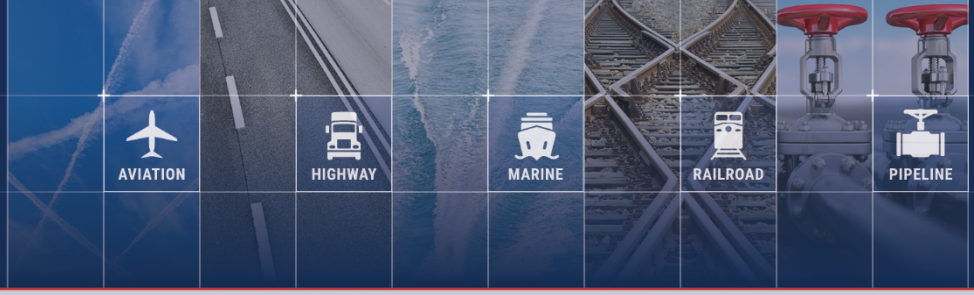

Aviation Investigation Final Report

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,

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

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 Precipitation		
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)

Administrative Information

Investigator In Charge (IIC):	Jones, Patrick
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