



MEMORANDUM FOR RECORD CEN19FA160

An examination of N41351, a Robinson R44 helicopter took place at Dawson's Aircraft Services, Clinton, AR.

The following persons were in attendance:

Jason Aguilera
Investigator-in-Charge
NTSB

Thom Webster
Accident Investigator
Robinson Helicopters

Troy Helgeson
Accident Investigator
Lycoming Engines

Below is a list of observation made during the examination:

Airframe

- All main rotor blade linkages remained secured
- Both swash plate and blade pitch change control continuity was confirmed to the flight controls; the cockpit removeable controls were not installed
- Continuity of the rotor drive system was confirmed by rotating the main rotor blades
 - No binding or unusual sounds were detected during rotation
 - The tail rotor drive shaft rotated freely
- The tail boom was removed during recovery, tail rotor drive continuity was confirmed to the tail rotor blades which remained attached to the hub
 - Tail rotor pitch change was confirmed
- Cockpit instrumentation was photo documented
 - Of the remaining cockpit annunciator lights, the "Oil" warning light filament was stretched
- At the accident scene, about 5 gallons of 100LL fuel was drained from the fuel tank, with an undetermined quantity remaining in the tanks. Fuel was also sampled from the firewall gascolator and the fuel appeared clear and the gascolator filter clean of debris
- During recovery, rain prohibited the recovery team from documenting any fuel that drained out. At the time of the examination, no fuel remained in the tanks. Examination of the tanks found both floats operational and both fuel pick-up screens clear of debris. No debris was detected at the bottom of the tanks
- The fuel selector was found at the "On" position and the knob was impact separated

Engine

- Thumb compression, valve train movement and crankshaft continuity was established by rotating the engine using a hand tool placed on the fan assembly
 - During engine rotation, all magneto terminals produced spark
 - The engine driven fuel pump pumped fuel during rotation
 - All drive belts remained in place.
- The air inlet filter was impact damaged; examination did not detect any obstructions to the air filter
- The air inlet hose was sectioned and there was no evidence of delamination or collapse of the inner liner
- Fuel was found in the fuel servo, the line to the servo, and in the line from the fuel servo to the fuel flow divider, the fuel tested negative for water, using a water detection paste
- The fuel flow divider was disassembled, and the inner diaphragm was found undamaged and intact. No debris was observed.
- The fuel control unit was removed and visually examined
 - Both throttle and mixture arms hardware remained safety wired
 - Both arms traveled smoothly along their full course of travel
 - The fuel inlet screen was found free of debris
- Oil was found in the engine and the oil pick-up screen was clear of metal and debris
- Ductile bending was noted to the exhaust system near the No. 2 cylinder
- The fuel injector in the No. 6 cylinder was loose
- The upper sheave had a single impact mark on the forward face of the sheave and on the adjacent frame tube with no directional score marks on either surface.

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