National Transportation Safety Board
Washington, DC 20594

Brief of Accident

Adopted 01/24/2005

NYC03FA190

File No. 17204 | 09/04/2003 | Flushing, NY | Aircraft Reg No. N1450A | Time (Local): 06:24 EDT

Make/Model:	Fokker / F.28 Mk 0100
Engine Make/Model:	Rolls-royce / TAY650-1-5
Aircraft Damage:	Substantial
Number of Engines:	2
Operating Certificate(s):	Flag Carrier/Domestic
Name of Carrier:	American Airlines
Type of Flight Operation:	Scheduled; Domestic; Passenger/Cargo
Reg. Flight Conducted Under:	Part 121: Air Carrier

	Fatal	Serious	Minor/None
Crew	0	0	4
Pass	0	0	34

Last Depart. Point:	Same as Accident/Incident Location
Destination:	Chicago, IL
Airport Proximity:	On Airport/Airstrip
Airport Name:	La Guardia Airport
Runway Identification:	13
Runway Length/Width (Ft):	7000 / 150
Runway Surface:	Asphalt; Concrete
Runway Surface Condition:	Unknown

Condition of Light:	Day
Weather Info Src:	Weather Observation Facility
Basic Weather:	Visual Conditions
Lowest Ceiling:	1200 Ft. AGL, Broken
Visibility:	4.00 SM
Wind Dir/Speed:	200 / 008 Kts
Temperature (°C):	22
Precip/Obscuration:	

Pilot-in-Command Age: 42

Certificate(s)/Rating(s)

Airline Transport; Flight Instructor; Multi-engine Land

Instrument Ratings

Airplane

Flight Time (Hours)

Total All Aircraft:	10000
Last 90 Days:	Unk/Nr
Total Make/Model:	1400
Total Instrument Time:	UnK/Nr

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HISTORY OF FLIGHT

On September 4, 2003, at 0624 eastern daylight time, a Fokker F.28 Mk 0100, N1450A, operated by American Airlines as flight 549, was substantially damaged during the initial climb after takeoff from La Guardia Airport (LGA), Flushing, New York. There were no injuries to the two certificated airline transport pilots, two flight attendants, or 34 passengers. Visual meteorological conditions prevailed for the scheduled, domestic passenger flight, destined for Midway Airport (MDW), Chicago, Illinois. The flight was conducted on an instrument flight rules flight plan under 14 CFR Part 121.

According to written statements submitted by the captain and first officer, flight 549 departed the gate at 0611, and proceeded to runway 13 for takeoff. After takeoff the airplane encountered a large flock of birds. The crew reported hearing a series of loud noises, followed by the failure of the right engine. The airplane then began to experience "heavy vibrations." The crew declared an emergency with air traffic control (ATC), and the captain proceeded with the

emergency checklists while the first officer flew the airplane.

The crew informed ATC of their intention to divert to John F Kennedy International Airport (JFK), New York, New York, and ATC provided radar vectors to the airport. The flight crew reported that the airplane continued to experience vibrations until landing. After landing, maintenance personnel inspected the landing gear and the airplane taxied to a gate where the passengers deplaned through the jetway.

METEROLOGICAL INFORMATION

The weather reported at LaGuardia Airport, at 0551, included winds from 200 degrees true at 8 knots, 4 statute miles visibility in mist, few clouds at 900 feet, a broken ceiling at 1,200 feet, an overcast ceiling at 6,000 feet, temperature 72 degrees Fahrenheit, dew point 72 degrees Fahrenheit, and a barometric pressure of 29.84 inches of mercury.

AIRDROME INFORMATION

La Guardia airport was certificated under 14 CFR Part 139. The area north of runway 13/31, and east of runway 4/22 was grass, and a known habitat for Canada geese, and other birds. According to Federal Aviation Administration, (FAA) information published about the airport, the additional remarks stated "flocks of birds on and in the vicinity of the airport." Included in the certification requirements for the airport, was the development and maintenance of a wildlife maintenance plan.

FLIGHT RECORDERS

Cockpit Voice Recorder

The 2-hour recording was found to contain no data that could contribute to determining the probable cause. Therefore, no transcript was prepared.

Flight Data Recorder

According to the digital flight data recorder (DFDR), at subframe reference number (SRN) 276672, the weight on wheel (WOW) switches for both main landing gear transitioned from ground to air. At SRN 276674, the right engine low-pressure rotor speed (N1) had reduced from 88 percent to 36 percent. At SRN 276675, the right engine fail discrete code had transitioned from OK to fail.

WRECKAGE AND IMPACT INFORMATION

Examination of the airplane revealed a 20 by 36-inch wide depression on the right side of the nose, behind the radome. The maximum depth of the depression was between 3 and 4 inches. Stringers in the depressed area were deformed and cracked.

Impact marks were found on the right wing at 15 and 18 feet outboard from the fuselage. There was no visible damage to the wings. Feathers and blood smears were visible on the right side wing root and the aft portion of fuselage adjacent to the right engine.

The right engine was examined, and additional bird remains were noted on the engine inlet cowling and inside the engine. The fan disk could be rotated with fingertip pressure. Three separate areas of soft body impact damage were noted on the fan blades. One fan blade was separated from the fan disk at the root. The remaining fan blades were deformed, and had received leading edge impact damage.

There was a 9 1/2-inch long circumferential by 2-inch wide axial hole in the bottom of the fan case, directly aft of the fan blades' plane of rotation. A tab of metal curled outward from the hole, and two fan blade pieces were found laying in the bottom of the fan duct, over the hole in the fan case. A hole was also found in the engine inlet duct, which coincided with an "L" shaped penetration in the fuselage, 6 inches above the aft-most window on the right side of the airplane. The penetration moved upward for 7 inches and was about 2-3/8 inches wide. The underlying insulation and plastic side panel were not penetrated. The blade that penetrated the fuselage was not recovered.

TESTS AND RESEARCH

The right engine's fan case was submitted to the manufacturer for metallurgical examination. The examination revealed that the fan case's wall thickness and composition conformed to design specifications.

All bird remains collected from the airport and from the airplane were collected. The remains were identified as five Canada geese.

The wildlife management plan for LaGuardia Airport was approved by the FAA on December 13, 2002. According to the plan, wildlife patrol supervisors would check the airport for wildlife activity throughout the day. According to airport operations staff, this patrol occurred three times per day during daylight hours, and on the morning of the accident, the wildlife patrol supervisor was in the process of conducting the morning wildlife patrol. In addition to the inspections conducted by the wildlife patrol supervisor, the airport duty manager conducted an airport self-inspection three times daily. The airport duty manager had inspected both runways at 0500.

There was a tidal flat area north of runway 31 where gulls and Canada geese normally congregated because of its proximity to the water. According to airport operations personnel, the oncoming wildlife patrol supervisor would check those potential trouble spots more closely during their inspection. If the supervisor observed birds, or any other wildlife construed as a hazard, the supervisor would attempt to disperse the wildlife with their vehicle. If the wildlife was not deterred, the supervisor would then attempt to use a flare pistol, and if still unsuccessful, use a shotgun to kill the wildlife hazard.

There was an island located to the north-northeast of the airport, which also attracted Canada geese. This area was of concern to the airport operations personnel because of its close proximity to the runways. The airport and the Department of Agriculture (USDA) had worked together to reduce the population of Canada geese on the island.

ADDITIONAL INFORMATION

The airplane was equipped with two Rolls-Royce TAY 650-15 engines. In addition to the cockpit controlled fuel cutoff, the engines were also equipped with an automatic emergency fuel shutoff (EFSO) system that would activate when there was a low pressure turbine drive shaft fracture, or there was engine damage that resulted in high vibration. According to the airplane's operating manual, internal engine failures that activate the EFSO system may restrict the movement of the fuel shutoff lever to the CUFOFF position.

In the cockpit, the right engine fire handle was found pulled, and the right engine fuel cutoff lever was in the mid-range position. When checked, the fuel cutoff lever would not go to the idle-cutoff position. Further examination revealed that the right engine's EFSO system had activated.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows.
An in-flight collision with birds.