



Aviation Investigation Final Report

Location:	Blackwell, Texas	Accident Number:	CEN22FA288
Date & Time:	June 26, 2022, 08:30 Local	Registration:	N4124D
Aircraft:	ROBINSON HELICOPTER COMPANY R44 II	Aircraft Damage:	Destroyed
Defining Event:	Low altitude operation/event	Injuries:	1 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

During an aerial application flight, the helicopter impacted power lines that were near the top of the canopy of a mesquite tree grove. The helicopter was destroyed during the impact. No radio or distress calls were heard from the pilot before the collision. Detailed examinations of the flight controls, airframe, and engine did not reveal any preimpact mechanical malfunctions or failures that would have precluded normal operation. Examination of the engine revealed multiple transfer marks and scoring consistent with engine rotation at the time of impact.

The pilot's toxicology results indicated that he had used a cannabis product. The precise timing of his cannabis use, and whether he was experiencing impairing effects from that use at the time of the accident, could not be determined from available evidence. Thus, it is unknown whether effects of the pilot's cannabis use contributed to the accident. The pilot's autopsy identified mild coronary artery disease and mild left ventricular hypertrophy of the heart. This heart disease conveyed some increased risk of a sudden impairing or incapacitating cardiac event, such as heart attack or abnormal heartbeat. Based on available medical evidence, it was unlikely that the pilot's mild heart disease contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain proper altitude and clearance during low-level aerial application, resulting in an in-flight collision with power lines.

Findings

Aircraft	Altitude - Not attained/maintained
Personnel issues	Use of equip/system - Pilot
Environmental issues	Wire - Awareness of condition

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)
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On June 26, 2022, about 0830 central daylight time, a Robinson R44 helicopter, N4124D, was destroyed when it was involved in an accident near Blackwell, Texas. The pilot sustained fatal injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 137 aerial application flight.

The purpose of the aerial application flight was to apply selective herbicide targeting a large grove of mesquite trees. After loading the herbicides near the target spray area, the pilot took off and completed 2 or 3 passes over the mesquite grove. After about 3 to 4 minutes, the person who loaded the helicopter with chemicals heard a metallic-type impact sound coming from the direction of where the helicopter was spraying. He subsequently heard an impact sound and an abrupt end to the engine and rotor blade noise coming from that direction. He responded to the accident site as quickly as possible. There were no direct witnesses to the accident.

There were no radio or distress calls heard from the pilot before the accident.

Pilot Information

Certificate:	Commercial	Age:	41, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	5-point
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	April 19, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 1000 hours (Total, all aircraft), 800 hours (Total, this make and model), 200 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER COMPANY	Registration:	N4124D
Model/Series:	R44 II	Aircraft Category:	Helicopter
Year of Manufacture:	2007	Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	12095
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	June 5, 2022 100 hour	Certified Max Gross Wt.:	2500 lbs
Time Since Last Inspection:	38 Hrs	Engines:	1
Airframe Total Time:	2933 Hrs at time of accident	Engine Manufacturer:	
ELT:	Not installed	Engine Model/Series:	
Registered Owner:	ASHCRAFT MATTHEW	Rated Power:	
Operator:	Aerial AG Services LLC	Operating Certificate(s) Held:	Agricultural aircraft (137)

Review of maintenance logbooks for the airframe and engine did not reveal any uncorrected defects and the annual inspections were up to date.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KSWW,2385 ft msl	Distance from Accident Site:	20 Nautical Miles
Observation Time:	08:15 Local	Direction from Accident Site:	341°
Lowest Cloud Condition:	Scattered / 10000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	360°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.22 inches Hg	Temperature/Dew Point:	29°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Blackwell, TX	Type of Flight Plan Filed:	None
Destination:	Blackwell, TX	Type of Clearance:	None
Departure Time:		Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	32.151523,-100.33771

A series of power poles running southwest to northeast carried two wires through the mesquite grove canopy. The poles measured about 23 ft tall with one wire on top and the second wire about 3 ft below the top wire. Both wires were found separated from the pole nearest the main wreckage and the top wire was broken in that area. The next pole to the northeast was shattered at the base and came to rest 100 ft to the south with the top wire separated and the lower wire still secure. On the next pole to the southwest, the top wire was separated, and the lower wire remained secure. The lower wire was found entangled around the main wreckage and had black paint transfer marks consistent with the helicopter's paint. The top wire on both sides of the break had black paint transfer marks.

The debris field extended 315 ft, oriented north and south, beginning 130 ft south of the closest pole and consisted mostly of tailcone and tail rotor drive components. The helicopter impacted the ground in a nose-low and left-side-low attitude. There was no postimpact fire.

There was no indication of electrical arcing visible on the wires or wreckage. The main wreckage came to rest on a southerly heading about 320 ft south of the closest pole with the top wire entangled in the helicopter fuselage. The first point of ground contact was 3 to 4 ft north of the main wreckage. Wires were found wrapped around the leading edge of the main rotor swashplate and score marks consistent with rotation were visible. More wires were found wrapped around the main rotor mast fairing, over the right side of the cabin roof, and down along the aft part of the cabin door. There were more wire score marks found on the hydraulic servo below the main rotor swashplate.

Detailed examination of the helicopter airframe, flight controls, and engine did not reveal any preimpact anomalies. All separations in the flight controls were consistent with impact damage. The frame tube adjacent to the forward face of the upper sheave near the engine exhibited scuff marks in the direction of engine rotation. The forward face of the sheave exhibited score marks around its outer edge. There were black transfer marks on the tube frame consistent with impact from the adjacent engine drive belts.

Medical and Pathological Information

An autopsy on the pilot was conducted at South Plains Forensic Pathology, Lubbock, Texas. The cause of death was blunt force injuries. The pilot's autopsy identified mild coronary artery disease and mild left ventricular hypertrophy of the heart.

Toxicological tests were performed at the Federal Aviation Administration Forensic Sciences Laboratory, Oklahoma City, Oklahoma. 3.5 ng/mL Tetrahydrocannabinol (THC) was identified in heart blood, 11-hydroxy-delta-9-THC was detected in urine but not in the heart blood. Carboxy-delta-9-THC was detected in urine and 9.4 ng/mL in heart blood.

Preventing Similar Accidents

Preventing Obstacle Collisions in Agricultural Operations (SA-035)

The Problem

Accidents involving collisions with obstacles, including poles, wires, guy wires, meteorological evaluation towers (MET), or trees, are among the most common types of agricultural aircraft accidents. Some collisions involved obstacles that the pilots did not see (even during survey flights) but others involved obstacles that were known to the pilot and/or had characteristics that would make them visibly conspicuous.

What can you do?

- Maintain a quick-reference document (paper or electronic) at the operations base that contains field maps, charts, photographs, and details of all known obstacles. Frequently review current aeronautical charts for information about obstacles.
- Before you leave the ground, spend time becoming familiar with all available information about the target field and programming navigation equipment. Such preflight action can help reduce the potential for confusion or distraction in flight.
- Conduct aerial surveys of the target field but do not rely solely on an aerial survey to identify potential obstacles.
- Conduct regular ground surveys of fields. Some towers can be erected in hours, and obstacles can change since you last worked that field.

- When possible, use ground crews. They may be in a better position to see certain obstacles and help you ensure that your aircraft remains clear of them.
- Watch for shadows and irregularities in growth patterns to help identify obstacles.
- Speak with farmers and land owners to raise awareness about obstacle hazards.
- Use GPS and other technology to maintain awareness of obstacle locations.
- Be aware that workload, fatigue, sun glare, and distractions in the cockpit can adversely affect your ability to see, avoid, or remember obstacles.
- Understand the performance limitations and requirements for your aircraft, particularly when operating with heavier loads and at higher density altitudes.
- The National Agricultural Aviation Association's Professional Aerial Applicators' Support System reminds pilots that, when ferrying an aircraft or transitioning between sites, flying above 500 feet reduces obstacle collision risks: "Ferry Above Five and Stay Alive."

See <https://www.nts.gov/Advocacy/safety-alerts/Documents/SA-035.pdf> for additional resources.

The NTSB presents this information to prevent recurrence of similar accidents. Note that this should not be considered guidance from the regulator, nor does this supersede existing FAA Regulations (FARs).

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Corey Wehmeyer; FAA FSADO; `Lubbock, TX Thom Webster; Robinson Helicopter; Torrence, CA
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Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=105354

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).