# Aviation Investigation Final Report

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| **Location:** | Two Harbors, California | **Accident Number:** | WPR19FA175 |
| **Date & Time:** | June 17, 2019, 17:30 Local | **Registration:** | N7187D |
| **Aircraft:** | Robinson R44 | **Aircraft Damage:** | Destroyed |
| **Defining Event:** | VFR encounter with IMC | **Injuries:** | 1 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The pilot of the helicopter was conducting a visual flight rules (VFR) cross-country flight from which he failed to return as planned. Radar data depicted the helicopter about 375 ft above ground level and 117 knots with no sudden airspeed or altitude diversions before it impacted an island hillside. The wreckage was located the following day, significantly fragmented and consumed by a postimpact fire. Ground scars and the wreckage distribution were consistent with collision with terrain in a level flight attitude. There was no evidence of mechanical malfunctions or failures that would have precluded normal operation of the helicopter.

Review of weather information supported instrument meteorological conditions (IMC) over the area of the accident site and an environment conducive to cloud development below 1,000 ft mean sea level. Satellite data showed that, during the accident timeframe, the northwestern part of the island (where the accident site was located) was affected by cloud cover, although most of the rest of the island was not, or the cloud coverage was not as extensive. The weather information that the pilot may have accessed before the flight could not be determined; however, reports available to him likely depicted higher cloud bases than those present over the accident site at the time of the accident. A first responder reported that low ceilings and visibility were common for the area for that time of year, and typically formed in the early evening hours and persisted overnight into the morning.

The circumstances of the accident are consistent with the pilot's continued VFR flight into a localized area of IMC, which resulted in controlled flight into terrain.

## Probable Cause and Findings

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

The pilot's continued visual flight into instrument meteorological conditions, which resulted in controlled flight into terrain.

## Findings

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| **Personnel issues** | Decision making/judgment - Pilot |
| **Personnel issues** | Monitoring environment - Pilot |
| **Aircraft** | Altitude - Not attained/maintained |
| **Environmental issues** | Below VFR minima - Decision related to condition |
| **Environmental issues** | Mountainous/hilly terrain - Effect on operation |

## Factual Information

### History of Flight

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| **Enroute-cruise** | VFR encounter with IMC (Defining event) |
| **Enroute-cruise** | Controlled flight into terr/obj (CFIT) |

On June 17, 2019, about 1713 Pacific daylight time, a Robinson R44 helicopter, N7187D, was destroyed when it was involved in an accident near Two Harbors, Santa Catalina Island, California. The pilot was fatally injured. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The Federal Aviation Administration (FAA) issued an Alert Notice (ALNOT) for the accident helicopter when a family member reported that the pilot had failed to return as planned. Local law enforcement commenced search and rescue operations throughout the northern area of Santa Catalina Island and the wreckage was located the following morning.

Review of radar data revealed that the pilot departed from John Wayne/Orange County Airport (SNA), Santa Ana, California, at 1632, and flew toward Zamperini Field Airport (TOA), Torrance, California, where he flew once around the airport traffic pattern. He then continued in a southwest direction toward Santa Catalina Island while gradually climbing to 1,900 ft mean sea level (msl) and maintaining a speed of about 110 knots (+/- 5 knots). The data did not reveal any extreme changes in pitch, bank, or airspeed. At 1710, the helicopter started a slow descent to about 1,700 ft while maintaining about 110 knots. The last radar return, at 1713, depicted the helicopter at 1,475 ft msl (about 375 ft above ground level) and 117 knots.

A first responder who arrived at the accident site by helicopter the morning after the accident reported that the sky was overcast with a low ceiling and low visibility. He also stated that that this was a common weather pattern for the area in the month of June, and that typically, “the ceiling drops in the early evening and remains until approximately 0900 in the morning.”

## Pilot Information

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| **Certificate:** | Airline transport; Flight instructor | **Age:** | 60,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Front |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | 3-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 1 With waivers/limitations | **Last FAA Medical Exam:** | December 18, 2018 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | (Estimated) 8000 hours (Total, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Robinson | **Registration:** | N7187D |
| **Model/Series:** | R44 Undesignat | **Aircraft Category:** | Helicopter |
| **Year of Manufacture:** | 2001 | **Amateur Built:** | |
| **Airworthiness Certificate:** | None | **Serial Number:** | 1113 |
| **Landing Gear Type:** | N/A; Ski | **Seats:** | |
| **Date/Type of Last Inspection:** | July 31, 2018 Annual | **Certified Max Gross Wt.:** | 2401 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 1746.4 Hrs as of last inspection | **Engine Manufacturer:** | Lycoming |
| **ELT:** | | **Engine Model/Series:** | IGSO-540-B1A |
| **Registered Owner:** | On file | **Rated Power:** | 360 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Instrument (IMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | AVX,1602 ft msl | **Distance from Accident Site:** | 9 Nautical Miles |
| **Observation Time:** | 17:13 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Scattered / 1600 ft AGL | **Visibility** | |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 6 knots / | **Turbulence Type Forecast/Actual:** | None / None |
| **Wind Direction:** | 120° | **Turbulence Severity Forecast/Actual:** | N/A / N/A |
| **Altimeter Setting:** | 29.91 inches Hg | **Temperature/Dew Point:** | 18°C / 11°C |
| **Precipitation and Obscuration:** | | | |
| **Departure Point:** | Santa Ana, CA (SNA) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Torance, CA (TOA) | **Type of Clearance:** | None |
| **Departure Time:** | 16:32 Local | **Type of Airspace:** | |

Geostationary Operational Environmental Satellite (GOES)-17 imagery data identified cloudy conditions across the accident region, including over the northwest portion of Santa Catalina Island, where the accident occurred; however, much of the rest of the island was not under cloud cover during this timeframe.

A High-Resolution Rapid Refresh (HRRR) model for the area of the accident site at 1700, revealed a temperature inversion between about 2,000 and 4,400 ft msl. The relative humidity was greater than 90% below 2,400 ft, and the Rawinsonde Observation Program (RAOB) projected broken cloud conditions from about 500 ft through 2,100 ft msl.

An AIRMET advisory for instrument flight rules (IFR) conditions was active for the accident location at the accident time.

The Graphical Forecasts for Aviation (GFA) imagery, which was issued about 1500 and valid until 1700, depicted few to scattered sky conditions over the accident site. Cloud bases and tops immediately to the west of the accident site were overcast at 1,000 ft and 3,500 ft msl respectively. Additionally, an AIRMET for mountain obscuration was identified to the east of the accident site.

It is not known if the pilot reviewed the weather prior to the accident flight; however, METARs available to him reported much higher cloud bases than what existed over the accident site.

For additional information, refer to the NTSB Weather Study, which is appended to the docket for this accident.

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Destroyed |
| **Passenger Injuries:** | | **Aircraft Fire:** | On-ground |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Fatal | **Latitude, Longitude:** | 33.462776,-118.57472(est) |

The wreckage was located about 2 miles southeast of the northern tip of Catalina Island. It came to rest about 860 ft north of an east-west oriented ridgeline at an elevation about 1,293 ft msl. The linear debris path extended uphill from the initial impact point on a heading of about 124° magnetic and was about 70 ft in length. All major components of the helicopter were located at the accident site. The wreckage was significantly fragmented and consumed by a postimpact fire. Continuity from the cockpit controls to the main and tail rotor systems could not be confirmed due to impact and fire damage; however, all control rod ends were found in the wreckage path. The initial impact point comprised disrupted dirt on the far northern end of the debris field. Two nearly parallel indentations in the vegetation and dirt, spaced about one foot apart, were consistent with both main rotor blades contacting terrain while still rotating. The shape of the disrupted dirt and the airframe debris found within and around the initial impact site indicated that the helicopter was in a level attitude at impact.

The empennage was located about 20 ft from the initial impact point and was impact damaged. The tailrotor (TR) gearbox was separated from the tailboom and one TR blade remained attached to the gearbox. The other TR blade was separated and located nearby.

The main wreckage comprised the fuselage, tailboom, engine, and the main rotor (MR) blade assembly. One MR blade was separated from the mast; the outboard portion of the other MR blade was located at the adjacent hill about 240 ft east of the main wreckage. The engine had separated from the airframe upon impact. Crankshaft rotation was precluded due to impact and thermal damage. The top spark plugs electrodes remained mechanically undamaged and displayed varying coloration attributed to thermal effects of the postimpact fire. The combustion chambers and bottom spark plug electrodes of all six cylinders remained mechanically undamaged, and there was no evidence of foreign object ingestion. The valves were intact and undamaged. The ignition harness remained attached at each spark plug lead. The carburetor was separated from the engine and examined. The fuel bowl remained free of visible preimpact contaminants, and the float assembly remained secure at the mounting and free of damage. The heat-damaged float pontoons exhibited no evidence of rubbing against the wall of the bowl. The fuel inlet screen was found properly installed and free of contamination. Both magnetos sustained postimpact and thermal energy damage and could not be functionally tested.

After holes were drilled through the top of the engine case, the engine was examined internally with a borescope. There was no evidence of lubrication deprivation. The crankshaft and attached connecting rods remained free of heat distress. The camshaft was intact and each of the camshaft lobes exhibited their characteristic elliptical shape.

There was no evidence of mechanical malfunction or failure with the engine or the airframe that would have precluded normal operation. Detailed examination reports of the accident site and the engine are available in the public docket for this accident.

## Medical and Pathological Information

County of Los Angeles Medical Examiner's Office performed an autopsy of the pilot. The autopsy report stated that the cause of death was due to "blunt trauma."

The FAA's Forensic Sciences Laboratory conducted toxicology tests on specimens from the pilot. The results were negative for all tests performed.

## Administrative Information

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| **Investigator In Charge (IIC):** | Smith, Maja |
| **Additional Participating Persons:** | Louis McGraw; FAA<br>Mark Platt; Lycoming engines<br>Thom Webster; Robinson Helicopter; Torrance, CA |
| **Original Publish Date:** | October 20, 2021 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class 3 |
| **Note:** | The NTSB traveled to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=99658 |