



Aviation Investigation Final Report

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| Location: | Klamath Falls, Oregon | Accident Number: | GAA16CA443 |
| Date & Time: | August 19, 2016, 11:45 Local | Registration: | N185SC |
| Aircraft: | Cessna A185 | Aircraft Damage: | Substantial |
| Defining Event: | Abnormal runway contact | Injuries: | 2 None |
| Flight Conducted Under: | Public aircraft | | |

Analysis

The pilot receiving instruction in a high performance tailwheel-equipped airplane reported that during the initial touchdown the airplane porpoised, then settled onto the ground in a three point landing attitude. The pilot further reported that during the landing roll the airplane veered to the left. He "applied moderate right rudder to compensate", then he applied "heavy" right rudder, but he was unable to arrest the veer. The airplane ground looped to the left, the right main landing gear collapsed, and the right wing impacted the ground.

The airplane sustained substantial damage to the right wing.

The pilot reported no preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

The Federal Aviation Administration has published the Airplane Flying Handbook FAA-H-8083-3A (2004). This handbook discusses porpoising and states in part:

In a bounced landing that is improperly recovered, the airplane comes in nose first setting off a series of motions that imitate the jumps and dives of a porpoise—hence the name. The problem is improper airplane attitude at touchdown, sometimes caused by inattention, not knowing where the ground is, mistrimming or forcing the airplane onto the runway.

Ground effect decreases elevator control effectiveness and increases the effort required to raise the nose. Not enough elevator or stabilator trim can result in a nose low contact with the runway and a porpoise develops.

Porpoising can also be caused by improper airspeed control. Usually, if an approach is too fast, the airplane floats and the pilot tries to force it on the runway when the airplane still wants to fly. A gust of wind, a bump in the runway, or even a slight tug on the control wheel will send the air plane aloft again.

The corrective action for a porpoise is the same as for a bounce and similarly depends on its severity. When it is very slight and there is no extreme change in the airplane's pitch attitude, a follow-up landing may be executed by applying sufficient power to cushion the subsequent touchdown, and smoothly adjusting the pitch to the proper touchdown attitude.

Probable Cause and Findings

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

The pilot's improper landing flare, which resulted in the airplane porpoising and the subsequent loss of directional control.

Findings

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| Aircraft | Directional control - Not attained/maintained |
| Personnel issues | Aircraft control - Student/instructed pilot |
| Aircraft | Landing flare - Not attained/maintained |

Factual Information

History of Flight

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| Landing-flare/touchdown | Abnormal runway contact (Defining event) |
| Landing | Loss of control on ground |
| Landing | Landing gear collapse |
| Landing | Collision with terr/obj (non-CFIT) |

Student pilot Information

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|----------------------------------|--|--|---------------|
| Certificate: | Commercial | Age: | 39, Male |
| Airplane Rating(s): | Single-engine land | Seat Occupied: | Left |
| Other Aircraft Rating(s): | None | Restraint Used: | 3-point |
| Instrument Rating(s): | Airplane | Second Pilot Present: | Yes |
| Instructor Rating(s): | None | Toxicology Performed: | No |
| Medical Certification: | Class 2 With waivers/limitations | Last FAA Medical Exam: | July 25, 2016 |
| Occupational Pilot: | No | Last Flight Review or Equivalent: | July 17, 2016 |
| Flight Time: | (Estimated) 583 hours (Total, all aircraft), 1.2 hours (Total, this make and model), 516 hours (Pilot In Command, all aircraft), 3 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft) | | |

Flight instructor Information

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|----------------------------------|--|--|------------------|
| Certificate: | Airline transport; Commercial; Flight instructor | Age: | 59, Male |
| Airplane Rating(s): | Single-engine land; Multi-engine land | Seat Occupied: | Right |
| Other Aircraft Rating(s): | None | Restraint Used: | 3-point |
| Instrument Rating(s): | Airplane | Second Pilot Present: | Yes |
| Instructor Rating(s): | Airplane multi-engine; Airplane single-engine; Instrument airplane | Toxicology Performed: | No |
| Medical Certification: | Class 2 With waivers/limitations | Last FAA Medical Exam: | December 1, 2015 |
| Occupational Pilot: | Yes | Last Flight Review or Equivalent: | |
| Flight Time: | | | |

Aircraft and Owner/Operator Information

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|--------------------------------------|--|---------------------------------------|-----------------|
| Aircraft Make: | Cessna | Registration: | N185SC |
| Model/Series: | A185 F | Aircraft Category: | Airplane |
| Year of Manufacture: | 1981 | Amateur Built: | |
| Airworthiness Certificate: | Certificate of authorization or waiver (COA) | Serial Number: | 18504301 |
| Landing Gear Type: | Tailwheel | Seats: | 4 |
| Date/Type of Last Inspection: | December 3, 2015 100 hour | Certified Max Gross Wt.: | 3350 lbs |
| Time Since Last Inspection: | | Engines: | 1 Reciprocating |
| Airframe Total Time: | 10686 Hrs at time of accident | Engine Manufacturer: | Continental |
| ELT: | C126 installed, not activated | Engine Model/Series: | IO-520D |
| Registered Owner: | OREGON STATE POLICE | Rated Power: | 300 Horsepower |
| Operator: | OREGON STATE POLICE | Operating Certificate(s) Held: | None |

Meteorological Information and Flight Plan

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| Conditions at Accident Site: | Visual (VMC) | Condition of Light: | Day |
| Observation Facility, Elevation: | KLMT,4092 ft msl | Distance from Accident Site: | 1 Nautical Miles |
| Observation Time: | 18:53 Local | Direction from Accident Site: | 144° |
| Lowest Cloud Condition: | Clear | Visibility | 10 miles |
| Lowest Ceiling: | None | Visibility (RVR): | |
| Wind Speed/Gusts: | 6 knots / | Turbulence Type Forecast/Actual: | / None |
| Wind Direction: | | Turbulence Severity Forecast/Actual: | / N/A |
| Altimeter Setting: | 30.11 inches Hg | Temperature/Dew Point: | 30°C / 6°C |
| Precipitation and Obscuration: | No Obscuration; No Precipitation | | |
| Departure Point: | SALEM, OR (SLE) | Type of Flight Plan Filed: | None |
| Destination: | Klamath Falls, OR (LMT) | Type of Clearance: | VFR flight following |
| Departure Time: | 10:30 Local | Type of Airspace: | Class D |

Airport Information

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| Airport: | CRATER LAKE-KLAMATH RGNL LMT | Runway Surface Type: | Concrete |
| Airport Elevation: | 4095 ft msl | Runway Surface Condition: | Dry |
| Runway Used: | 32 | IFR Approach: | None |
| Runway Length/Width: | 10301 ft / 150 ft | VFR Approach/Landing: | Full stop |

Wreckage and Impact Information

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|----------------------------|--------|-----------------------------|----------------------------|
| Crew Injuries: | 2 None | Aircraft Damage: | Substantial |
| Passenger Injuries: | | Aircraft Fire: | None |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Total Injuries: | 2 None | Latitude, Longitude: | 42.157775,-121.734443(est) |

Administrative Information

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| Investigator In Charge (IIC): | Vanover, Jackie |
| Additional Participating Persons: | David Montalvo; FAA; Portland, OR |
| Original Publish Date: | January 18, 2017 |
| Last Revision Date: | |
| Investigation Class: | Class |
| Note: | This accident report documents the factual circumstances of this accident as described to the NTSB. |
| Investigation Docket: | https://data.nts.gov/Docket?ProjectID=93875 |

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](#).