



National Transportation Safety Board Aviation Accident Preliminary Report

Location:	Lubbock, TX	Accident Number:	CEN19LA266
Date & Time:	08/08/2019, 1547 CDT	Registration:	N237QS
Aircraft:	CANADAIR CL600 2B16	Injuries:	1 Serious, 2 Minor, 7 None
Flight Conducted Under:	Part 91: General Aviation - Business		

On August 8, 2019, about 1547 central daylight time, a Bombardier CL-600-2B16 business jet, N237QS, fractionally owned and operated by Netjets, Oklahoma City, Oklahoma, encountered unexpected wake turbulence at FL335 in the vicinity of Lubbock, Texas. The airline transport pilot and co-pilot were not injured. The flight attendant sustained minor injuries, 1 passenger sustained serious injuries, 1 passenger sustained minor injuries, and 5 passengers were not injured. Visual meteorological conditions prevailed in the vicinity and an instrument flight rules (IFR) flight plan was filed. The personal business flight was being operated under the provisions of Title 14 *Code of Federal Regulations* Part 91. The flight departed Love Field (DAL), Dallas, Texas, at 1521, and was enroute to Santa Ana, California.

The aircraft was climbing through FL335 on the way to the assigned altitude of FL340. The airplane was in an approximate 500-foot per minute rate of climb when unexpected wake turbulence was encountered. Prior to the event the aircraft was in smooth air with light and variable winds.

According to Flight Data Recorder (FDR) data, the wake turbulence lasted 11 seconds during which a maximum bank of 23.4° right and 12.6° left were encountered. The pitch reached a maximum of 8.5° nose up and -2.5° nose down during this time, while the airspeed was stable between 268 and 276 knots. Heading started at 280 degrees and initially went left to 272° before oscillating to 282° (after 2 seconds) and back to 269° (2 seconds later).

In the first 2 seconds of the event, the normal acceleration (vertical g's) peaked at 2.09g's as the aircraft pitched up to 8.5°, stayed around 2g's for about a second before reducing to 0.4 to 0.9g's for a second, then increased to 1.2g's before maxing out at -0.72g's less than a second later. The negative g's only lasted about a half a second before going back to 1.75g's less than a second later. These two seconds (seconds 4 to 6 of the event) were the most violent, with the lateral acceleration (yaw) going from -0.611g's (left) to 0.42g's (right) in a second, the bank going from 3° left to 22° right in a second, and pitch dropping from 7.3° up to -2.5 down in a second (causing the momentary -0.72g's). After these two seconds the peaks of the parameters started to lessen. A short burst of 1.8g's, another short lateral acceleration of -0.45 g's (left), and the bank reached 18° right were the extremes of the last 5 seconds of the event.

All unsecured objects in the cabin were thrown about including all passengers and the flight attendant not secured who hit various parts of the aircraft. Cabin service items (food, broken plates and dishware), and the lavatory fluid spilled on the interior of the cabin. After the event, the flight crew stabilized and assessed the aircraft, believing it was wake turbulence, they advised ATC of the event, and requested a climb to FL360 to be above any other potential wake. According to the flight crew, an immediate assessment of injuries was completed by the flight attendant, and the captain went to the cabin to check on the passengers and flight attendant. After accessing the injuries, the captain made an immediate decision to divert the flight. The flight crew coordinated a destination change to Lubbock, Texas, with ATC and advised the company. A normal approach and landing were made at Lubbock, Texas (LBB).

Emergency services met the aircraft upon arrival and assessed the crew and passengers. Two passengers were transported to the hospital. One passenger was treated and released with minor injuries and the other was admitted with a tibia fracture which required surgery. The flight attendant was standing in the galley at the time of the event and reported several minor injuries. She was escorted to the hospital by the flight crew and was treated and released.

A review of flight data showed at the time of the event the aircraft was between eight and ten miles in trail of FedEx Flight 3154, an Airbus A300 enroute from Fort Worth Alliance (AFW) to Burbank Bob Hope Airport (BUR). The FedEx Flight was level at FL340 and on the same assigned route as N237QS. The FDR showed the winds at the time of the event to be variable at 2 to 7 knots prior to the event. During the event, the wind data reported winds from 336° (right quartering headwind) at 77 knots for one data plot (parameter sampled every four seconds). Post-event the wind returned to variable winds >12 knots.

The flight crew was not aware of the preceding FedEx Airbus until after the wake turbulence encounter.

Aircraft and Owner/Operator Information

Aircraft Make:	CANADAIR	Registration:	N237QS
Model/Series:	CL600 2B16	Aircraft Category:	Airplane
Amateur Built:	No		
Operator:	NETJETS	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	DXTA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	
Observation Facility, Elevation:		Observation Time:	
Distance from Accident Site:		Temperature/Dew Point:	
Lowest Cloud Condition:		Wind Speed/Gusts, Direction:	/ ,
Lowest Ceiling:		Visibility:	
Altimeter Setting:		Type of Flight Plan Filed:	IFR
Departure Point:	Dallas, TX (DAL)	Destination:	Santa Ana, CA (SNA)

Wreckage and Impact Information

Crew Injuries:	1 Minor, 2 None	Aircraft Damage:	None
Passenger Injuries:	1 Serious, 1 Minor, 5 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious, 2 Minor, 7 None	Latitude, Longitude:	32.845833, -96.850833 (est)

Administrative Information

Investigator In Charge (IIC):	Alexander Lemishko
Additional Participating Persons:	Robert Smith; FAA FSDO; Lubbock, TX
Note:	The NTSB did not travel to the scene of this accident.