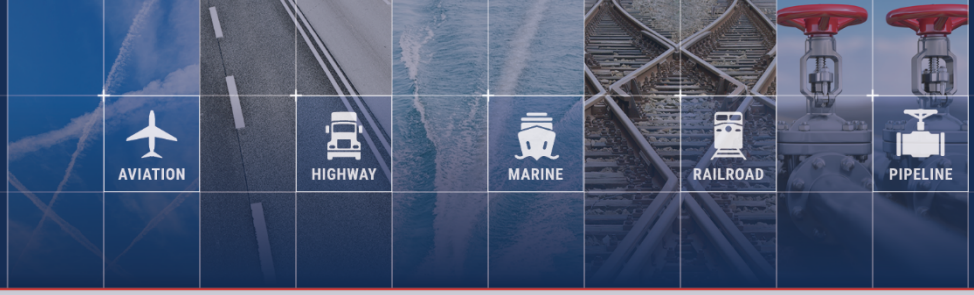

Aviation Investigation Final Report

Location:	Odessa, Texas	**Accident Number:**	CEN13LA380
Date & Time:	June 26, 2013, 22:00 Local	**Registration:**	N322FS
Aircraft:	Diamond Aicraft Industries Inc DA 20-C1	**Aircraft Damage:**	Substantial
Defining Event:	Abnormal runway contact	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During the 4-mile final leg for landing in night visual meteorological conditions, the pilot set the flaps at 15 degrees for the approach and landing. According to the manufacturer's flight information manual, the flap position for landing is 45 degrees. The pilot stated that she kept the airplane speed "up" so that the airplane would not lose too much altitude and that, although the approach was a "little low," it was still within limits. The airplane touched down on the runway and bounced three times before the pilot increased engine power to perform a go-around. As the engine power increased, the airplane nosed down and contacted the runway, damaging the nosewheel and firewall. The pilot's use of partial flaps at a low altitude with a high approach speed resulted in more energy than a typical landing approach and the pilot was unable to arrest the descent rate before impact. Although high wind conditions and gusts prevailed at the time of the accident, the wind was within the manufacturer's maximum demonstrated crosswind velocity for the airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's use of an improper flap setting and a subsequent inadequate flare of the airplane, which resulted in a bounced landing, and the pilot's delay in executing a go-around.

Findings

Aircraft	Pitch control - Not attained/maintained
Aircraft	Landing flare - Not attained/maintained
Organizational issues	(general) - Operator

Factual Information

History of Flight

Landing-flare/touchdown	Abnormal runway contact (Defining event)
Landing-flare/touchdown	Attempted remediation/recovery
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

On June 26, 2013, about 2200 central daylight time, a Diamond Aircraft Industries Inc. DA 20-C1, N322FS, experienced a hard landing when the airplane touched down on its nose wheel at Odessa-Schlemeyer Field Airport (ODO), Odessa, Texas. The airplane sustained substantial damage to the firewall. The private pilot was uninjured. The airplane was registered to Pilot Coach Aviation Inc and operated by Flight Source under 14 Code of Federal Regulations Part 91 as a personal flight. Night visual meteorological conditions prevailed for the flight that last departed Georgetown (GTU) Municipal Airport, Georgetown, Texas, about 1930 and was destined for ODO.

The pilot stated that she had flown N322FS, about two weeks before the accident, from ODO to OXO and left the airplane there until she returned to fly the airplane back to ODO. The landing at OXO was at night. The pilot stated that for the flight from OXO to ODO, she checked the weather using a National Oceanic and Atmospheric Association website, satellite information, radar information, and weather forecasts. She also used her iPad for weather information.

The pilot departed CXO about 1600 and stopped at GTU about 1715 for dinner before departing for ODO about 1730. The flight was smooth and there were no problems with either turbulence or the plane. The pilot obtained ODO automated surface observing system (ASOS) information when the airplane was about 25 miles from ODO. About 3 1/2 miles from ODO, the pilot obtained ODO ASOS information, which indicated wind was from 150 degrees at 19 knots, gusts 25 knots. The wind direction was verified by the pilot sighting of the windsock. The pilot stated that wind conditions were at the top of wind capability for the airplane, but it did not exceed the airplane limitations. The pilot extended the left downwind for runway 16 (5,003 feet by 75 feet, asphalt) to take into account the strong wind. The final approach was 4 miles long. The terrain around the area was flat, although there was a neighborhood and water tower right off of the approach end of runway 16. The visual approach slope indicator lights for runway 16 had been out for some time, so the pilot kept the airplane speed up so as not to lose too much altitude and used the first flap setting for the approach. The approach felt completely normal. The pilot said that the approach was a little low, but was still within the limits. Once the airplane was past the runway numbers, the pilot reduced engine power to glide the rest of the way. The initial touchdown was smooth, but the airplane suddenly ballooned twice. On the third bounce, the pilot decided the landing was not recoverable and increased engine power to go around. As soon as engine power increased, the airplane "nose dove" towards the runway and contacted the ground. After exiting the airplane, the pilot felt like the wind was blowing much stronger than 25 knots.

According to a Federal Aviation Administration inspector, the airplane first touched down on the nosewheel, which resulted in nosewheel and firewall damage.

According to the Diamond DA 20-C1 Flight Information Manual, the airplane flap positions for takeoff and landing are 15 degrees and 45 degrees, respectively. The maximum demonstrated crosswind component was 20 knots.

The pilot said that the Diamond DA 20-C1 is equipped with takeoff and landing flaps that are "10 degrees" and "20 degrees," respectively. She stated that she has always used the first flap setting for landings in Diamond DA20 and in Cessna 172 airplanes, because it "felt most comfortable." She stated that she usually rents the Diamond DA 40 at Flight Source, but it had been undergoing maintenance for a while and was not available, so she rented N322FS. She last flew a Diamond DA 40 on March 5, 2013. She said that she did not receive a checkout in a Diamond DA 20-C1 from Flight Source. She said that the owner of Flight Source said that she did not need a Diamond DA 20-C1 checkout, because she had been flying a Diamond DA 40.

Pilot Information

Certificate:	Private	**Age:**	20,Female
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	September 2, 2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 22, 2012
Flight Time:	196 hours (Total, all aircraft), 10 hours (Total, this make and model), 104 hours (Pilot In Command, all aircraft), 27 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Diamond Aicraft Industries Inc	**Registration:**	N322FS
Model/Series:	DA 20-C1	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	CO279
Landing Gear Type:		**Seats:**	2
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	1764 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Teledyne Continental Motors
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-240-B3B
Registered Owner:	Pilot Coach Aviation Inc	**Rated Power:**	125 Horsepower
Operator:	Flight Source Aviation	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	ODO,3001 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	20 knots / 27 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.94 inches Hg	**Temperature/Dew Point:**	34°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gerogetown, TX (GTU)	**Type of Flight Plan Filed:**	None
Destination:	Odessa, TX (ODO)	**Type of Clearance:**	VFR flight following
Departure Time:	19:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Odessa-Schlemeyer Field Airpor ODO	**Runway Surface Type:**	Asphalt
Airport Elevation:	3004 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	5003 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	31.921388,-102.387222(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Craig Patterson; Federal Aviation Administration, Lubbock FSDO; Lubbock, TX
Original Publish Date:	February 10, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=87346