Aviation Investigation Final Report

Location:	Nuevo, California	**Accident Number:**	ANC23FA031
Date & Time:	March 24, 2023, 12:17 Local	**Registration:**	N14Z
Aircraft:	BELL HELICOPTER TEXTRON 407	**Aircraft Damage:**	Destroyed
Defining Event:	Low altitude operation/event	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot and passenger departed in the helicopter on a personal flight over rough hilly terrain. The pilot's cell phone was enabled with a crash notification feature, which initiated a call to a family member to notify them there may have been an accident. The family member notified first responders, and the wreckage was located near the peak of a rocky hilltop.

Video recovered from cameras mounted on the outside of the helicopter shows the helicopter took off and made two low-level passes over terrain. As the pilot approached the crest of a ridgeline, he initiated a steep right turn. As the helicopter passed a rocky outcrop at the top of the hill, the main rotor blade contacted the terrain. Fragments of main rotor blades can be seen across the entire view of the camera.

Reviewed medical evidence for the pilot and pilot-rated passenger indicated that they both had some risk factors for an impairing or incapacitating cardiovascular event. Although such an event cannot be excluded by autopsy evidence alone, there was no autopsy evidence that such an event occurred, and the accident circumstances were not consistent with a sudden medical event. Thus, it is unlikely that the pilot's or pilot-rated passenger's medical conditions contributed to the accident.

Examination of the helicopter revealed no anomalies with the airframe or engine that would have precluded normal operation.

Probable Cause and Findings

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

The pilot’s decision to maneuver in a steep bank at a low altitude, which resulted in his failure to maintain clearance with terrain.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Understanding/comprehension - Pilot
Environmental issues	Mountainous/hilly terrain - Decision related to condition
Aircraft	Altitude - Not attained/maintained

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)

On March 24, 2023, at 1217 Pacific daylight time, a Bell 407 helicopter, N14Z, was destroyed when it was involved in an accident near Nuevo, California. The pilot and pilot-rated passenger were fatally injured. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to a family member, the helicopter was en route to Big Bear, California, as part of a weekend skiing trip. The pilot's cell phone was enabled with a crash notification feature, which triggered an automatic call to a family member. The family member then notified first responders, who located the wreckage near the peak of a rocky hilltop at 1243.

Review of ADS-B data revealed the helicopter departed French Valley Airport (F70), Murrieta/Temecula, California, at 1205 and flew in a northernly direction at an altitude of about 500 to 600 ft above the ground (agl). The last ADS-B reporting point was collocated with the accident site, about 18 miles north of F70.

Pilot Information

Certificate:	Private	**Age:**	61,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	October 1, 2022
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 1, 2022
Flight Time:	2190 hours (Total, all aircraft), 132 hours (Total, this make and model)		

Pilot-rated passenger Information

Certificate:	Private	**Age:**	62,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	April 1, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1600 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BELL HELICOPTER TEXTRON	**Registration:**	N14Z
Model/Series:	407	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	54704
Landing Gear Type:	None; High skid	**Seats:**	7
Date/Type of Last Inspection:	November 1, 2022 Continuous airworthiness	**Certified Max Gross Wt.:**	5250 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	1750.2 Hrs at time of accident	**Engine Manufacturer:**	Rolls-Royce
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	250C47B/8
Registered Owner:	On file	**Rated Power:**	813 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KHMT,1514 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	12:55 Local	**Direction from Accident Site:**	150°
Lowest Cloud Condition:	Scattered / 3800 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.21 inches Hg	**Temperature/Dew Point:**	13°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Murrietta, CA (F70)	**Type of Flight Plan Filed:**	None
Destination:	Big Bear, CA (L35)	**Type of Clearance:**	VFR
Departure Time:	12:05 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	33.789279,-117.09542(est)

The helicopter came to rest about 330 ft downslope on a rocky, hilly terrain, at an elevation of 2,560 ft above mean sea level. All of the helicopter and engine components were located within the main wreckage site.

The debris field extended along the route of flight, starting at the top of a small hill and extending down the hillside. The beginning of the debris field consisted of very small fragments of fiberglass, consistent with main rotor blade material. These fragments were located on top of, and immediately adjacent to, a large rocky outcrop at the top of the hill. Ground scars about 60 ft past the initial impact point were consistent with multiple tail rotor blade strikes. No evidence of main rotor strikes were found after the initial impact point.

The airframe was extensively damaged, and the tailboom was separated. The main rotor hub remained attached to the transmission and the transmission deck was fractured from the

passenger compartment. Two main rotor blades exhibited extensive impact damage. The two other main rotor blades sustained less damage.

The cockpit and flight controls sustained extensive damage due to impact forces. The helicopter was equipped with a set of left side dual controls, which consisted of a cyclic, collective, and tail rotor anti torque pedals. Main rotor flight control continuity for both cyclic and collective systems was confirmed from the flight control input sticks to the main rotor hub assembly, with several overload fractures observed consistent with impact forces. No preimpact anomalies were observed in the main and tail rotor flight controls or hydraulics and all observed fractures were consistent with overload forces at impact. The hydraulic reservoir contained hydraulic fluid, and the screen was free of debris.

The three main rotor servos were all connected to the servo support, which remained attached to the surrounding fractured roof section. The servos were removed and functionally tested; no anomalies were noted.

The rotating (outer ring) swashplate rotated freely by hand. The swashplate also moved freely up and down with hand movement of the collective lever assembly. Drive shaft continuity was confirmed through a series of impact fractures from the engine gearbox to the tail rotor system. No preimpact anomalies were found in the fuel system; fuel remained in the bottom of the aft main fuel cell. Postaccident examination of the engine and airframe revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

Medical and Pathological Information

An autopsy of the pilot was performed by Riverside County Sheriff's Coroner in Perris, California. The autopsy report was reviewed by the NTSB Investigator-In-Charge. According to the autopsy report, the cause of death was multiple blunt force injuries, and the manner of death was accident.

The results of the pilot's postmortem toxicological testing indicated that he had used the sedating medication zolpidem. The precise timing of his last zolpidem use, and whether it was exerting significant impairing effects at the time of the crash, could not be determined from the zolpidem levels measured in cavity blood and urine. The pilot's toxological tests were also positive for zolpidem, chlorothiazide, hydrochlorothiazide and lisinopril, none of which are typically impairing.

The pilot-rated passenger's toxicological tests were positive for acetaminophen, amlodipine, atorvastatin, chlorathiazide, hydrochlorathiazide, sildenafil, desmethylsildenafil, and rivaroxaban, which are not typically impairing.

Additional Information

Two GoPro cameras were found within the debris field and were sent to the National Transportation Safety Board (NTSB) Vehicle Recorders Laboratory in Washington, DC for examination. Video recovered from one of the cameras ended before takeoff. The other video captured the entirety of the 9-minute flight from takeoff to impact from its mounted position on the helicopter's right skid. The video shows the helicopter depart and proceed toward the intended destination. On two occasions, the video depicted low-level maneuvering over elevated terrain. On the first low pass over a hilltop, about 6 minutes after takeoff, embedded GPS data indicated the helicopter traversed the crest of the hill at an altitude between 30 to 40 ft agl.

About 3 minutes later, the pilot flew over the next line of hills at an altitude of about 30 ft agl, then turned left and flew low-level along a ridgeline. As the pilot approached the crest of the ridgeline, he initiated a steep right turn in a bank of about 60°. See figure 1.

Figure 1. Video frame from on board Go-Pro camera seconds before impact, with main rotor blade seen in upper left of photo.

Moments later, as the helicopter passed over a rocky outcropping at the top of the hill, the main rotor blade contacted terrain and shards of main rotor blades can be seen on the video. See figure 2.

Figure 2. Video frame from on board Go-Pro camera at point of impact, with portions of fragmented main rotor blade seen in upper left of photo.

Administrative Information

Investigator In Charge (IIC):	Ward, Mark
Additional Participating Persons:	Jeffrey Newcomer; Federal Aviation Administration; Riverside, CA Mark Stuntzner; Bell Flight Safety; Fort Worth , TX Jack Johnson; Rolls-Royce Corporation; Indianapolis, IN
Original Publish Date:	February 5, 2025
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=106951