



Aviation Investigation Final Report

Location:	Baton Rouge, Louisiana	Incident Number:	CEN111A615
Date & Time:	September 1, 2011, 17:25 Local	Registration:	N875AS
Aircraft:	BOMBARDIER INC CL-600-2B19	Aircraft Damage:	Minor
Defining Event:	Landing gear not configured	Injuries:	53 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

While configuring the airplane for landing, the flight crew observed a landing gear disagree message and an indication that the left main landing gear was not down and locked. The flight crewmembers followed procedures to address the landing gear disagree message; however, they were unable to get the left landing gear to extend. The captain declared an emergency and chose to land the airplane with only the right main landing gear and nose landing gear extended. The airplane came to rest in an upright, left-wing-low position. Postincident examination of the left main landing gear system revealed that the upper attachment bolt for the left main landing gear uplock assembly, which is designed to be attached to both the uplock mechanism and the structure, was attached only to the airplane structure. The left main landing gear uplock assembly had been removed and reinstalled the day before the incident flight. The mechanic who performed the maintenance did not have training on nor prior experience performing the installation of the uplock assembly, and the maintenance inspector who inspected its installation did not have training on inspecting the uplock assembly. Neither the mechanic nor the maintenance inspector observed any problems during the postinstallation inspection. Thus, it is likely that the uplock assembly was installed incorrectly due to the lack of training in both the installation by the mechanic and the inspection by the inspector.

Probable Cause and Findings

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

The improperly installed upper attachment bolt in the left main landing gear uplock assembly, which led to the failure of the left main landing gear to extend before landing. Contributing to the accident was maintenance personnel's lack of training on the installation and inspection of the uplock assembly.

Findings

Personnel issues	Installation - Maintenance personnel
Personnel issues	Total experience w/ equipment - Maintenance personnel
Personnel issues	Post maintenance inspection - Maintenance personnel

Factual Information

History of Flight

Landing	Landing gear not configured (Defining event)
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On September 1, 2011, about 1725 central daylight time, a Bombardier CL-600-2B19 airplane, N875AS, operated as Delta Connection flight 5058, landed at the Baton Rouge Metropolitan Airport (BTR), Baton Rouge, Louisiana, with the left main landing gear in the retracted position. The airline transport pilot captain, first officer, flight attendant, and 50 passengers were not injured. The airplane received minor damage. Visual meteorological conditions prevailed for the landing and an instrument flight rules flight plan was filed for the 14 Code of Federal Regulations Part 121 flight. The flight originated from the Hartsfield Jackson Atlanta International Airport (ATL), Atlanta, Georgia, at 1409.

While configuring the airplane for landing, the flight crew observed a landing gear disagree message, and the left main gear indicated that it was not down and locked. The Quick Reference Handbook (QRH) procedures were accomplished, which included cycling the landing gear handle and the use of the alternate gear extension (manual release) system; however, the crew was unable to get the left landing gear to extend. The captain declared an emergency and elected to land the airplane with the right main landing gear and nose gear extended. The airplane came to rest in an upright and left wing low position. The captain commanded an evacuation, and all passengers departed the airplane using the left forward door.

Post-incident inspection of the airplane revealed minor damage to the left wing. There was no other damage to the airplane as a result of the left main landing gear being retracted at the time of landing. Examination of the left main landing gear assembly revealed that the upper attachment bolt for the left main landing gear uplock assembly, which is designed to be attached to both the uplock mechanism and the structure, was attached to the airplane structure only.

Maintenance had been performed on both the left and right main landing gear systems prior to the incident flight. The mechanic who performed the maintenance did not have prior experience performing the installation of the uplock assembly. Following the incident, Atlantic Southeast Airlines changed their maintenance requirements and procedures to prevent future accidents. In addition, Bombardier issued Service Letter ATA:3230 to address this maintenance discrepancy and prevent future accidents.

Pilot Information

Certificate:	Airline transport; Commercial	Age:	31
Airplane Rating(s):	Single-engine land; 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:	Yes
Medical Certification:	Class 1 Unknown	Last FAA Medical Exam:	February 23, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 18, 2011
Flight Time:	5305 hours (Total, all aircraft), 4312 hours (Total, this make and model), 198 hours (Last 90 days, all aircraft)		

Co-pilot Information

Certificate:	Commercial	Age:	27
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):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	July 21, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	998 hours (Total, all aircraft), 715 hours (Total, this make and model), 175 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BOMBARDIER INC	Registration:	N875AS
Model/Series:	CL-600-2B19	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Transport	Serial Number:	7559
Landing Gear Type:	Retractable - Tricycle	Seats:	54
Date/Type of Last Inspection:	August 31, 2011 AAIP	Certified Max Gross Wt.:	53000 lbs
Time Since Last Inspection:		Engines:	2 Turbo fan
Airframe Total Time:	30563 Hrs at time of accident	Engine Manufacturer:	General Electric
ELT:	Installed, not activated	Engine Model/Series:	CF34-3B1
Registered Owner:	ATLANTIC SOUTHEAST AIRLINES INC	Rated Power:	9140 Lbs thrust
Operator:	ATLANTIC SOUTHEAST AIRLINES INC	Operating Certificate(s) Held:	Commuter air carrier (135)
Operator Does Business As:		Operator Designator Code:	ASOA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	BTR,70 ft msl	Distance from Accident Site:	
Observation Time:	16:43 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 8000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	11 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	100°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.94 inches Hg	Temperature/Dew Point:	29°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Atlanta, GA (ATL)	Type of Flight Plan Filed:	IFR
Destination:	Baton Rouge, LA (BTR)	Type of Clearance:	IFR
Departure Time:	14:09 Local	Type of Airspace:	

Airport Information

Airport:	Baton Rouge Metropolitan BTR	Runway Surface Type:	Asphalt
Airport Elevation:	70 ft msl	Runway Surface Condition:	Dry
Runway Used:	13	IFR Approach:	None
Runway Length/Width:	6407 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	Minor
Passenger Injuries:	50 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	53 None	Latitude, Longitude:	30.532777,-91.149719(est)

Administrative Information

Investigator In Charge (IIC):	LeBaron, Timothy
Additional Participating Persons:	T.R. Proven; Federal Aviation Administration; Washington, DC Brad Sheehan; Atlantic Southeast Airlines; Atlanta, GA
Original Publish Date:	January 30, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=81683

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](#).