

NATIONAL TRANSPORTATIONS SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SUMMARY OF ENGINE EXAMINATION

-- ERA20LA324 --

A. ACCIDENT

Location: Hilliard, Florida
Date: September 21, 2020
Aircraft: Vans RV8, N800PB

B. PARTICIPANTS

Joshua Lindberg
Aviation Accident Investigator
National Transportation Safety Board
Denver, Colorado

Bill Ross
VP Product Support
Superior Air Parts
Coppell, Texas

Darrell Ingle
Warranty and Technical Advisor
Superior Air Parts
Coppell, Texas

C. DETAILS OF ENGINE EXAMINATION

An engine examination and disassembly was conducted at Superior Air Parts, Coppell, Texas, on May 6, 2021. The airplane was subject to a fire and the engine exhibited significant thermal damage. The engine had already been removed from the airframe and was shipped in a wooden crate to Superior Air Parts. The crate was first opened under the supervision of the NTSB during this examination.

D. SUMMARY OF ENGINE EXAMINATION

- Superior XP Experimental IO-360-B1DA2 s/n 03207
- The airplane was subject to a fire and the engine exhibited significant thermal damage and corrosion.

- Data plate missing. Doesn't appear to have been installed.
- The engine had already been removed from the airframe
- The rear accessories were still attached
- Oil filter 6/10/2019. Filter element cut open and was unremarkable. No visible contamination or metallic debris
- Slick magneto internal components were likely fire damaged. Impulse coupling snapped when the engine was rotated through
- Timing was not possible due to magneto damage
- Case deck studs and through studs were inconsistent, some loose and some tight.
- No. 2 cylinder bottom forward deck stud was mostly backed off and hanging on by ½ thread. The top rear through bolt was tight. The top forward deck stud was missing and coincided with the hole in the case
- No. 2 cylinder removed. The piston was seized inside the cylinder. The connecting rod was seized on the piston pin and couldn't move. The rod end was distorted and damaged.
- No. 1 cylinder flange was impact damaged and rounded in a couple places which wouldn't allow it to be removed
- Nos. 3 and 4 cylinders removed and documented. No obvious issues
- Oil sump contained metallic debris and honeycomb material. Likely came in the from hole in the case and settled in the bottom of the oil sump
- Not much oil observed but the oil lines had burned away and likely allowed the system to drain after the accident
- Oil sump screen clear on the inside with thick dark oil on the outside
- Oil pump and gears unremarkable with no metallic debris noted. Rinsed with solvent and no scratches noted.
- Split the case in order to remove the No. 1 cylinder
- Connecting rod bearing all worn and oil starved. No. 2 was the worst since it failed, then in order most damage 3-4-1
- The main journal bearing are worn and slightly oil starved but not as bad as the rod bearings
- No fretting observed on the case mating surfaces
- No signs of metallic debris in the engine that would indicate a slow/gradual failure of any component

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