



National Transportation Safety Board Aviation Incident Final Report

Location:	Baton Rouge, LA	Incident Number:	CEN11IA615
Date & Time:	09/01/2011, 1725 CDT	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 (Cause)

Total experience w/ equipment - Maintenance personnel (Factor)

Post maintenance inspection - Maintenance personnel (Factor)

Factual Information

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.

History of Flight

Landing	Landing gear not configured (Defining event)
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Pilot Information

Certificate:	Airline Transport; Commercial	Age:	31
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1 Unknown	Last Medical Exam:	02/23/2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	03/18/2011
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):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
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 Without Waivers/Limitations	Last Medical Exam:	07/21/2011
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 Manufacturer:	BOMBARDIER INC	Registration:	N875AS
Model/Series:	CL-600-2B19	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	7559
Landing Gear Type:	Retractable - Tricycle	Seats:	54
Date/Type of Last Inspection:	08/31/2011, AAIP	Certified Max Gross Wt.:	53000 lbs
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:	30563 Hours	Engine Manufacturer:	General Electric
ELT:	Installed, not activated	Engine Model/Series:	CF34-3B1
Registered Owner:	ATLANTIC SOUTHEAST AIRLINES INC	Rated Power:	9140 lbs
Operator:	ATLANTIC SOUTHEAST AIRLINES INC	Air Carrier Operating Certificate:	Commuter Air Carrier (135)
Operator Does Business As:		Operator Designator Code:	ASOA

Meteorological Information and Flight Plan

Observation Facility, Elevation:	BTR, 70 ft msl	Observation Time:	1643 CDT
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Few / 8000 ft agl	Temperature/Dew Point:	29° C / 24° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	11 knots, 100°	Visibility (RVR):	
Altimeter Setting:	29.94 inches Hg	Visibility (RVV):	
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:	1409 CDT	Type of Airspace:	

Airport Information

Airport:	Baton Rouge Metropolitan (BTR)	Runway Surface Type:	Asphalt
Airport Elevation:	70 ft	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		

Administrative Information

Investigator In Charge (IIC):	Timothy LeBaron	Adopted Date:	01/30/2014
Additional Participating Persons:	T.R. Proven; Federal Aviation Administration; Washington, DC Brad Sheehan; Atlantic Southeast Airlines; Atlanta, GA		
Publish Date:	01/30/2014		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=81683		

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