Aviation Investigation Final Report

Location:	Sturgis, Kentucky	**Accident Number:**	NYC06LA165
Date & Time:	July 2, 2006, 11:48 Local	**Registration:**	N91686
Aircraft:	North American Navion	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was in cruise flight about 2,500 feet, when the engine experienced a total loss of power. The pilot attempted to troubleshoot during the descent, but could not restore engine power. In close proximity to the ground, the pilot determined that the airplane would not clear the power lines in its path, turned away from the power lines, and noted that the airspeed was "under a hundred" as he initiated the turn. The pilot could not recall the remainder of the flight, and stated that his next recollection was waking up in the wreckage. After the accident, the engine was placed in a test cell and started, but it would not sustain operation without application of auxiliary fuel pressure. The engine was stopped, and examination revealed that the engine-driven fuel pump gasket was leaking, and the pump displayed considerable fuel staining on its exterior. Tightening of the pump produced the same results. The engine-driven fuel pump was removed, and replaced by a slave pump. The engine then started immediately, accelerated smoothly, and ran continuously without interruption with no application of auxiliary fuel pressure.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power due to a leaking fuel pump gasket.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE - NORMAL

Findings
1. (C) FUEL SYSTEM,PUMP - INOPERATIVE

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Factual Information

On July 2, 2006, at 1148 eastern daylight time, a North American Navion, N91686, was substantially damaged during a collision with terrain following a forced landing near Sturgis, Kentucky. The certificated private pilot was seriously injured and a passenger was fatally injured. Visual meteorological conditions prevailed for the flight that originated at Carmi Municipal Airport (CUL), Carmi, Illinois, about 1120, and was destined for Lake Barkley State Park Airport (1M9), Cadiz, Kentucky. No flight plan was filed for the personal flight conducted under 14 CFR Part 91.

In a telephone interview, the pilot explained that the airplane was in cruise flight about 2,500 feet, when the engine experienced a total loss of power. He contacted Evansville approach control, and the controller assigned a transponder code, provided nearest airport information, and a heading to fly to the airport.

During the descent, the pilot ensured that the fuel selector was in the "Main" position, and attempted to troubleshoot the loss of power. The passenger then advised that the airplane was "getting low." The pilot directed his attention outside, and determined that the airplane would not clear the power lines in its path. He started a turn away from the power lines, and noted that the airspeed was "under a hundred" as he initiated the turn. The pilot could not recall the remainder of the flight, and stated that his next recollection was waking up in the wreckage.

The pilot held a private pilot certificate with a rating for airplane single engine land. His most recent third class medical certificate was issued June 15, 2005. He reported 500 total hours of flight experience, 150 hours of which were in make and model.

According to Federal Aviation Administration records, the airplane was manufactured in 1946, and had accrued 3,256 total aircraft hours. The airplane's most recent annual inspection was completed in August 2005.

At 1155, the weather reported at Henderson, Kentucky, 21 miles northeast, included clear skies, and 10 miles of visibility. The wind was from 260 degrees at 8 knots. The temperature was 32 degrees Celsius (C), and the dew point was 22 degrees C.

The airplane was examined at the site by a Federal Aviation Administration (FAA) inspector, and all major components were accounted for at the scene. The airplane came to rest upright, on its belly. There was fuel in both main tanks. The engine and its associated cowlings were crushed up and aft into the cockpit area. The canopy was displaced, and the remainder of the airplane was relatively intact.

The airplane's engine and components from the fuel system were removed for examination at a later date.

On August 4, 2006, the airplane's fuel selector and other fuel system components were examined under the supervision of an FAA aviation safety inspector. Examination of the components revealed some leakage, as well as some undersized gaskets and o-rings in the aftermarket selector valve, but no defects that would have precluded normal operation.

On December 4, 2007, the airplane's engine was examined and then run in a test cell under the supervision of a National Transportation Safety Board Supervisory Air Safety Investigator. The engine started, but would not sustain operation without application of auxiliary fuel pressure. The engine was stopped, and examination revealed that the engine-driven fuel pump gasket was leaking, and the pump displayed considerable fuel staining on its exterior. The pump cover was tightened; the engine restarted, but the gasket continued to leak, and again the engine would not sustain operation without auxiliary fuel pressure applied.

The engine-driven fuel pump was removed, and replaced by a slave pump. The engine then started immediately, accelerated smoothly, and ran continuously without interruption with no application of auxiliary fuel pressure.

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:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 1, 2005
Flight Time:	500 hours (Total, all aircraft), 150 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	North American	**Registration:**	N91686
Model/Series:	Navion	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	NAV-4-174
Landing Gear Type:	Retractable - Tricycle	**Seats:**	5
Date/Type of Last Inspection:	August 1, 2005 Annual	**Certified Max Gross Wt.:**	2350 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3256 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	E185
Registered Owner:	On file	**Rated Power:**	205 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:	KEHR,386 ft msl	**Distance from Accident Site:**	21 Nautical Miles
Observation Time:	11:55 Local	**Direction from Accident Site:**	45°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.17 inches Hg	**Temperature/Dew Point:**	32°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	CARMI, IL (CUL)	**Type of Flight Plan Filed:**	None
Destination:	CADIZ, KY (1M9)	**Type of Clearance:**	None
Departure Time:	11:28 Local	**Type of Airspace:**	

Airport Information

Airport:	Sturgis Municipal Airport KTWT	**Runway Surface Type:**	
Airport Elevation:	372 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	37.537776,-87.95111

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Chuck Holsclaw; FAA/FSDO; Louisville, KY Terry Horton; Teledyne; Mobile, AL Hector Casanova; NTSB; Arlington, TX
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Note:	
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