
		NTSB ID: NYC01FA053		Aircraft Registration Number: N744FC	
		Occurrence Date: 12/04/2000		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place SANDGAP		State KY	Zip Code 40481	Local Time 1910	Time Zone EST
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:			
Aircraft Information Summary					
Aircraft Manufacturer Robinson		Model/Series R-44A /R-44A		Type of Aircraft Helicopter	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:					
<p>HISTORY OF FLIGHT</p> <p>On December 4, 2000, about 1910 Eastern Standard Time, a Robinson R-44A, N744FC, operated by Christian Cardiology, Manchester, Kentucky, was destroyed when it impacted rising terrain near Sandgap, Kentucky. The non-instrument rated, certificated private pilot and two passengers were fatally injured. Night instrument meteorological conditions prevailed at the accident site. No flight plan had been filed for the business flight that was conducted under 14 CFR Part 91.</p> <p>The pilot, along with two company employees were en route to Lexington, Kentucky, to acquire additional equipment for a planned expansion of the pilot's medical practice. According to witnesses, the flight had been planned to depart from his office in Manchester, with an intermediate stop at Jackson, Kentucky, and then proceed to Lexington.</p> <p>The pilot was estimated to have departed about 1850. Several witnesses along the route of flight reported either seeing or hearing a helicopter fly by. However, a check of the times the helicopter was observed or heard, revealed most were earlier than the departure time of the accident flight.</p> <p>Two witnesses in a vehicle, were headed toward McKee, Kentucky, about 1910. They observed a bright glow on the opposite side of a ridgeline through clouds. One of the witness reported the glow lasted for about 5 seconds and described it as similar to a sunrise. The other witness reported a low cloud covered the top of the ridge. Neither witness saw or heard the helicopter prior to the glow, nor was any smoke observed after the glow. Based upon the witnesses' observations, the wreckage was found on December 5, 2000.</p> <p>The accident occurred during the hours of darkness at 37 degrees, 31.272 north latitude, and 84 degrees, 04.911 minutes west longitude.</p> <p>PERSONNEL INFORMATION</p> <p>The pilot held a private pilot certificate for rotorcraft - helicopter, issued on May 21, 2000. According to the pilot's airman application, his flight experience was 176 hours with 22.6 hours of solo/pilot-in-command (PIC), all in Robinson R22s. Additional flight experience was reconstructed through incomplete pilot logbooks, and maintenance records of helicopters flown. At the time of the accident, the pilot's total flight experience was estimated to be 386 hours, with 232 hours as PIC. He was estimated to have accumulated 326 hours in the Robinson R-22, and 60 hours in the Robinson R-44A.</p> <p>On September 9, 1999, the pilot was issued a Federal Aviation Administration (FAA), third class airman medical certificate, with a limitation to wear corrective lenses for distant vision, and</p>					
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possess glasses for near vision.

Interviews with the two flight instructors, who flew with the pilot, revealed that both thought he was an above average student. However, one flight instructor expressed concern about the pilot's awareness of his own limitations as a low time pilot.

AIRCRAFT INFORMATION

The helicopter was not approved for flight in instrument meteorological conditions. It was equipped with dual VHF communications radios, an encoding altimeter, and a GPS with a moving map display. Other than the GPS, no navigation equipment was installed. The helicopter was estimated to have accumulated about 60 hours since new at the time of the accident.

The last documented refueling occurred at the airport in London, Kentucky, on December 1, 2000. At that time, the helicopter was serviced with 38.8 gallons of 100 LL aviation grade gasoline.

METEOROLOGICAL INFORMATION

All telephone contacts with FAA Flight Service Station weather briefers are recorded, and available for review. A check of FAA facilities found no record of a pre-departure weather briefing.

The pilot's wife reported they had a security monitoring system in the office. She had reviewed the tape after the accident, and observed her husband making at least two phone calls to check the weather prior to departure.

Alternate means of obtaining weather were available to the pilot through the use of pre-recorded weather from a variety of different sources. However, when a person calls the various pre-recorded weather sources, no record is made of the telephone call.

The three closest weather-reporting stations to the accident site were London, Jackson, and Lexington, Kentucky.


London had a field elevation of 1,212 feet. The distance and bearing to Manchester and the accident site were 079 deg at 16 NM, and 003 deg at 26 NM respectively. Between 1800 and 2000, the visibility varied between 8 and 9 statute miles, and the lowest ceiling was between 1,500 and 2,000 feet AGL.

Jackson had a field elevation of 1,381 feet. The distance and bearing to Manchester and the accident site were 223 deg at 34 NM, and 267 deg at 37 NM respectively. Between 1800 and 2000, the visibility was 10 statute miles, and the ceiling varied between 1,400 and 1,600 feet AGL.

Lexington had a field elevation of 979 feet. The distance and bearing to Manchester and the accident site were 145 deg at 66 NM, and 147 deg / 40 NM respectively. Between 1800 and 2000, the visibility varied between 6 and 7 statute miles. The lowest ceiling varied between 900 and 1,100 feet AGL.

The most recent area forecast (FA) prior to departure of the accident flight was issued at 1445 on December 4, 2000. The outlook for eastern Kentucky was broken clouds at 2,000 feet msl, with tops at 4,000 feet msl. In the extreme portions of eastern Kentucky, the sky would be clear until 1700. The outlook was for marginal VFR ceilings.

According to the Accident Prevention Program Publication, FAA-P-8740-30B, HOW TO OBTAIN A GOOD WEATHER BRIEFING, marginal VFR conditions are when the ceiling is between 3,000 feet and 5,000 feet AGL, and/or visibility is between 3 and 5 statute miles inclusive.

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Two AIRMETS (Airmen's Meteorological Information), with three geographic areas for specific types of weather were contained within the area forecast. The geographic areas covered instrument meteorological conditions (IMC) - referred to in the AIRMET as IFR, mountain obscurement, and icing conditions.

The geographic area for IMC conditions (IFR), and icing conditions covered the planned route of flight for the helicopter. The geographic area for mountain obscurement covered the departure point. However, the accident site was outside of the geographic area.

Following are the AIRMET comments for IMC conditions, mountain obscurement, and icing conditions.

IMC Conditions - Indiana and Kentucky - Occasional ceilings below 1,000 feet/visibility below 3 statute miles, with mist and/or fog. Conditions ending by 1700 to 1900. Conditions developing extreme eastern Kentucky by 1700 to 1800. Conditions continuing beyond 2200 through 0400 December 5, 2000.

Mountain Obscurement - Kentucky and Tennessee - Mountains occasionally obscured with cloud, mist, and fog. Conditions continuing beyond 2200 through 0400 December 5, 2000.

Icing Conditions - Indiana and Kentucky - Occasional moderate rime and mixed icing in precipitation below 4,000 feet AGL. Conditions ending by 1700 to 1900. Conditions continuing beyond 2200 through 0400, December 5, 2000, in Kentucky.

Witnesses along the route of flight reported variable weather, with fog or overcast conditions, while the person who saw the glow from the impact reported he could see the moon through breaks in the clouds, and there was no fog in the area. Further, he reported the visibility was about 1 mile.

A pilot who had several years experience operating in Kentucky reported that the hills in eastern Kentucky can generate weather when none is forecast. He further reported that you could not always count on the forecast weather to remain as indicated, and that it could be significantly better or worse than forecast.

RADAR AND OTHER REMOTELY RECORDED DATA

Radar data was received from the Indianapolis Air Traffic Control Center (ARTCC). A check of both code 1200, and non-beacon targets failed to identify the helicopter on its route of flight.

WRECKAGE AND IMPACT INFORMATION

The helicopter was examined at the accident site on December 6 and 7, 2000. The terrain was rolling hills covered by trees. There was no ground lighting in the area of the accident site.

The flight path of the helicopter crossed a north/south ridgeline with an elevation of 1,400 feet, and with higher terrain to the north. The first observed ground contact was with a tree on the east side of the north/south ridgeline, about 30 feet above the top of the ridge. The upper 10 feet of the trunk and upper branches were freshly scraped and the bark was missing. In addition, several branches on the top had been broken off at the same height, and the ends of the limbs were puffed out. Higher trees beyond the initial tree strike in the direction of flight were not damaged.

All major components were accounted for at the accident site. The debris trail started beyond the tree and continued for 670 feet on a heading of 305 degrees where the main wreckage was found. Lighter items were found on the right side of the debris trail and heavier items were found on the left side of the debris trail.

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The first item on the ground, identified as from the helicopter, was located on the top of the ridgeline, about 182 feet from first known tree strike, on a heading of 004 degrees magnetic. It consisted of a partial decal from the battery box located in the nose of the helicopter. This was followed by pieces of plexiglas, numerous small pieces of unidentified metal, doorframes, and doors, a large piece of the trailing edge of one main rotor blade, a tail rotor blade, pieces of the rear case of various cockpit instruments, the instrument panel frame, the rear fuselage cowling, and finally the main wreckage. Most items were on the ground; however, several items remained in the upper branches of the trees.

The main accident site contained the fuselage, two partial main rotor blades, the tail boom, the 90-degree gearbox, and the landing skids.

The main rotor turned freely in the direction of rotation. It would not rotate when force was applied opposite to the direction of rotation. The drive belts to the clutch were burned and not identified. The belt tension actuator was found in position, identified by a representative from Robinson Helicopters, as within the normal range.

The main rotor drive shaft was bent about 20 degrees, about 6 inches below the teetering head. The elastomeric stops on both sides of the teetering head were present and split. The main rotor drive shaft under the elastomeric stops was dented on both sides.

The blue main rotor blade was bent upward 90 degrees, about 37 inches outboard of the main rotor shaft. About 99 inches outboard from the main rotor shaft, the main rotor blade was bent down, and the aft honeycomb section of the blade had separated. The honeycomb section of blade was recovered several hundred feet away. At 61 to 69 inches inboard from the tip, the underside of the aft honeycomb section exhibited scratches in multiple directions.

The outboard portion of the red main rotor blade was separated about 27 inches from the main rotor shaft. The outboard portion of the red main rotor blade was found in the main wreckage area, and was attached to the inboard portion by the trailing edge doubler.

The paint on the leading edge of both main rotor blades had numerous nicks, chips, and chord wise scratches from inboard to tip.

One tail rotor blade found in the debris trail, was bent away from the tail boom and the plane of rotation for the tail rotor blades. This blade had separated from the tail rotor hub. The other tail rotor blade remained attached to the rotor hub, and was bent in toward the tail boom. The 90-degree gearbox casing remained in the tail boom, and the drive shaft and gear, which fit into the casing had separated from the case. One vertical cut on the left side of the tail boom was at the same location as the arc of the tail rotor blades.

The leading edges of the right side horizontal stabilizer, and vertical fin had been penetrated, consistent with tree branch impact. The penetrations were outside of the arc of the main rotor blades. No evidence of a main rotor blade strike to the tail boom was found.

The aluminum flight controls in the cockpit/cabin were not identified. Individual components were identified; however, their pre-impact positions could not be determined.

A small piece of cabin structure, from the intersection of the vertical and lateral bows for the front windshield was recovered along the debris trail. This part also contained the vent line for the battery. The forward or front side was deformed, with a cylindrical impression, about 3 inches in diameter, orientated vertically.

The engine crankshaft was rotated and valve train continuity was confirmed. The upper spark plugs were gray in appearance with no evidence of impact damage. The magnetos were attached and had been

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burned. When the engine was rotated, the internal gear that drove the magnetos rotated. However, no rotation was observed on either magneto.

The carburetor had separated from the engine and was recovered along the debris path at the main impact. The carburetor had not been exposed to fire and the venturi was in place.

FIRE

A fire consumed the fuselage and cabin. No evidence of soot patterns was found on the rear fuselage cowling or tail boom.

MEDICAL AND PATHOLOGICAL INFORMATION

The toxicological testing report from the FAA Toxicology and Accident Research Laboratory, Oklahoma City, Oklahoma, was negative for drugs and alcohol for the pilot.

On December 6, 2000, the Office of the Chief Medical Examiner for Kentucky, Frankfort, Kentucky, conducted autopsies on the pilot and passengers.


ADDITIONAL INFORMATION


The accident site was located on a direct line between Manchester, and Lexington. A witness who was en route to Lexington to meet the pilot reported that it was not unusual for the pilot to change his destination en route, if there was a need.

He further reported that he had received a page from one of the passengers on the helicopter at 1908. He returned the call, and received static the first time. He tried the number a second time, and the number was answered by voice mail. He then tried the cell phones of the other two occupants in the helicopter, including the pilot, and was unable to reach anyone.

Wreckage Release

The aircraft wreckage was released to a representative of the owner's insurance company on December 8, 2000.

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Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used 0	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Approach/Arrival Flown: NONE					
VFR Approach/Landing: None					
Aircraft Information					
Aircraft Manufacturer Robinson		Model/Series R-44A /R-44A		Serial Number 888	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Skid					
Amateur Built Acft? No	Number of Seats: 4	Certified Max Gross Wt. 2400 LBS	Number of Engines: 1		
Engine Type: Reciprocating	Engine Manufacturer: Lycoming	Model/Series: O-540-F1B5	Rated Power: 225 HP		
- Aircraft Inspection Information					
Type of Last Inspection Annual	Date of Last Inspection 10/2000	Time Since Last Inspection 60 Hours	Airframe Total Time 60 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type Yes /	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner CHRISTIAN CARDIOLOGY		Street Address P.O. BOX 159			
		City MANCHESTER	State KY	Zip Code 40962	
Operator of Aircraft FRED A. COLLATZ		Street Address P.O. BOX 159			
		City MANCHESTER	State KY	Zip Code 40962	
Operator Does Business As: CHRISTIAN CARDIOLOGY			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Business					

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First Pilot Information

Name On File	City On File	State On File	Date of Birth	Age 45
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Sex: M	Seat Occupied: Right	Occupational Pilot? Doctor/Dentist	Certificate Number:
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Certificate(s): Private

Airplane Rating(s): None

Rotorcraft/Glider/LTA: Helicopter

Instrument Rating(s): None

Instructor Rating(s): None

Current Biennial Flight Review?

Medical Cert.: Class 3	Medical Cert. Status: Valid Medical--w/ waivers/lim.	Date of Last Medical Exam: 09/1999
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	386	60			15			386		
Pilot In Command(PIC)	232	60						232		
Instructor										
Instruction Received										
Last 90 Days	100	60						100		
Last 30 Days	30	30						30		
Last 24 Hours										

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? Yes	Second Pilot? No
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Flight Plan/Itinerary

Type of Flight Plan Filed: None

Departure Point MANCHESTER	State KY	Airport Identifier NONE	Departure Time 1850	Time Zone EST
Destination LEXINGTON	State KY	Airport Identifier NONE		


Type of Clearance: None

Type of Airspace: Class G

Weather Information

Source of Wx Information:

No record of briefing

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Weather Information

WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
	0000		0 Ft. MSL	0 NM	0 Deg. Mag.
Sky/Lowest Cloud Condition: Scattered			0 Ft. AGL	Condition of Light: Night/Bright	
Lowest Ceiling: Unknown			0 Ft. AGL	Visibility: 1 SM	Altimeter: "Hg
Temperature: °C	Dew Point: °C	Weather Conditions at Accident Site: Instrument Conditions			
Wind Direction:	Wind Speed:	Wind Gusts:			
Visibility (RVR): 0 Ft.	Visibility (RVV) 0 SM				
Precip and/or Obscuration:					

Accident Information

Aircraft Damage: Destroyed	Aircraft Fire: Ground	Aircraft Explosion: None
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- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers	2				2
- TOTAL ABOARD -	3				3
Other Ground	0	0	0		0
- GRAND TOTAL -	3	0	0		3

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Administrative Information

Investigator-In-Charge (IIC)

ROBERT L. HANCOCK

Additional Persons Participating in This Accident/Incident Investigation:

WILLIAM L FISHER
LOUISVILLE, KY

DAVE MOORE
WILLIAMSPORT, PA

KEN MARTIN
TORRANCE, CA