



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Orlando, Florida	Accident Number:	DCA19LA193
Date & Time:	August 8, 2019, 13:30 Local	Registration:	N717FR
Aircraft:	Airbus A321	Aircraft Damage:	Substantial
Defining Event:	Tailstrike	Injuries:	232 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

The final approach was considered stabilized. At about 40 feet above ground level, a significant tailwind gust of about 25 knots was experienced, creating a loss of airspeed. The loss of airspeed resulted in a loss of lift at a low height and led to a hard touchdown. At about 10 feet above the runway (and before the hard touchdown) the flight crew set “TOGA” thrust for go-around and applied full back stick pressure resulting in a pitch increase to +9.2 degrees. The engines required time to spool up and the airplane lost altitude before it started to climb. The increase in pitch and delay in thrust caused the tailstrike, resulting in substantial damage to the airplane. The airplane was fitted with a tailstrike prevention option which appears on the primary flight director (PFD) when below 400 feet but deactivates when thrust levers are pushed to “TOGA”. Standard operating procedures for go-arounds near the ground inform flight crews to avoid an excessive rotation rate to prevent tailstrikes.

Probable Cause and Findings

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

Encountering gusty conditions at a low altitude during landing and the crew’s decision to do a go-around at a low altitude with an excessive rotation rate.

Findings

Environmental issues	Tailwind - Decision related to condition
Personnel issues	Delayed action - Pilot

Factual Information

History of Flight

Landing-flare/touchdown	Tailstrike (Defining event)
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Pilot Information

Certificate:	Airline transport	Age:	51
Airplane Rating(s):	Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1	Last FAA Medical Exam:	August 12, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 26, 2019
Flight Time:	10854 hours (Total, all aircraft), 10854 hours (Total, this make and model), 2047 hours (Pilot In Command, all aircraft), 103 hours (Last 90 days, all aircraft), 19 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Airline transport	Age:	45
Airplane Rating(s):	Multi-engine sea	Seat Occupied:	Right
Other Aircraft Rating(s):		Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):		Toxicology Performed:	No
Medical Certification:	Class 1	Last FAA Medical Exam:	April 20, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	September 9, 2017
Flight Time:	1897 hours (Total, all aircraft), 1897 hours (Total, this make and model), 0 hours (Pilot In Command, all aircraft), 191 hours (Last 90 days, all aircraft), 85 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Airbus	Registration:	N717FR
Model/Series:	A321 211	Aircraft Category:	Airplane
Year of Manufacture:	2017	Amateur Built:	
Airworthiness Certificate:	Transport	Serial Number:	7536
Landing Gear Type:	Retractable - Tricycle	Seats:	228
Date/Type of Last Inspection:	August 5, 2019	Certified Max Gross Wt.:	206132 lbs
Time Since Last Inspection:		Engines:	2
Airframe Total Time:	9504 Hrs at time of accident	Engine Manufacturer:	Cfm Intl
ELT:	C91A installed, not activated	Engine Model/Series:	CFM56-5B3/3
Registered Owner:	Wells Fargo Trust Co Na Trustee	Rated Power:	
Operator:	Frontier Airlines	Operating Certificate(s) Held:	Flag carrier (121)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 22 ft AGL	Visibility	6 miles
Lowest Ceiling:	Broken	Visibility (RVR):	
Wind Speed/Gusts:	/ 31 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	30°C / 25°C
Precipitation and Obscuration:			
Departure Point:	PORTLAND, ME (PMW)	Type of Flight Plan Filed:	IFR
Destination:	ORLANDO, FL (MCO)	Type of Clearance:	None
Departure Time:	10:55 Local	Type of Airspace:	

Airport Information

Airport:	ORLANDO INTERNATIONAL AIRPORT MCO	Runway Surface Type:	Asphalt;Concrete
Airport Elevation:	96 ft msl	Runway Surface Condition:	Dry
Runway Used:	18L	IFR Approach:	Visual
Runway Length/Width:	12005 ft / 200 ft	VFR Approach/Landing:	Go around

Wreckage and Impact Information

Crew Injuries:	7 None	Aircraft Damage:	Substantial
Passenger Injuries:	225 None	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	232 None	Latitude, Longitude:	28.419879,-81.299156(est)

Administrative Information

Investigator In Charge (IIC):	Ward, Effie Lorenda
Additional Participating Persons:	Sandy Shepherd; Frontier Director of Safety and Security Stephane Veillon; BEA Accredited Representative Sundeeep Gupta; Airbus - Technical Advisor to BEA Hannu Melaranta; EASA - Technical Advisor to BEA Rikki Gardonio; ALPA Eric I Horstmeyer; FAA PAI Denver
Original Publish Date:	May 3, 2022
Last Revision Date:	
Investigation Class:	Class 4
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=100023

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](#).