baker; Federal Aviation Administration; Oakland, CA Andrew Swick; Continental Motors, Inc; Mobile, AL

Original Publish Date:

March 13, 2013

Last Revision Date:

Investigation Class:

Class

Note:

Investigation Docket:

https://data.ntsb.gov/Docket?ProjectID=82575

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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.

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