

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN25FA019

EXAMINATION SUMMARY

December 3, 2024

A. ACCIDENT

Location: Houston, Texas
Date: October 20, 2024
Time: 19:51 Central Daylight Time
Helicopter: Robinson R44 II; N881KE

B. EXAMINATION FIELD NOTES

IIC	Aaron Sauer NTSB Denver, CO
Party Coordinators	Charles Olvis Federal Aviation Administration Washington, DC
	Thom Webster Robinson Helicopter Company Torrance, CA
	David Harsanyi Lycoming Engines Williamsport, PA

C. SUMMARY

On October 20, 2024, about 1951 central daylight time, a Robinson R44 helicopter, N881KE, was destroyed when it was involved in an accident near Houston, Texas. The pilot and three passengers sustained fatal injuries. The helicopter was operated as a Title 14 Code of Federal Regulations Part 91.147 revenue air tour flight.

Airframe:

Cockpit/Cabin - Fragmented and mostly consumed by fire. Small portions of windshield, doors, console, and upholstery were recovered within debris field. Instruments were separated and destroyed. Various door locking pins found engaged in the locked position. Portions of seat restraints were located. Lower instrument console thermal and impact damage. Key broken and found in the OFF position. All warning/cautions lights destroyed. Portions of all 4 doors were recovered.

Fuel System – Main fuel tank remained with main wreckage; bladder consumed by fire. Fuel cap found in debris, and cap secured to filler neck. Aux fuel tank separated and recovered in debris field. Both fuel tanks contained fuel bladders. Aux tank fuel tank bladder was compromised and contained no fuel. Filler cap remained secured to filler neck. Strainer clear of debris. All fuel lines and components consumed by fire. Gascolator housing consumed by fire. Aux fuel pump sustained thermal damage.

Powerplant controls – Mixture control knob was in the full rich position.

Rotation signatures – Engine cooling fan was crushed between the 10 and 2 o'clock positions. Main rotor blades about 1 ft from blade tip were separated. One blade sustained thermal damage and bowed. One blade was separated near root and multiple separations throughout the blade span. Portions of the outboard sections of the blade leading edge and core were not located. Upper sheave aft face was scored around its circumference and adjacent face of centering strut displayed score marks.

Driveline – Main rotor gearbox sustained impact and some thermal damage. Driveshaft was bent near the center. Rotor hub appeared undamaged. Drive v-belts were consumed by fire. Upper and lower sheaves appeared serviceable, sustained minor damage. Tail rotor driveshaft was disconnected at intermediate flex coupling. Tail rotor gearbox housing was fractured and separated. Gearbox and tail rotor blades were recovered in debris field. Both tail rotor blades were slightly bent. Sprag clutch operated smoothly and properly. Forward flex coupling partially disconnected and deformed. Main rotor gearbox input pinion and housing separated from main gearbox housing. Pinion gear and ring gear teeth showed no apparent damage. Main rotor driveshaft bent forward about 60 degrees and mast tube fractured in association with bend location. Intermediate flex plate disconnected and distorted/bent. Tail rotor drive shaft separated in two locations. No visual evidence of "twisting" at separation locations. Tail rotor driveshaft damper bearing rotated smoothly. Aft flex coupling undamaged. Tail rotor gearbox housing fractured; input and output gears undamaged. Output shaft was straight.

Tail rotor blades – one blade bent inward slightly with several dents near trailing edge. Other blade bent inward slightly.

Main rotor blades – both teeter stops were slightly smashed. Both droop stops showed normal wear. Both blades coned freely and the hub teeter freely. One blade was bent downward and sustained thermal damage. About 18" of blade tip was separated. One blade was bent opposite direction of rotation near the blade tip. Outboard about 7' had multiple fractures. Separated at the root fitting.

Flight controls – All flight control rod ends were accounted for and attached to appropriate control tube. Portion of control tubes were consumed by fire. Center section of collective assembly was not recovered. Pilot's collective found in a full up

position. Pilot's cyclic grip was separated from cyclic cross tube. Tail rotor pedals were position with the right pedal forward. Removable flight controls were recovered separately.

Structure - Multiple separations within the steel tube frames. Fuselage mostly consumed by fire and fragmented. Tail boom remained partially attached to airframe. Tail boom sustained minor impact and thermal damage. Stabilizer sustained minor impact damage. Tail cone separated at frame mount, fractures noted in frame tubing. Severe thermal damage to first two sections of tail cone structure. Severe impact damage to bays 2 and 3 with partial separation. Partial fracture in bay 6 adjacent to aft flex plate. Impact damage to all 3 stabilizers. Horizontal and vertical firewalls impact damage.

Emergency locator transmitter - Not installed.

Landing gear - Separated from the airframe. Several fractures of skids and fractured sections located within debris field. All portions of the skids and frame attach structure were located. Left skid fractured at both strut attachments. Forward left strut fractured midspan. Forward cross tube was straight. Forward right strut and elbow were separated from cross tube. Right skid disconnected at forward right strut attachment and disconnected forward of the ground handling bracket. Aft right strut partially separated from right skid. Aft cross tube was bent to the rear at the right elbow. Aft left strut remained attached to the cross tube.

Engine:

Lycoming IO-540-AE1A5 engine, serial number, L-29549-48A, horsepower 260, derated to 235 horsepower. Portions of airframe engine structure was consumed by fire.

High thermal damage noted on a majority of the engine. All cylinders had impact damage - cooling fins, push rods, and top spark plugs. All lower spark plugs intact and undamaged. All rocker box covers displayed impact damage. All valve springs intact and undamaged. Oil sump was partially consumed by fire (right side) and attached data plate was missing. Both magnetos recovered and separated from engine. Thermal damage and unable to be tested. Fuel pump body consumed, attach flange attached to engine. Fuel manifold attached to top of engine; all fuel lines separated from the manifold. All 6 injectors were present and secured. All injectors clear of debris. Fuel servo separated, thermal damaged, and throttle arm between idle and max. Fuel inlet screen clean and undamaged. All diaphragms in servos were thermally damaged. Lighted borescope of all cylinders was unremarkable on all valves, piston heads should combustion deposits with corrosion and water noted. Drilled holes in crankcase, borescope of crankshaft, camshaft,

connecting rod hardware, and backside of pistons were unremarkable. Rotation not achieved after cutting of all pushrods - heavy corrosion and thermal damage.