

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23LA022

ENGINE EXAMINATION

July 21, 2023

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. ENGINE EXAMINATION.....	3
C. SUMMARY.....	3
D. DETAILS OF THE EXAMINATION.....	4
1.0 ENGINE EXAMINATION	4
2.0 FUEL SYSTEM EXAMINATION.....	6
3.0 PROPELLER EXAMINATION	7

A. ACCIDENT

Location: Nogales, AZ
Date: October 20, 2022
Time: 1258 Mountain standard time

Airplane: N50JM

B. ENGINE EXAMINATION

Investigator Eleazar Nepomuceno
 NTSB - WPR
 Federal Way, WA

C. SUMMARY

On October 20, 2022, about 1258 Mountain standard time, a Beechcraft V35B airplane, N50JM was substantially damaged when it was involved in an accident near Nogales, Arizona. The pilot was not injured; however, the passenger was hospitalized with serious injuries. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

The pilot reported he was returning from Tarkio, Missouri (K57) on an IFR flight plan. Their last fuel stop was in Santa Teresa, New Mexico (KDNA), with a destination of Nogales, Arizona (KOLS). At 1252 Mountain standard time the pilot canceled IFR, announced his intentions on local traffic frequency and entered left downwind for runway 21 at KOLS. He turned left base, lowered the landing gear, and confirmed 3 green landing gear lights with his passenger. The aural landing gear warning system confirmed the landing gear was down.

The pilot reported that upon touchdown, it felt like they "fell to the left." He corrected towards the runway centerline with right rudder and brake, however, was unable to correct and elected to go-around. He applied full power and raised the landing gear. The pilot reported they were unable to gain airspeed and he decided to land off airport. The airplane touched down in an open field and came to rest on its belly. The pilot reported that the airplane subsequently caught fire and that he and airport personnel assisted the injured passenger from the airplane. Soon after they exited the airplane, the onboard oxygen bottle exploded, and the airplane was destroyed.

The pilot later reported that the propeller struck the runway surface during the go-around.

D. DETAILS OF THE EXAMINATION

The examination of a Continental IO-520-CB, serial no. 299377-R, took place on July 18, 2023, at Air Transport in Phoenix, AZ. The powerplant is a six-cylinder, air-cooled, direct drive, horizontally opposed, normally aspirated (fuel injected), internal combustion engine rated at 285 hp @ 2700 rpm.



Figure 1. View of data plate of accident engine

1.0 Engine Examination

Visual inspection of the engine revealed that the engine sustained thermal damage. The engine examined separate of the airframe due to impact damage and the retrieval process. The engine mounts and engine truss sustained impact and thermal damage. The magnetos, fuel injection servo, vacuum pump, starter remained secured on its respective mounting pad, each sustained thermal damage.



Figure 2. Overall view of accident engine

All spark plugs were removed, examined, and photographed. The spark plug electrodes remained mechanically undamaged, and according to the Champion Spark Plugs Check-A-Plug chart AV-27, the spark plug electrodes displayed coloration consistent with normal operation.

Each accessory was removed to facilitate manual rotation of the crankshaft. The complete valve train within the rocker box covers appeared to be free of any mechanical malfunctions and moved with manual rotation of the crankshaft. Visual inspection of the combustion chamber revealed no mechanical damage and there was no evidence of foreign object injection.

Both magnetos sustained thermal damage and normal operation could not be confirmed. The vacuum pump shaft was not sheared and appeared operational.



Figure 3. View of thermal damaged left and right magnetos

2.0 Fuel System Examination

Various fuel supply lines at the engine were subjected to forces of impact energy and thermal damage. There was no fuel observed. The fuel servo remained secured to its mounting pad but sustained thermal damage. The throttle and mixture controls remained secured to the fuel servo.

The thermal damaged fuel flow divider remained secured at the mounting bracket situation at the top of the engine. The thermal damaged fuel injection lines remained secured at each flow divider and fuel injector at each cylinder. The flow divider was disassembled and revealed that the diaphragm was brittle, consistent with thermal damage.



Figure 4. Close-up view of thermal damaged fuel flow divider

3.0 Propeller Examination

The propeller hub and blade assembly remained secured to the engine' crankshaft flange. Each blade displayed deformation about 20 inches from its blade root, consistent with damage under engine power. The propeller governor remained secured at its respective mounting pad. The governor control mechanism was free to move.



Figure 5. View of damaged propeller blades

Submitted by:

Eleazar Nepomuceno
Aviation Accident Investigator