



# Aviation Investigation Final Report

<b>Location:</b>	New York, New York	<b>Accident Number:</b>	DCA19CA035
<b>Date &amp; Time:</b>	December 1, 2018, 00:18 UTC	<b>Registration:</b>	N202PS
<b>Aircraft:</b>	Bombardier CL 600 2B19	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Ground handling event	<b>Injuries:</b>	2 Minor, 27 None
<b>Flight Conducted Under:</b>	Part 121: Air carrier - Scheduled		

## Analysis

On December 1, 2018, at approximately 0018 coordinated universal time, PSA Airlines flight 5541, a Bombardier CRJ200, N202PS, struck a tug during engine start at LaGuardia Airport (LGA), Queens, New York. There were no injuries to the 27 passengers and crew onboard. The airplane was substantially damaged. The was operating under 49 *Code of Federal Regulations* Part 121 as a regularly scheduled passenger flight from LGA to Akron-Canton Airport (CAK), North Canton, Ohio.

According to the operator, the accident airplane had six deferred items on the dispatch release including, auxiliary power unit (APU) crossflow, power crossflow shutoff valves (SOV), and the APU. These deferred items rendered the fuel tank transfer on the ground inoperative and required the right engine to be started via an air cart. The flight crew indicated that the tug driver had to use hand signals to communicate back to them because the transmit function on his headset was inoperative. The captain indicated that he had requested to start both engines at the gate to limit fuel imbalance while on the ground, but the ground crew had denied that request. The towing operation was initiated with only the right engine running.

A cross-bleed start on the CRJ200 requires a significant increase in thrust in the operative engine to allow the appropriate amount of bleed pressure to power the air turbine starter and imparts a lateral thrust imbalance on the airplane. A checklist item on the CRJ200 Engine Start (Cross-Bleed) procedure is to set the parking brake prior to initiating a cross-bleed engine start. However, the captain initiated the cross-bleed start while still under tow after receiving clearance from the ground crew. According to the operator, the flight data indicated the was initiated with the right engine N2 first increasing to approximately 82.5%, and then to maximum N2 about 12 seconds after start was initiated. About ten seconds later, a lateral acceleration of 0.20 g was recorded. The tug impacted the right side of the airplane underneath the right front galley door, after jack knifing while remaining attached to the nose gear. The airplane sustained a whole 14.5 inches by 7.5 inches and a fractured stringer.

## Probable Cause and Findings

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

the captain initiating a cross bleed start while under tow.

### Findings

<b>Personnel issues</b>	Use of checklist - Pilot
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## Factual Information

### History of Flight

Pushback/towing	Ground handling event (Defining event)
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### Pilot Information

Certificate:	Airline transport; Commercial; Flight engineer; Flight instructor	Age:	58,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Unknown	Last FAA Medical Exam:	
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	February 21, 2018
Flight Time:	9346 hours (Total, all aircraft), 1351 hours (Total, this make and model), 2218 hours (Pilot In Command, all aircraft), 195 hours (Last 90 days, all aircraft), 56 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

### Co-pilot Information

Certificate:	Flight instructor	Age:	33
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Unknown	Last FAA Medical Exam:	
Occupational Pilot:		Last Flight Review or Equivalent:	June 22, 2018
Flight Time:	2432 hours (Total, all aircraft), 526 hours (Total, this make and model), 1693 hours (Pilot In Command, all aircraft), 146 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Bombardier	<b>Registration:</b>	N202PS
<b>Model/Series:</b>	CL 600 2B19 100	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2003	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Transport	<b>Serial Number:</b>	7858
<b>Landing Gear Type:</b>		<b>Seats:</b>	53
<b>Date/Type of Last Inspection:</b>	November 20, 2018 Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	47000 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo fan
<b>Airframe Total Time:</b>	35435 Hrs at time of accident	<b>Engine Manufacturer:</b>	General Electric
<b>ELT:</b>		<b>Engine Model/Series:</b>	CF34-3B1
<b>Registered Owner:</b>		<b>Rated Power:</b>	8729 Lbs thrust
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	Flag carrier (121)
<b>Operator Does Business As:</b>	American Eagle	<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Night
<b>Observation Facility, Elevation:</b>	KLGA, 31 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	23:51 Local	<b>Direction from Accident Site:</b>	289°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 2000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	6 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	40°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.06 inches Hg	<b>Temperature/Dew Point:</b>	4°C / 1°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	New York, NY (LGA )	<b>Type of Flight Plan Filed:</b>	
<b>Destination:</b>	Akron, OH (CAK )	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class B

## Airport Information

<b>Airport:</b>	Laguardia LGA	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	20 ft msl	<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	3 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	24 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	2 Minor	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Minor, 27 None	<b>Latitude, Longitude:</b>	40.776943,-73.871948

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Bower, Daniel		
<b>Additional Participating Persons:</b>			
<b>Original Publish Date:</b>	March 1, 2022	<b>Investigation Class:</b>	4
<b>Note:</b>	This accident report documents the factual circumstances of this accident as described to the NTSB.		
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=98734">https://data.nts.gov/Docket?ProjectID=98734</a>		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).