



National Transportation Safety Board Aviation Incident Final Report

Location:	PORTLAND, ME	Incident Number:	NYC961A022
Date & Time:	11/02/1995, 1828 EST	Registration:	N373US
Aircraft:	BOEING 737-3B7	Aircraft Damage:	Minor
Defining Event:		Injuries:	62 None

Flight Conducted Under: Part 121: Air Carrier - Scheduled

Analysis

During rotation, on the takeoff roll, the right engine of a Boeing 737-3B7, ingested a bird. Several fan blades broke; however, there was no uncontained failure of the blades. There was no fire and the engine continued to run until shut down by the flight crew, after which the pilot returned for a single-engine landing. Feathers recovered from the engine belonged to a bird with a weight between 2.7 to 6.4 pounds, and a average weight of 3.8 pounds. The engine performed within the limits of its certification criteria.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: a bird strike during takeoff, which resulted in failure of several fan blades in the right engine and a partial loss of engine power.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (C) OBJECT - BIRD(S)

Occurrence #2: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

2. 1 ENGINE
3. COMPRESSOR ASSEMBLY, FORWARD FAN - OVERLOAD

Factual Information

On November 2, 1995, at 1828 eastern standard time, a Boeing 737-3B7, N373US, operated by USAir as flight 1669, struck a bird in the number 2 engine, during takeoff from the Portland International Jetport, Portland, Maine. The occupants were not injured, and the airplane received minor damage. Instrument meteorological conditions prevailed, and the scheduled, domestic, passenger/cargo flight was operated on an Instrument Flight Rules (IFR) flight plan under 14 CFR 121.

The CAPTAIN'S REPORT OF NON-STANDARD OR IRREGULAR OPERATION stated:

At takeoff rotation we experienced an apparent bird strike in the #2 engine followed by a loud bang & excessive engine vibration. #2 engine was shut down, an emergency was declared & emergency procedures were followed ending with an uneventful single engine landing.

According to the Powerplant Group Chairman Report, conducted by a Safety Board Investigator from RE-40, Aviation Engineering Services:

...The fuselage adjacent to the No. 2 engine did not have any apparent damage from engine debris. An inspection of the entire airplane did not show any indications of other bird impacts or damage...There were no penetrations through any of the engine casings...Feathers and other organic debris identified to be bird remains were found in the fan, compressor, and combustor. There was no indication of any preexisting engine damage...Feather pieces...[were identified] as a female Common Eider (*Somateria mollissima*). The weight of the female Common Eider can range from 42 to 103 ounces (2.7 to 6.4 pound) with the average weight being 61 ounces (3.8 pounds)...The airworthiness certification requirements for bird ingestion into a turbine engine...states, in part that the engine must demonstrate that the ingestion of a 4-pound bird may not cause the engine to catch fire, burst or release hazardous fragments through the engine case, generate loads greater than the engine mount attachment ultimate load limits, or lose the capability of being shut down...the fractured fan blades, and the gearbox mount pad adapter were returned to the NTSB Materials laboratory to determine the mod of fracture. Examination showed all the fractures were due to overstress, with no evidence of progressive cracking...

Pilot Information

Certificate:	Airline Transport	Age:	43, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	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:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	05/19/1995
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	13140 hours (Total, all aircraft), 271 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	BOEING	Registration:	N373US
Model/Series:	737-3B7 737-3B7	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	22952
Landing Gear Type:	Retractable - Tricycle	Seats:	128
Date/Type of Last Inspection:	Continuous Airworthiness	Certified Max Gross Wt.:	135500 lbs
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:		Engine Manufacturer:	CFM
ELT:	Not installed	Engine Model/Series:	CFM56-3B2
Registered Owner:	USAIR	Rated Power:	22300 hp
Operator:	USAIR	Operating Certificate(s) Held:	Flag carrier (121)
Operator Does Business As:		Operator Designator Code:	USAA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	PWM, 74 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1856 EST	Direction from Accident Site:	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	1.75 Miles
Lowest Ceiling:	Broken / 300 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	350°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	10° C / 10° C
Precipitation and Obscuration:			
Departure Point:	(PWM)	Type of Flight Plan Filed:	IFR
Destination:	PHILADELPHIA, PA (PHL)	Type of Clearance:	IFR
Departure Time:	1828 EST	Type of Airspace:	Class C

Airport Information

Airport:	PORTLAND INT'L JETPORT (PWM)	Runway Surface Type:	Asphalt
Airport Elevation:	74 ft	Runway Surface Condition:	Wet
Runway Used:	11	IFR Approach:	None
Runway Length/Width:	6800 ft / 150 ft	VFR Approach/Landing:	Precautionary Landing

Wreckage and Impact Information

Crew Injuries:	6 None	Aircraft Damage:	Minor
Passenger Injuries:	56 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	62 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ROBERT L HANCOCK	Report Date:	03/21/1996
Additional Participating Persons:	RAYMOND CLOUTIER; PORTLAND, ME JAMES HOOKEY; WASHINGTON, DC JOE EPPERSON; WASHINGTON, DC GEORGE SNYDER; PITTSBURGH, PA		
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 pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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