Aviation Investigation Final Report

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

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

Factual Information

History of Flight

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

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

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

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

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

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

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

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.ntsb.gov/Docket?ProjectID=93875