



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Dulles Airport, VA	<b>Accident Number:</b>	DCA02MA026
<b>Date &amp; Time:</b>	03/09/2002, 1015	<b>Registration:</b>	N622BR
<b>Aircraft:</b>	Canadair CL-600-2B19	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	53 None
<b>Flight Conducted Under:</b>	Part 121: Air Carrier - Scheduled		

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## Analysis

During its takeoff roll from runway 30 at Washington Dulles International Airport, Atlantic Coast Airways flight 7682, a Bombardier CL-600-2B19, struck two wild turkeys. The captain aborted the takeoff at about 110 knots. None of the crewmembers or passengers was injured. The captain taxied the airplane back to the gate without further incident. A postflight inspection revealed that one turkey had struck the number-two engine intake and that the first officer's windshield had been cracked and the surrounding structure beneath it bent by another turkey. The second turkey penetrated the pressure bulkhead and entered the back of the instrument panel but did not penetrate either the windshield or its supporting structure. The area where the turkey penetrated the pressure bulkhead was not strengthened for bird impact, nor was it required to be. A comprehensive airport wildlife management system was in effect at the time of the accident.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the airplane's collision with two wild turkeys.

## Findings

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Occurrence #1: ON GROUND/WATER COLLISION WITH OBJECT  
Phase of Operation: TAKEOFF - ABORTED

### Findings

1. (C) WINDOW, FLIGHT COMPARTMENT WINDOW/WINDSHIELD - FOREIGN OBJECT DAMAGE
2. (C) OBJECT - BIRD(S)

## Factual Information

On March 9, 2002, about 1015 eastern standard time, a Bombardier CL-600-2B19, N622BR, operating as Atlantic Coast Airlines (ACA) flight 7682, struck two wild turkeys while initiating a takeoff from runway 30 at Washington Dulles International Airport (IAD). None of the 3 crewmembers or 50 passengers on board was injured. The airplane sustained damage to the number-two engine inlet, the first officer's windshield, and a 14- by 4-inch section of fuselage skin just below the windshield seal on the first officer's side. Flight 7682 was operating on an instrument flight rules flight plan under the provisions of 14 Code of Federal Regulations (CFR) Part 121 as a regularly scheduled passenger flight from IAD to LaGuardia International Airport, New York, New York. Visual meteorological conditions prevailed at the time of the accident.

The captain reported that the airplane was on departure roll and had accelerated past 80 knots when a flock of birds began to fly south over the runway. The airplane was traveling at approximately 110 knots when one of the birds hit the airplane, cracking the first officer's windshield and causing a few shards of glass to fall into the cockpit and onto the first officer. The captain immediately rejected the takeoff and stopped on the runway to assess the damage. The first officer notified air traffic control (ATC) of the rejected takeoff. The flight crew determined that the only damage appeared to be to the windshield, so the captain taxied clear of the runway. The flight crew then notified ATC, ACA operations, and ACA maintenance about the reason for the rejected takeoff and informed them that they were returning to the gate.

A postflight inspection by ACA maintenance personnel revealed that the airplane had struck two wild turkeys. One turkey hit the intake of the number-two engine, slightly damaging the forward lip of the engine intake cowl. No bird remains went through the engine. The other turkey hit just below the first officer's windshield, where a turkey leg and foot were still lodged. Closer examination of the airplane revealed that the second turkey hit the nose sheet metal at the base of the first officer's windshield, bending the windshield support structure and causing the windshield to crack upward from that location. The second turkey penetrated the area beneath the lower support structure, went through the pressure bulkhead, and entered the back of the instrument panel but did not penetrate either the windshield or its supporting structure.

Title 14 CFR 25.775(b) states,

Windshield panes directly in front of the pilots in the normal conduct of their duties, and the supporting structures for these panes, must withstand, without penetration, the impact of a four-pound bird when the velocity of the airplane (relative to the bird along the airplane's flight path) is equal to the value of  $V_c$ , at sea level. [ $V_c$  equals design cruising speed.]

Bombardier Aerospace Company, the manufacturer of the airplane, impact-tested the windshield for a 4-pound bird at 330 knots. The wild turkey that hit the accident airplane was estimated to have weighed roughly 15 pounds, and the impact velocity was approximately 110 knots. Using the kinetic energy equation to calculate the equivalent energy for this mass and speed, investigators determined that the windshield would have been able to withstand the impact of a bird more than twice as large as the turkey that hit the accident aircraft. In this accident, the wild turkey did not penetrate the windshield or its support structure but instead penetrated an area beneath the windshield support structure.

At the time of the accident, IAD had an annual wildlife management plan that included provisions for dispersing and removing wildlife from areas surrounding the aircraft operating area. The United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, assessed IAD wildlife hazards for the period from September 2000 to August 2001 [U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, Monitoring of Potential Wildlife Hazards at Washington Dulles International Airport: September 2000 through August 2001 (Moseley, Virginia)]. The assessment report indicated that, during that time, Wildlife Services took 719 control actions against 36 species, dispersing a total of 19,000 animals (including 3 wild turkeys) and killing a total of 799 animals. The assessment report concluded that birds and mammals continued to present a high risk to aviation safety at IAD and listed several recommendations to reduce the risk, which IAD has implemented. To help eliminate the wild turkey threat, IAD allows airport personnel to hunt wild turkeys within the airport perimeter during the Commonwealth of Virginia's two annual turkey hunting seasons.

### Pilot Information

<b>Certificate:</b>	Airline Transport; Commercial	<b>Age:</b>	, Female
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>		<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>		<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>		<b>Last Medical Exam:</b>	
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>			

## Co-Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Instructor; Commercial	<b>Age:</b>	23, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>		<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane Single-engine	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical--w/ waivers/lim.	<b>Last Medical Exam:</b>	03/01/2001
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	11/10/2001
<b>Flight Time:</b>	800 hours (Total, all aircraft), 300 hours (Total, this make and model), 350 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 80 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Manufacturer:</b>	Canadair	<b>Registration:</b>	N622BR
<b>Model/Series:</b>	CL-600-2B19	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Transport	<b>Serial Number:</b>	7187
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	50
<b>Date/Type of Last Inspection:</b>	02/08/2002, Continuous Airworthiness	<b>Certified Max Gross Wt.:</b>	51250 lbs
<b>Time Since Last Inspection:</b>	203 Hours	<b>Engines:</b>	2 Turbo Fan
<b>Airframe Total Time:</b>	12059 Hours	<b>Engine Manufacturer:</b>	General Electric
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	CF34B
<b>Registered Owner:</b>	State Street Bank and Trust Co. of CT	<b>Rated Power:</b>	9220 lbs
<b>Operator:</b>	ATLANTIC COAST AIRLINES	<b>Air Carrier Operating Certificate:</b>	Flag carrier (121)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	VTZA

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:		Observation Time:	
Distance from Accident Site:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	14° C / 14° C
Lowest Ceiling:		Visibility	9 Miles
Wind Speed/Gusts, Direction:	Calm	Visibility (RVR):	
Altimeter Setting:	30.37 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	Dulles Airport, VA (KIAD)	Type of Flight Plan Filed:	IFR
Destination:	, NY (KLGA)	Type of Clearance:	IFR
Departure Time:	0000 EST	Type of Airspace:	

## Airport Information

Airport:	Dulles International Airport (IAD)	Runway Surface Type:	Asphalt
Airport Elevation:	313 ft	Runway Surface Condition:	Dry
Runway Used:	30	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	

## Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	Substantial
Passenger Injuries:	50 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	53 None	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	Lorenda Ward	Adopted Date:	12/20/2005
Additional Participating Persons:			
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</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.