Aviation Investigation Final Report

Location:	Dimmitt, Texas	**Accident Number:**	CEN17FA209
Date & Time:	June 3, 2017, 14:37 Local	**Registration:**	N7091F
Aircraft:	ROBINSON HELICOPTER COMPANY R44 II	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation		

Analysis

The private pilot, who did not hold a rotorcraft rating, departed in the helicopter on a routine flight to check and observe crop fields, business facilities, and other business-related assets. A search was initiated when the pilot did not return from the flight, and the accident site was located in a field the following morning. There were no witnesses to the accident. Data obtained from an onboard GPS showed the helicopter making a series of turns at a low altitude above the field in which the wreckage was located. Examination of the helicopter did not reveal any preimpact mechanical malfunctions and there was no damage to nearby obstructions to suggest an in-flight collision.

The pilot's autopsy revealed scarring in heart muscle from previous heart attacks and severe left ventricular hypertrophy. Each of these findings significantly increased his risk for a sudden arrhythmia. Such an arrhythmia would likely cause sudden symptoms such as palpitations or altered/decreased consciousness as a result of diminished blood pressure. It is likely that scarring from previous heart attacks and severe hypertrophy of the left ventricular wall caused arrhythmia which resulted in incapacitation and a loss of control at low altitude. Although the pilot did not hold a rating for rotorcraft, his recent flight experience in the accident helicopter performing similar flight profiles make it unlikely that he simply lost helicopter control.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's incapacitation due to scarring from previous heart attacks and severe hypertrophy of the left ventricular wall which resulted in arrhythmia and a loss of control while maneuvering at low altitude.

Findings

Aircraft	(general) - Not attained/maintained
Personnel issues	Cardiovascular - Pilot
Personnel issues	Aircraft control - Pilot
Personnel issues	Qualification/certification - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying	Loss of control in flight (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

On June 3, 2017, about 1437 central daylight time, a Robinson R44 II helicopter, N7091F, impacted terrain while maneuvering at near Dimmitt, Texas. The private pilot sustained fatal injuries, and the helicopter sustained substantial damage. The helicopter was registered to Don Oppliger Trucking, Inc, Clovis, New Mexico, and privately operated under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the local business flight, which departed a private helipad near Farwell, Texas, about 1302.

According to the pilot's business manager, the pilot departed on a routine flight to check and observe crop fields, business facilities, and other business-related assets. When the pilot did not return from the flight, a search was initiated. The helicopter wreckage was located in a field about 0800 the following morning. There were no witnesses to the accident.

Flight data downloaded from a Garmin GPSmap 496 handheld GPS unit located at the accident site included the accident flight. Data extracted from the unit included 13 flight track logs from April 22, 2017, to June 3, 2017. The accident flight was recorded starting at 1302:31 and ended at 1437:28, and included 730 discrete points. The flight track was consistent with the pilot overflying fields, facilities, and other business assets. The end of the data showed the helicopter making a series of turns at a low altitude above the field where the wreckage was located.

Pilot Information

Certificate:	Private	**Age:**	68,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	None
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	March 29, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	4225 hours (Total, all aircraft), 177 hours (Total, this make and model)		

The pilot held a Federal Aviation Administration (FAA) private pilot certificate with airplane single and multi-engine land and instrument airplane ratings. The pilot did not hold a rotorcraft rating; however,

according to his business manager, he had flown helicopters for several years for business purposes. Based on the 177 total hours on the accident helicopter, the pilot's estimated rotorcraft flight experience was at least 177 hours. The pilot reported a total flight experience of 4,225 hours on his 2016 FAA medical certificate application.

According to the FAA medical files, the 68 year-old pilot reported having had a 4 vessel coronary artery bypass graft procedure in 2008, followed by a stent in his right coronary artery in 2009. After reviewing the data related to these events, the FAA granted the pilot special issuance medical certificates beginning in 2010. At the time of his last aviation medical examination on March 29, 2017, he reported using aspirin and clopidogrel as blood thinners, losartan for blood pressure control, and a combination of ezetimibe and simvastatin to control his cholesterol. None of these were considered impairing. A stress echo cardiogram, dated January 6, 2017, demonstrated that the pilot reached 16 mets, more than 150% of the target heart rate, and had no ischemic findings on his electrocardiogram or echocardiogram. The aviation medical examiner found no abnormalities and the pilot received a special issuance third class medical certificate limited by a requirement for corrective lenses and marked, "Not valid for any class after March 31, 2018."

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER COMPANY	**Registration:**	N7091F
Model/Series:	R44 II II	**Aircraft Category:**	Helicopter
Year of Manufacture:	2015	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	13910
Landing Gear Type:	N/A; Skid	**Seats:**	4
Date/Type of Last Inspection:	March 20, 2017 Annual	**Certified Max Gross Wt.:**	2500 lbs
Time Since Last Inspection:	27 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	177 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Not installed	**Engine Model/Series:**	IO-540-AE1A5
Registered Owner:	On file	**Rated Power:**	245 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The accident helicopter, serial number 13910, was a Robinson R44 II, four-place, two-bladed, single main rotor, single-engine helicopter, with skid-type landing gear. The primary structure was welded steel tubing and riveted aluminum. The tailboom was a semi-monocoque structure consisting of an aluminum skin. Each seat was equipped with a combined seat belt and inertia reel shoulder strap.

The helicopter was equipped with a Lycoming IO-540- AE1A5 engine, serial number L-36203-48E, rated at 260 horsepower; however, according to the helicopter's type certificate, the engine had a 5-minute takeoff rating of 245 horsepower and a maximum continuous rating of 205 horsepower.

The helicopter was registered to the owner on December 1, 2015.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	HRX,3788 ft msl	**Distance from Accident Site:**	28 Nautical Miles
Observation Time:	14:35 Local	**Direction from Accident Site:**	300°
Lowest Cloud Condition:	Scattered / 4000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	26°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Farwell, TX (PVT)	**Type of Flight Plan Filed:**	None
Destination:	Farwell, TX (PVT)	**Type of Clearance:**	None
Departure Time:	13:02 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	34.420555,-102.512222

Examination of the accident site revealed that the helicopter came to rest on its right side in a wheat field (the wheat crop was about 3 inches tall) owned by the pilot's business. Three ground scars, consistent with main rotor blade strikes, were observed adjacent to the main wreckage. Fragmented plexiglass was scattered between the ground scars and main wreckage. Separated sections of the main rotor blades were located within a 75-ft diameter of the main wreckage; the main rotor blades were fragmented, bent, deformed, and their root sections remained attached to the rotor hub. No evidence of contact with any adjacent structures or power lines was observed.

The lower forward fuselage was crushed aft and upward. The tailboom was intact, and the horizontal stabilizer was bent. No damage was noted to the tail skid. The forward landing gear skid tubes were fractured, and the left forward skid tube was separated and located in the debris field. The left forward door was separated, the right forward door and rear cabin doors were damaged and partially fragmented. The forward seat belts and shoulder harnesses were unlatched. The helicopter was not equipped with an emergency locator transmitter.

Flight control continuity was established from the cockpit flight controls to the swashplate and tail rotor system. Drivetrain continuity was established from the engine to the main transmission and tail rotor systems.

The engine remained attached to the engine mount and secured in the airframe. Thumb compression was noted on all cylinders, and mechanical continuity throughout the engine was established. The magnetos and ignition leads produced spark when engine crankshaft was rotated.

Medical and Pathological Information

An autopsy was performed by South Plains Forensic Pathology, P.A., Lubbock, Texas. The cause of death was blood loss due to visceral injuries due to blunt force injuries, and the manner of death was an accident.

The autopsy also described significant heart disease. The heart weighed 610 gm and both the ventricles were dilated; the left ventricle was described as having severe hypertrophy, but no measurements were given. There was very severe coronary artery disease in the native arteries, but the grafts were all described as patent. A stent was identified, but not further described. Sections of the myocardium revealed scarring from old heart attacks in the left ventricle. Microscopy of the heart showed myocyte hypertrophy with interstitial and perivascular fibrosis. There were areas where adipose and fibrotic tissue replaced normal cells.

Toxicology testing performed by the Federal Aviation Administration's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, identified no ethanol in the vitreous. In addition, salicylate (a metabolite of aspirin) was found in urine, losartan was found in cavity blood and liver, and clopidogrel was identified in liver tissue. As stated above, none of these are considered impairing.

Administrative Information

Investigator In Charge (IIC):	Sauer, Aaron
Additional Participating Persons:	Dawna Gournic; Federal Aviation Administration; Lubbock, TX Thom Webster; Robinson Helicopter Company; Torrance, CA
Original Publish Date:	March 18, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95289