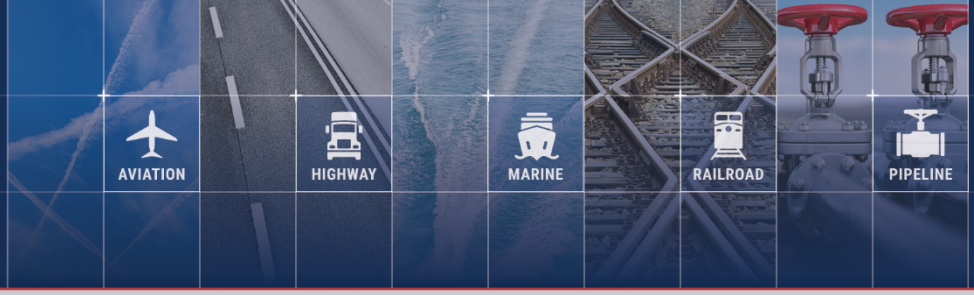

Aviation Investigation Final Report

Location:	Arlington, Washington	**Accident Number:**	WPR18FA016
Date & Time:	October 24, 2017, 13:15 Local	**Registration:**	N8537J
Aircraft:	Robinson R22	**Aircraft Damage:**	Substantial
Defining Event:	Low altitude operation/event	**Injuries:**	1 Fatal, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot and passenger departed in the helicopter from the pilot's residence near a lake. Two witnesses who lived near the accident site saw the helicopter flying fast over the trees from the south side of the lake to the north. One of the witnesses reported that the helicopter "swooped" down over the lake and flew over the water past their house. Shortly thereafter, the helicopter's skids touched the water and the helicopter impacted the lake.

The passenger reported that the pilot descended close to the water and hovered while the passenger took pictures. The helicopter subsequently dipped to the right, followed by the main blades hitting the water; the helicopter descended into the lake and rolled onto its right side before beginning to sink.

The helicopter sank in about 31 ft of water subsequent to impact. A postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. It is likely that the pilot misjudged the helicopter's height above the water while maneuvering at a low altitude, which resulted in impact with the water.

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 adequate clearance from the water while maneuvering at low altitude.

Findings

Aircraft	Altitude - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

On October 24, 2017, about 1315 Pacific daylight time, a Robinson R22 Alpha helicopter, N8537J, was substantially damaged following impact with water while performing a low-level maneuver at King Lake near Arlington, Washington. The commercial pilot was fatally injured, and the passenger sustained minor injuries. The helicopter was owned by the pilot who was operating it as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Visual meteorological conditions prevailed, and no flight plan was filed for the local flight, which departed the pilot's residence, located about 1,350 ft south-southwest of the accident site, about 5 minutes before the accident.

In a postaccident telephone interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC), the passenger reported that he arrived at the pilot's residence about 1200 on the day of the accident, after which he and the pilot discussed going for a flight in the accident helicopter if the weather was good. After the pilot assessed that the weather was fine, he stated that they would be flying to the Arlington Airport to get fuel. The pilot then went out, looked over the helicopter, and prepared for the flight. After both he and the pilot secured their seat belts and shoulder harnesses, the pilot started the engine and let it warm up; then they departed. He said that, after circling the pilot's residence, the pilot brought the helicopter to a hover close to their departure point, where the pilot's wife took some pictures of them before giving them a thumbs-up. The pilot then proceeded away from his residence toward King Lake. During the approach to the lake, the pilot dipped down close to the water "…where he hovered while I was taking some pictures." Shortly thereafter, the helicopter dipped to the right, followed by the main rotor blades hitting the water, "…which took us in." He said the helicopter then listed onto its right side before beginning to sink, at which time he was almost immediately in the water. The passenger unbuckled his seat belt and shoulder harness, crawled through the left door, and surfaced from the water. He then saw the pilot come up to the surface, and the pilot stated that he could not swim; the passenger attempted to tow him to shore, but it was too far, and he had to let go. The passenger was subsequently picked up by a first responder in a small boat. They brought the pilot to shore and performed CPR. The passenger stated that at no time did he recall the pilot being under water for any extended period.

A witness, who lived less than 100 yards west of the accident site reported that he observed the helicopter come over the trees and drop down to fly over the lake south to north. The witness stated that the pilot had performed this type of maneuver many times in the past, and sometimes hovering over the center of the lake. The witness further stated that this time [the pilot] dropped about 6 ft from the surface of the lake (south to north), and about the middle of the lake. The witness mentioned that he noticed the [skid] hit the water, then dove forward hitting the water very hard with an explosive sound; "I saw parts of the helicopter fly off." The witness added that the engine sounded normal.

A second witness, who lived with the first witness, reported that she heard a helicopter coming from the

direction of the accident pilot's residence. The witness stated that she observed the helicopter from her kitchen window flying fast over the trees, then it swooped down and flew over the water past her house. The witness mentioned that she then walked over to the front room and watched the helicopter from the picture window. "I saw him flying fast over the water, and very close to the water. The helicopter's skids touched the water and [it] exploded into little pieces." The witness added that the pilot flew all the time, knew the lake well, and would sometimes fly by their house, hover over the lake for a while, then fly away. The witness opined that, this time, the pilot got too close to the lake and was not hovering. "He was zooming [about 3 ft] above the water and just went down. Looked like his skids hit the water." The witness stated that the helicopter sounded normal.

Pilot Information

Certificate:	Commercial	**Age:**	70,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
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:**	May 3, 2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	5100 hours (Total, all aircraft)		

The pilot held a commercial pilot certificate with ratings for airplane multiengine land, single-engine land, rotorcraft-helicopter, and instrument airplane. The pilot's most recent Federal Aviation Administration (FAA) third-class medical certificate was issued on May 3, 2007, with a limitation for corrective lenses. On the application for that certificate, the pilot reported 5,100 total hours of flight experience with 100 hours in the previous 6 months. There were no pilot flight records located during the investigation. The pilot's medical certificate expired for all classes on May 31, 2009. FAA records revealed that the pilot never reapplied for a medical certificate and that he had not completed the requirements for operation under Basic Med.

Aircraft and Owner/Operator Information

Aircraft Make:	Robinson	**Registration:**	N8537J
Model/Series:	R22 Alpha	**Aircraft Category:**	Helicopter
Year of Manufacture:	1984	**Amateur Built:**	
Airworthiness Certificate:	None	**Serial Number:**	0441
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	1370 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	O320-B2C
Registered Owner:	On file	**Rated Power:**	124 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The two-seat helicopter, serial number (S/N) 0441, was manufactured in 1984. It was powered by a Lycoming O-320-B2C engine, serial number L-16194-39A, rated at 160 horsepower. Airframe and engine times in service could not be determined as no maintenance records were recovered during the investigation. The Hobbs meter recorded time was 3,334.8 hours. FAA records indicated that the airplane was deregistered in May 2015.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AWO,142 ft msl	**Distance from Accident Site:**	100 Nautical Miles
Observation Time:	12:56 Local	**Direction from Accident Site:**	6°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	320°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.42 inches Hg	**Temperature/Dew Point:**	16°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Arlington, WA (NA)	**Type of Flight Plan Filed:**	None
Destination:	Arlington, WA (NA)	**Type of Clearance:**	None
Departure Time:	13:10 Local	**Type of Airspace:**	Class G

At 1256, the weather reporting facility at Arlington Municipal Airport (AWO), Arlington,

Washington, about 6 nm west-northwest of the accident site, reported wind from 320° at 7 knots, 10 miles visibility, clear sky, temperature 16°C, dew point 9°C, and an altimeter setting of 30.42 inches of mercury.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Minor	**Latitude, Longitude:**	48.147777,-122.01667

An examination of the accident site was performed by the NTSB IIC about 2 hours after the accident. The helicopter impacted water on a northerly heading about the mid-lake area and subsequently sank. Aside from remnants of the main rotor blades, which were recovered and placed on shore by first responders, no other components of the helicopter were recovered at that time. The helicopter was recovered from its submerged location to the south shore of the lake during the afternoon of October 30. A post-recovery examination revealed that the helicopter was primarily intact, except for the aft tail boom and right wind screen, which were separated from the helicopter.

A postaccident examination of the airframe and engine was conducted on December 12, 2018. There was no evidence of any preimpact mechanical malfunctions that would have precluded normal operation (refer to the Summary of Aircraft Examination, which is appended to the docket for this accident.)

Medical and Pathological Information

On November 26, 2017, an autopsy was performed on the pilot at the Snohomish County Medical Examiner's Office, Everett, Washington. The cause of death was attributed to freshwater drowning.

Toxicology testing performed at the FAA's Forensic Sciences Laboratory identified atropine in the blood; no carbon monoxide, alcohol, or other drugs were detected. Testing for cyanide was not performed.

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	Curtis R Johnson; Federal Aviation Administration; Renton, WA Kenneth Martin; Robinson Helicopters; Torrance, CA Troy Helgeson; Lycoming Engines; Williamsport, PA
Original Publish Date:	November 6, 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=96242

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.