



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

February 20, 2020

AIRFRAME AND ENGINE EXAMINATION

WPR18LA006

A. ACCIDENT

Location: Buckeye, AZ
Date: October 9, 2017
Aircraft: Nanchang CJ-6 Registration Number: N8NW
NTSB IIC: Albert Nixon

B. EXAMINATION PARTICIPANTS:

Albert Nixon
Senior Aviation Accident Investigator
National Transportation Safety Board
Federal Way, WA

C. SUMMARY

Examination of the airplane's airframe and engine was conducted on February 20, 2020, at the facilities of Air Transport, in Phoenix, Arizona, with a certified Airframe and Powerplant mechanic. No anomalies or evidence of preimpact mechanical failure or malfunction were noted during the examination of the recovered airframe and engine, with the exception of the fuel pump's diaphragm being damaged and ruptured.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

Examination of the airplane revealed that the outboard portion of the wings were removed for recovery. The fuselage sustained several dents and buckling throughout. The bottom portion of the empennage was crushed.

Flight control continuity was established from the ailerons to the wing root. In addition, aileron continuity was established from flight control surface to the inboard portion of the wing that was removed. Rudder and elevator continuity were established to the flight controls.

The front and rear seat's lap belt buckle and shoulder hardness were a 5-point system.

The front seat and rear seat yokes remained in place in the cockpit.

The throttle lever was forward of the middle position and the mixture was in the middle position or slightly aft. The carburetor heat was off.

The airspeed indicator indicated 0.

The fuel selector handle was selected to the off position. The handle position was confirmed with the fuel shut off valve in the firewall.



Figure 1: Airplane set up for Examination as viewed from the left side.

2.0 Engine Examination

Examination of the M-14P nine-cylinder, single row radial engine revealed that the engine sustained impact damage on the bottom portion. A couple of engine mounts were observed fractured. The crankcase was intact. The propeller and spinner were attached to the crankshaft. All rocker covers were attached. The crankshaft was able to be rotated by hand and rotational continuity was established throughout the engine and valve train in all cylinders. All cylinders displayed appropriate compression and suction in the proper firing order. The left magneto was removed and manually rotated. Spark was observed from the coil lead. However, when rotated, the mechanical advance was sticking. The right magneto was removed and during manual rotation, spark was observed on the coil lead. The forward spark plugs were removed, and the spark plugs electrodes exhibited “normal wear” signatures when compared to the Champion Check-A-Plug comparison chart. Furthermore, the spark plug electrodes did exhibit an oil residue.



Figure 2: Fuel Pump removed for examination.

The engine driven rotary gear type fuel pump was removed and examined. Examination of the pump's vanes and drive shaft revealed no anomalies. The pump's drive shaft rotated freely by hand; however, fuel was noted on the accessory side of the pump. Further examination revealed that the pump's diaphragm which is located on the drive shaft was ruptured. Remnants of the diaphragm were observed on the accessory side of the pump and the diaphragm was located inward from its original position on the drive shaft. The fuel header tank in the belly of the aircraft was empty. The fuel line from the gascolator to the engine was intact. The fuel lines were removed, and none had any obstruction to prevent flow.

The engine accessories mounted to the rear of the engine were intact with the exception of the oil reservoir which had impact damage. The oil dipstick housing was intact and secured. The oil quantity stick did not indicate any oil. The oil sump was removed, and the screen had a small piece of metal present. The firewall oil screen cap was bent and allowed the oil to drain out. The propeller governor oil supply screen was removed and clear of contaminants.

The engine exhaust system remained attached and no anomalies were noted.

The three-bladed propeller was examined. All blades had separated about 1 ft from the hub.

The examination of the engine revealed no additional evidence of pre-impact mechanical anomalies or malfunctions that would have precluded normal operation.

Submitted by: Albert Nixon