
Damage caused to airplane by light cover, McDonnell Douglas DC-9-51, December 27, 2000

Micro-summary: This McDonnell Douglas DC-9-51 was damaged after an in-ground light it rolled over failed, resulting in a pressurization failure and diversion.

Event Date: 2000-12-27 at 2033 EST


Investigative Body: National Transportation Safety Board (NTSB), USA


Investigative Body's Web Site: <http://www.nts.gov/>

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		NTSB ID: NYC01FA062		Aircraft Registration Number: N769NC	
		Occurrence Date: 12/27/2000		Most Critical Injury: None	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Jamaica		State NY	Zip Code 11430	Local Time 2033	Time Zone EST
Airport Proximity: On Airport		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer McDonnell Douglas		Model/Series DC-9-51		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:					
HISTORY OF FLIGHT					
<p>On December 27, 2000, about 2033 eastern standard time, a McDonnell Douglas DC-9-51, N769NC, operated by Northwest Airlines Inc., as flight 1865, was substantially damaged during the takeoff roll from John F. Kennedy International Airport (JFK), Jamaica, New York. The 2 pilots, 3 flight attendants, and 22 passengers, were not injured. Night visual meteorological conditions prevailed and an instrument flight rules flight plan was filed for the flight destined for Detroit Metropolitan Airport, Detroit, Michigan. The scheduled passenger flight was conducted under 14 CFR Part 121.</p> <p>According to a representative from the operator, the airplane was on takeoff roll from runway 31L, full length, when at approximately 110 knots, the flightcrew heard a "bang." The pilot continued the takeoff and began a climb. Unable to pressurize the passenger cabin, the pilot elected to divert the flight to Newark International Airport, Newark, New Jersey, where the airplane landed uneventfully.</p> <p>According to a Federal Aviation Administration (FAA) inspector, about 5 minutes after the airplane took-off, a second airplane departed from runway 31L. The airplane reported to the air traffic control tower that they observed an object on the runway. The tower controller alerted the Port Authority of New York and New Jersey Operations Group of the object, who then dispatched airport personnel to investigate. When airport personnel arrived at the approach end of runway 31L, they found a cover from an in-ground light lying on the runway, broken in two pieces.</p>					
FLIGHTCREW INFORMATION					
Captain					
<p>The Captain held an airline transport pilot certificate with a rating for airplane multiengine land, and was type rated in the DC-9. His most FAA first class medical certificate was issued on August 17, 2000.</p>					
First Officer					
<p>The First Officer held an airline transport pilot certificate with a rating for airplane multiengine land, and was type rated in a Boeing 707, 720, and 737. His most recent FAA first class medical certificate was issued on April 20, 2000.</p>					
AIRCRAFT INFORMATION					
A review of the airplane's maintenance records did not reveal any repetitive discrepancies related					

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Narrative (Continued)

to the pressurization system.

AERODROME INFORMATION

Runway 31L, was a 14,572-foot long, 150-foot wide, asphalt and concrete, grooved runway, with a displaced threshold of 3,323 feet.

The light cover recovered on the runway was from an inset flashing light fixture, which was part of an in-ground, semi-flush mounted, medium intensity approach lighting system (MALSR), installed at the approach end of runway 31L in 1997. The lighting system included five separate light fixtures, located within the displaced threshold of runway 31L. The in-ground approach light fixtures were installed in the pavement by a contactor, working for the Port Authority of New York and New Jersey, on behalf of the FAA. The light fixtures were not operational at the time of the accident due to lack of FAA commissioning.

According to a representative from the Port Authority of New York and New Jersey, the delay in making the lighting system operational also included the FAA's lack of supplying additional approved light fixtures to complete the approach lighting system project on runway 31L.

According to the manufacturer of the lighting system, the semi-flush flashing light fixture was a high intensity flashing light, used in paved operational surfaces of a runway, as a guide for incoming pilots. They were weatherproof and designed to withstand rollover loads.

The semi-flush flashing light consisted of a top casting and prism assembly, mirror-holding assembly, and a bracket and filter assembly. The top casting was held to a base mount by six, 1-inch, 3/8-16 threaded bolts, and 3/8 lock washers. The cover was estimated to weigh about 100 pounds.

The limitations of the fixture were that "proper maintenance procedures must be adhered to -- the base must be kept reasonably free of water, and proper snow removal and runway clearing procedures must be employed."


The manufacturer also warned, "snowplows can cause serious damage to the light objects."

According to a representative from the JFK Airport Facilities Division, the last snow removal operations were conducted during the last snow season of 1999-2000. Contracted electricians conducted repairs and inspections of runway lighting facilities at varied intervals. The MALSR lighting fixtures installed at the departure end of runway 31L were not a part of a special maintenance program, due to their being non-operational. The contracted electricians would not be specifically sent to the fixtures to lift the cover and inspect the integrity of the securing bolts; however the electricians would visually check the units during the inspections. The runway was also inspected for debris and general condition on a daily basis, or on a Duty Manager shift change, in accordance with 14 CFR Part 139.

WRECKAGE DESCRIPTION

Examination of the airplane by an FAA inspector after the accident revealed a gash about 3 feet long, by 1-foot wide on the underside of the fuselage, aft of the passenger entry door. Damage was also observed to the right nose gear tire and two navigation antennas.

Safety Board personnel examined the runway on December 29, 2000. Airport maintenance personnel had replaced the area where the affected light fixture cover was installed with a new light fixture cover. Examination of the MALSR light fixtures revealed a layer of epoxy glue, poured into an approximate 1-inch wide void area between the fixture and the runway asphalt.

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Examination of the accident light fixture by Safety Board personnel, revealed that the six bolts utilized to attach the lighting assembly to the in-ground base were all sheared. The fracture surfaces on the bolts were smeared, consistent with low cycle fatigue fractures that occurred over a period of time. A black mark, consistent with a tire tread, was observed in the optical lighting well of the light fixture. An additional mark, also consistent with a tire tread, was observed on the underside of the light fixture.

ADDITIONAL INFORMATION

On December 29, JFK facility maintenance electricians inspected the remaining in pavement MALSR light fixtures on runway 31L. The electricians observed, "that while the castings were secured to the base cans, there were a number of 'loose' bolts in each of the remaining 4 fixtures."

The airplane was repaired and returned to service on December 29.

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Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
John F. Kennedy International	JFK	13 Ft. MSL	31L	14572	150
Runway Surface Type: Asphalt; Concrete					
Runway Surface Condition: Dry					
Type Instrument Approach: NONE					
VFR Approach/Landing: None					
Aircraft Information					
Aircraft Manufacturer		Model/Series		Serial Number	
McDonnell Douglas		DC-9-51		47757	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 131	Certified Max Gross Wt.	121000 LBS	Number of Engines: 2	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
Turbo Fan	P&W	JT8D-17	16000 LBS		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time		
AAIP		Hours	Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? No	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner		Street Address			
Northwest Airlines Inc.		5101 Northwest Dr.			
		City	State	Zip Code	
		St. Paul	MN	55111	
Operator of Aircraft		Street Address			
Same as Reg'd Aircraft Owner		Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As: Northwest Airlines			Operator Designator Code: NWAA		
- Type of U.S. Certificate(s) Held:					
Air Carrier Operating Certificate(s): Flag Carrier/Domestic					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 121: Air Carrier					
Type of Flight Operation Conducted: Scheduled; Domestic; Passenger Only					

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First Pilot Information

Name On File	City	State	Date of Birth On File	Age 39
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Sex: M	Seat Occupied: Left	Principal Profession: Civilian Pilot	Certificate Number: On File
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Certificate(s): Airline Transport

Airplane Rating(s): Multi-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s): None

Type Rating/Endorsement for Accident/Incident Aircraft? Yes	Current Biennial Flight Review? 05/2000
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Medical Cert.: Class 1	Medical Cert. Status: Valid Medical--no waivers/lim.	Date of Last Medical Exam: 08/2000
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	3746	3130								
Pilot In Command(PIC)		324								
Instructor										
Last 90 Days										
Last 30 Days										
Last 24 Hours										

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? No	Second Pilot? Yes
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Flight Plan/Itinerary

Type of Flight Plan Filed: IFR

Departure Point Same as Accident/Incident Location	State	Airport Identifier JFK	Departure Time 2033	Time Zone EST
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Destination Detroit	State MI	Airport Identifier DTW	
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Type of Clearance: IFR

Type of Airspace: Class B

Weather Information

Source of Briefing: Company

Method of Briefing: Teletype

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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
JFK	2051	EST	13 Ft. MSL	1 NM	360 Deg. Mag.
Sky/Lowest Cloud Condition: Clear			Ft. AGL	Condition of Light: Night	
Lowest Ceiling: None		Ft. AGL	Visibility: 10	SM	Altimeter: 29.96 "Hg
Temperature: -7 °C	Dew Point: -13 °C	Wind Direction: 320		Density Altitude: Ft.	
Wind Speed: 12	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): Ft.	Visibility (RVV)	SM	Intensity of Precipitation:		
Restrictions to Visibility: None					
Type of Precipitation: None					

Accident Information		
Aircraft Damage: Substantial	Aircraft Fire: None	Aircraft Explosion: None

Classification: U.S. Registered/U.S. Soil					
- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot				1	1
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants				3	3
Other Crew					
Passengers				22	22
- TOTAL ABOARD -				27	27
Other Ground					
- GRAND TOTAL -				27	27

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National Transportation Safety Board

FACTUAL REPORT

AVIATION



NTSB ID: NYC01FA062

Occurrence Date: 12/27/2000

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

Stephen M. Demko

Additional Persons Participating in This Accident/Incident Investigation:

James A Keane
Operations Manager
The Port Authority of New York and New Jersey
Jersey City, NJ