

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

SUMMARY OF AIRCRAFT EXAMINATION

-- CEN20LA400 --

A. ACCIDENT

Location: Red Bud, Illinois
Date: September 19, 2020
Time: 1400 central daylight time
Aircraft: DeRousse Safari (s/n S2114), N60WD

B. PARTICIPANTS

Clive Adams
Airworthiness Inspector
Federal Aviation Administration
Springfield, Illinois

Ryan Enders
Supervisor of Air Safety
Lycoming Engines
Williamsport, Pennsylvania

C. ACCIDENT SUMMARY

On September 19, 2020, about 1400 central daylight time, an experimental Safari helicopter, N60WD, was destroyed when it was involved in an accident near Red Bud, Illinois. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF AIRCRAFT EXAMINATION

The NTSB did not respond to the accident site. The airplane was recovered to J&S Towing in Sparta, Illinois, following the accident. A post-recovery engine examination was conducted by an FAA inspector and a representative of Lycoming Engines on November 18, 2020.

Summary of Aircraft Examination

E. SUMMARY OF EXAMINATION¹

Airframe – DeRousse Safari (s/n S2114)

The helicopter came to rest on its left side against a storage building. The forward portion of the aircraft was destroyed by a post-impact fire. The structural frame exhibited thermal damage consistent with the fire and deformation consistent with impact. The canopy and seats were consumed. The instrument panel was dislocated from the airframe and destroyed by the fire.² The landing skids were intact with exception of the forward portion of the left skid. The section of the skid was located at the accident site. The left fuel tank remained attached to the airframe. The right fuel tank was separated from the airframe mounting harness. Both fuel tanks were breached.

The cyclic and collective controls, anti-torque pedals, and associated control linkage remained in place. Portions of the cyclic and collective control linkage in the area of the aft fuselage were consumed by the post-impact fire. The tail rotor push-pull cable was continuous from the tail rotor to the cockpit anti-torque pedals. No anomalies consistent with a pre-impact failure were observed.

The main rotor mast and gearbox were dislocated from the airframe. They were located in position adjacent to the engine. They were discolored consistent with the post-impact fire. The main rotor blades remained secured to the hub. The remainder of the blades had been partially consumed by the post-impact fire. The main gearbox rotated freely over approximately 330°. Deformed airframe structure prevented full rotation.

The forward end of the tail boom was deformed. The structural tubing at one welded cluster joint was separated. The fracture surface appeared consistent with overload. The deformation and separated appeared consistent with impact forces. The tail boom structure was intact and appeared undamaged aft of the previously mentioned damage. The tail rotor drive shaft was intact from the forward flex coupling to the tail rotor gearbox. The gearbox rotated freely. The tail rotor hub, blades and pitch change links were intact and appeared undamaged. The horizontal stabilizer appeared intact.

Engine – Lycoming O-360-J2A (s/n L-35494-36A)³

The engine remained installed in the helicopter in a vertical position.⁴ Internal engine continuity was confirmed via crankshaft rotation. Thumb compression were observed on all cylinders. Valve movement was observed on all cylinders. The valve covers showed signs of thermal damage from post impact fire. The intake and exhaust systems appeared undamaged.

The magnetos remained securely attached to the engine. Both produced spark across all leads. The left ignition harness exhibited thermal damage; the right ignition harness appeared intact. The spark plugs were undamaged and exhibited normal combustion signatures. All spark plugs electrodes appeared worn but operational.

¹ Directions related to accident site placement and component damage/deformation are with respect to an intact airframe unless otherwise noted.

² No useful information was available from the instruments.

³ An engine data plate was not installed. The engine model number was determined from the airframe data plate inscription. The engine serial number was determined from the crankcase spine markings.

⁴ The engine was removed from the airframe to facilitate the post-recovery examination.

Summary of Aircraft Examination

The carburetor remained secured to the engine with the inlet fuel hose attached. Throttle and mixture control linkage remained attached to the carburetor; the attachment cotter pins were installed. The inlet fuel screen was intact and free of sediment or debris. The metal floats were undamaged. The carburetor bowl contained a fluid consistent in odor and appearance with aviation fuel. Water test paste was applied; no water was detected. No fuel pump was found on the engine or with the airframe consistent with a gravity fed system.

The standard Lycoming oil sump was removed and replaced with an external tank and remote oil filter. Both the tank and filter appeared intact. The filter was opened, and no contamination or debris was observed. The associated oil hoses remained attached. Oil was present at the fittings. The oil appeared clean.

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