
Uncontained engine failure, McDonnell Douglas MD-83, June 17, 1997

Micro-summary: Uncontained engine failure for this McDonnell Douglas MD-83 following takeoff.


Event Date: 1997-06-17 at 1701 PDT

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

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

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 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: LAX971A209		Aircraft Registration Number: N875RA	
		Occurrence Date: 06/17/1997		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By: NTSB	
Location/Time					
Nearest City/Place LAS VEGAS		State NV	Zip Code 89111	Local Time 1701	Time Zone PDT
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer McDonnell Douglas		Model/Series MD-83		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:					
<p>HISTORY OF FLIGHT</p> <p>On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, N875RA, operated by Reno Airlines of Reno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegas, Nevada. The flight was operating as flight 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFR flight plan was filed.</p> <p>During departure from runway 25R at 1,000 feet agl, the crew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.</p> <p>Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.</p> <p>ENGINE INFORMATION</p> <p>The No. 1 (left) engine was a Pratt and Whitney JT8D-219 turbofan. At the time of the incident the engine had accumulated 20,039.0 total hours and 16,057 cycles.</p> <p>The engine had accumulated 76.9 hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingestion incident on March 14, 1997.</p> <p>A postincident examination of the engine was conducted again at the American facility. An external examination revealed that the engine had four holes in the combustion chamber fan ducts just forward of the High Pressure Turbine (HPT) plane of rotation.</p> <p>An internal inspection revealed that the HPT shaft had separated at the No. 4 1/2 bearing hole scavenge oil holes, which were elongated away from the direction of rotation.</p> <p>The oil holes in the No. 5 bearing inner race retaining nut were found plugged with a hard, black colored material. The assembly sheets for the No. 5 bearing area do not have specific instructions to check the holes in the inner race retaining nut. The sheet has a general instruction at the top of the sheet that states, "NOTE: BEFORE ASSEMBLY BE SURE PARTS ARE CLEAN AND BLOW OUT OIL PASSAGES. OIL MOVING PARTS BEFORE ASSEMBLY."</p> <p>The No. 5 bearing inner race retaining nuts in the American inventory were examined. Of 17 nuts awaiting assembly, one had several oil supply holes plugged.</p>					
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FACTUAL REPORT

AVIATION



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Narrative (Continued)

The Pratt and Whitney (P&W) standard practice manual for overhaul plating (SPOP) of silver over steel specifies that the No. 5 bearing race should be grit blasted to remove old plating per SPOP 10, which specifies using PMC 3052-9 aluminum oxide grit. The P&W standard practice manual of consumable materials list identifies PMC 3052-9 as 500 aluminum oxide grit.

The actual processing of the incident nut consisted of grit blasting with 120 aluminum oxide grit, contrary to P&W recommendation to use 200 to 500 aluminum oxide grit media or glass beads. The nut is to be cleaned and flushed after the blasting.

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		Occurrence Date: 06/17/1997			
		Occurrence Type: Incident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used 0	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Type Instrument Approach:					
VFR Approach/Landing: Forced Landing					
Aircraft Information					
Aircraft Manufacturer McDonnell Douglas		Model/Series MD-83		Serial Number 53182	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 145	Certified Max Gross Wt.	137500 LBS	Number of Engines: 2	
Engine Type: Turbo Fan	Engine Manufacturer: P&W	Model/Series: JT8D-219	Rated Power: 21700 LBS		
- Aircraft Inspection Information					
Type of Last Inspection Continuous Airworthiness	Date of Last Inspection 04/1997	Time Since Last Inspection 76 Hours	Airframe Total Time 10417 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner RENO AIR		Street Address 220 EDISON WAY			
		City RENO	State NV	Zip Code 89502	
Operator of Aircraft Same as Reg'd Aircraft Owner		Street Address Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As:			Operator Designator Code: ORJA		
- 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					
FACTUAL REPORT - AVIATION					

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: LAX97IA209
	Occurrence Date: 06/17/1997
	Occurrence Type: Incident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 50
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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; Single-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?
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Medical Cert.: Class 1	Medical Cert. Status: Valid Medical--no waivers/lim.	Date of Last Medical Exam: 02/1997
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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	21000	8000								
Pilot In Command(PIC)										
Instructor										
Last 90 Days		240								
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 KLAS	Departure Time 1700	Time Zone PDT
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Destination COLORADO SPRING	State CO	Airport Identifier KCOS	
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Type of Clearance: IFR

Type of Airspace: Class B

Weather Information

Source of Briefing:
Company

Method of Briefing:

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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
LAS	1656	PDT	0 Ft. MSL	0 NM	0 Deg. Mag.
Sky/Lowest Cloud Condition: Scattered			8500 Ft. AGL	Condition of Light: Day	
Lowest Ceiling: None		0 Ft. AGL	Visibility: 10	SM	Altimeter: 29.00 "Hg
Temperature: 38 °C	Dew Point: 7 °C	Wind Direction: 330		Density Altitude: Ft.	
Wind Speed: 3	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): 0 Ft.	Visibility (RVV) 0	SM	Intensity of Precipitation: Unknown		
Restrictions to Visibility: None					
Type of Precipitation: None					

Accident Information		
Aircraft Damage: Minor	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				140	140
- TOTAL ABOARD -				145	145
Other Ground	0	0	0		0
- GRAND TOTAL -	0	0	0	145	145

National Transportation Safety Board

FACTUAL REPORT

AVIATION



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Occurrence Date: 06/17/1997

Occurrence Type: Incident

Administrative Information

Investigator-In-Charge (IIC)

GEORGE E. PETTERSON

Additional Persons Participating in This Accident/Incident Investigation:

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