



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

October 29, 2020

AIRFRAME AND ENGINE EXAMINATION SUMMARY

WPR20LA303

This document contains 10 embedded photos.

A. ACCIDENT

Location: Van Nuys, California
Date: September 11, 2020
Aircraft: N37C; North American, Navion

Preliminary Report:

On September 11, 2020, at 1500 Pacific daylight time, a Navion B, N37C, was destroyed when it was involved in an accident near the Van Nuys Airport (VNY), Van Nuys, California. The pilot and passenger were fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations (CFR) Part 91 personal flight.

Witnesses reported that the airplane departed to the south and was flying lower than normal. In addition, the airplane started a right turn much earlier than most airplanes. As the airplane started its turn, they heard a "pop" and the airplane made a "hard right" turn.

The airplane then descended nose down with the wings at a slight angle as it went out of sight. Shortly thereafter, a plume of smoke was observed. The airplane impacted nose low in a narrow parking lot about ½ mile from the runway surface. The airplane wreckage was contained to a small area between two rows of vehicles. A postcrash fire ensued, and a large portion of the fuselage and aft fuselage were consumed by fire. The engine, cabin area, and wings all exhibited extensive aft crush damage. The empennage was present but exhibited extensive thermal damage.

The airplane has been recovered to a secure location for further examination.

B. PARTICIPANTS

Samantha Link-NTSB IIC (Not present during the examination)
Andrew Swick-NTSB

C. SUMMARY

Examination of the wreckage was conducted at the facilities of Southwest Aircraft Transportation and Recovery Incorporated, Chino, California. The postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

The airframe was previously examined at the accident site, where flight control continuity was established. The cabin floor had excessive crush damage preventing view of the fuel selector valve. The airframe cabin floor was opened with a cutting saw to gain access to the fuel selector valve. The fuel selector handle remained attached to the valve and was undamaged. The fuel selector valve was found in the 'MAIN' position. The valve handle was operated by hand and handle operation and valve detents worked normally.



Figure 1-Wreckage Layout, Forward Left Side View

2.0 Engine Examination

The engine was separated from the airframe during the relocation of the wreckage. The propeller assembly had impact damage and only a section of the hub remained attached to the crankshaft flange. A partial section of the firewall remained attached to engine control cables. The crankcase had impact damage and a large crack was visible near the gear driven alternator mount, crossing over the crankcase split-line to the propeller governor mount area. The accessory section had impact damage. The oil filter separated from the oil filter adapter housing and remained attached to the engine with safety wire. The fuel pump remained attached to the engine and had impact damage to its adjustment screw. The starter separated from the starter adapter housing. The upper accessory section rear mounts had separated components. The magnetos separated from the engine and one was found with the main wreckage. One of the magnetos remained attached to the damaged ignition leads.



Figure 2-Engine, forward right side view.

The gear driven alternator separated from the engine. Internal engine surfaces were visible through the gear driven alternator mount. The internal engine surfaces were undamaged and had a light residue of oil. The exhaust assembly had impact damage and only a few stacks remained attached to the cylinders. The induction assembly separated from the cylinders and the plenum remained partially attached to the engine. The fuel manifold valve remained attached to the intake plenum. The throttle cable had impact damage remained attached to the throttle linkage on the intake plenum. The oil sump had impact damage with large cracks along the left side. The propeller governor had impact damage and only the governor housing remained attached.



Figure 3-Accessory Section

The cylinder valve covers were removed exposing the overhead components. The no. 5 cylinder intake valve assembly, including the rocker and push rod, had impact damage, and separated from the engine. The upper sparkplugs were removed from the cylinders. The sparkplug electrodes were undamaged and showed normal wear and combustion deposits. The cylinders were boroscoped and the combustion chambers revealed normal operating signatures. The valve heads were undamaged and normal combustion deposits were found on the piston head surfaces.

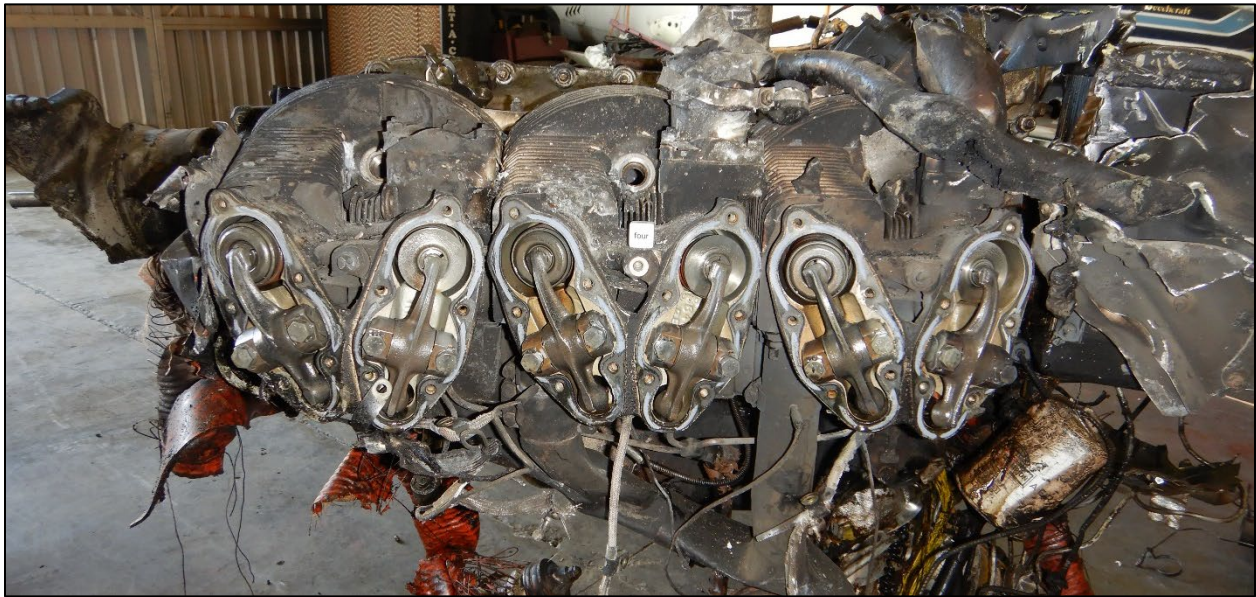


Figure 4-Engine, left side view.



Figure 5-Engine, right side view.

The magneto was removed from the engine and the other magneto was found with the main wreckage. The magneto housings had thermal discoloration and damage at their mounting flanges. The ignition leads were cut near the distributor cap and the magneto drive shafts and impulse couplings rotated freely by hand. Spark was visible at each ignition lead end.



Figure 6-Magnetos

The fuel control valve was disassembled, and internal surfaces showed normal operational signatures. The o-ring attached to the cam unit was undamaged. The throttle linkage arm was undamaged and was loose on the control valve shaft. The throttle linkage arm retaining nut was tight when removed. b material shavings were found at the shaft and the bronze linkage arm mating surface. The bronze linkage arm showed material deformation of the serrated mating surface.



Figure 7-Fuel control linkage arm and shaft.



Figure 8-Fuel linkage arm.

The fuel manifold valve was removed from the engine and disassembled. Fuel was noted in the valve chamber and the screen was clear of debris. The valve diaphragm was undamaged and there were no anomalies noted with the valve.



Figure 9-Fuel manifold valve.

The fuel pump was removed from the accessory section of the engine. The drive coupling was intact and the pump linkage arm was bent. A section of the linkage cable remained attached to the linkage arm.



Figure 10-Fuel pump.

Submitted by: Andrew Swick