# Aviation Investigation Final Report

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| **Location:** | Lincoln, California | **Accident Number:** | WPR10LA293 |
| **Date & Time:** | June 14, 2010, 20:18 Local | **Registration:** | N1901C |
| **Aircraft:** | RANS COYOTE II S6 | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Loss of control in flight | **Injuries:** | 2 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The pilot removed the doors of his two-seat, 65-horsepower airplane the day before the accident and flew it successfully. The aircraft documentation noted that with the doors removed the airplane's climb and cruise performance would be reduced. On the day of the accident, the pilot had a passenger with him and the doors of the airplane were still off. A witness reported that the airplane was returning to the airport at 500 feet and made a downwind entry for the runway. There was one airplane in the traffic pattern ahead of the accident airplane. The accident airplane then entered a 35- to 40-degree angle-of-bank left-hand turn, presumably to increase the spacing between aircraft. After the airplane had completed about 180 degrees of turn, it appeared to be traveling slower than normal; the left wing dipped and the airplane entered a descending spiral. The airplane rotated 360 degrees while descending vertically and impacted terrain. During a postaccident examination of the airplane, flight control continuity was confirmed and no preimpact mechanical anomalies were noted.

## 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 airspeed while in a turn, which resulted in an aerodynamic stall and subsequent loss of control. Contributing to the accident was the increased drag on the airplane with the doors removed.

## Findings

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| **Aircraft** | Airspeed - Not attained/maintained |
| **Aircraft** | Passenger/crew doors - Not used/operated |
| **Personnel issues** | Aircraft control - Pilot |

# Factual Information

## History of Flight

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| **Maneuvering** | Loss of control in flight (Defining event) |
| **Maneuvering** | Aerodynamic stall/spin |
| **Uncontrolled descent** | Collision with terr/obj (non-CFIT) |

HISTORY OF FLIGHT

On June 14, 2010, at 2018 Pacific daylight time, a RANS Coyote II S6, N1901C, descended vertically and impacted terrain while in the traffic pattern at Lincoln Regional Airport, Lincoln, California. The private pilot operated the airplane under the provisions of Title 14 Code of Federal Regulations Part 91. The pilot and his passenger were fatally injured, and the airplane was substantially damaged. Visual meteorological conditions prevailed, and no flight plan had been filed. The flight originated at the Lincoln airport about 1930.

A pilot who had been flying his airplane at the same time as the accident airplane stated that he knew the accident pilot, and that the flight was the second time the pilot had flown with the doors off the airplane. It was the first time the accident pilot had taken a passenger in the airplane. The witness had just landed his airplane and stated that he had experienced a 10-12 mph wind from the southwest when at 500 feet agl (above ground level), and observed the accident airplane enter the Lincoln airport traffic pattern for runway 15. There was one other airplane ahead of the accident airplane in the pattern at the time. According to the witness, the accident airplane had entered the downwind portion of the traffic pattern for runway 15 at 500 feet, which was lower than the normal 800-foot pattern altitude, and the airplane entered a 35- to 40-degree angle-of-bank left-hand turn. The witness believed that the left-hand turn was meant to increase the spacing between the accident airplane and the other airplane in the pattern. After the airplane had completed about 180 degrees of turn, it appeared to be traveling slower than normal; the left wing dipped and the airplane entered a descending spiral. The airplane rotated 360 degrees while descending vertically and then impacted the ground.

PERSONNEL INFORMATION

The pilot, age 44, held a private pilot certificate for airplane single-engine land, issued May 7, 2005, and a third-class airman medical certificate issued in January 22, 2008, with no limitations. The pilot's logbook recorded 379.7 hours of flight time, with the majority of the flight time performed in a Cessna 182. The last entry in the logbook was dated July 1, 2009. There were no entries that documented any flight in the accident airplane. The most recent flight review was dated May 21, 2008.

AIRCRAFT INFORMATION

The two-seat, high-wing, fixed gear, experimental light sport category airplane, serial number HWM001, was manufactured in 1993. It was powered by a Rotax 582DCDI 65-horsepower engine, equipped with a 3-bladed composite propeller. The aircraft maintenance records were not located and were not examined. The airplane's hobbs meter, as documented at the accident site, read 229.1, and the digital tachometer read 0035.

The RANS S6-ES Coyote II Pilots Notes state, "The S-6ES can be flown with one (1) or both doors removed up to 65 mph. A loss in L & D, climb and cruise speed is to be expected with doors open or off operations."

RANS Aircraft identified the wings of the accident airplane as the Standard wing, and provided a table of stall speeds associated with the Standard wing. The table listed the stall speed at 30-degree bank angle (flaps up) as 42 mph and 45-degree bank angle (flaps up) as 46 mph. Stall speed at 0-degree bank angle is 39 mph.

## METEOROLOGICAL INFORMATION

The Lincoln Regional Airport (Karl Harder Field) automated weather observing system (AWOS-3) recorded on June 14, at 2012, winds from 170 degrees at 6 knots; 10 statute miles visibility, and clear skies.

## WRECKAGE AND IMPACT INFORMATION

The main wreckage was located in a flat, dried grass field within the airport boundary. The entire aircraft wreckage was located at the accident site, and no debris path or lengthy ground scars were noted. A Federal Aviation Administration inspector who responded to the scene stated that he was able to establish control continuity from the cockpit controls to the elevator and rudder. The aileron cables had been cut at the right wing root to facilitate the removal of the victims. Examination of the photographs of the wreckage showed the ailerons on both wings attached to the wing and the aileron control push-pull tubes attached. The inspector stated that 4 gallons of fuel was collected from the left fuel tank, and that the right fuel tank had been compromised.

## MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot June 15, 2010, by the Placer County Sheriff-Corner, Auburn, California. The autopsy findings include "multiple blunt-force trauma (immediate)," and the report listed specific injuries.

Forensic toxicology was performed on specimens from the pilot by the FAA Forensic Toxicology Research Team CAMI, Oklahoma City, Oklahoma. The toxicology report stated no carbon monoxide, no cyanide, no ethanol, and no drugs were detected.

## Pilot Information

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| **Certificate:** | Private | **Age:** | 44,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 3 Without waivers/limitations | **Last FAA Medical Exam:** | January 22, 2008 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 378 hours (Total, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | RANS | **Registration:** | N1901C |
| **Model/Series:** | COYOTE II S6 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Experimental light sport (Special) | **Serial Number:** | HWM001 |
| **Landing Gear Type:** | Tricycle | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | Unknown | **Certified Max Gross Wt.:** | 1041 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 229 Hrs at time of accident | **Engine Manufacturer:** | Rotax |
| **ELT:** | C91A installed | **Engine Model/Series:** | 912UL |
| **Registered Owner:** | Michael S. Gorden | **Rated Power:** | 65 Horsepower |
| **Operator:** | Michael S. Gorden | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Dusk |
| **Observation Facility, Elevation:** | KLHM,121 ft msl | **Distance from Accident Site:** | 0 Nautical Miles |
| **Observation Time:** | 20:12 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 6 knots / None | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 170° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 29.79 inches Hg | **Temperature/Dew Point:** | 29°C / 3°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Lincoln, CA (KLHM) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Lincoln, CA (KLHM) | **Type of Clearance:** | None |
| **Departure Time:** | 19:30 Local | **Type of Airspace:** | |

## Airport Information

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| **Airport:** | Lincoln Regional Airport KLHM | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 121 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 15 | **IFR Approach:** | None |
| **Runway Length/Width:** | 6000 ft / 100 ft | **VFR Approach/Landing:** | Traffic pattern |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 1 Fatal | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 2 Fatal | **Latitude, Longitude:** | 38.903057,-121.33889(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | McKenny, Van |
| **Additional Participating Persons:** | Brian Allen; Federal Aviation Administration; Sacramento, CA |
| **Original Publish Date:** | May 26, 2011 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=76324 |