
In-cockpit electrical smoke, McDonnell Douglas DC-9-30, July 5, 1997

Micro-summary: This McDonnell Douglas DC-9-30 experienced in-cockpit electrical smoke.


Event Date: 1997-07-05 at 1515 CDT

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

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

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		NTSB ID: CHI97IA195		Aircraft Registration Number: N963N	
		Occurrence Date: 07/05/1997		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By: NTSB	
Location/Time					
Nearest City/Place FLINT	State MI	Zip Code 48501	Local Time 1515	Time Zone CDT	
Airport Proximity: Unknown		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer McDonnell Douglas		Model/Series DC-9-30		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>On July 5, 1997, at 1515 central daylight time, a McDonnell-Douglas DC-9-30, operated by Northwest Airlines, Incorporated, as Flight Number 1446, and piloted by an airline transport pilot certified crew, declared an emergency when the cockpit filled with smoke. Instrument meteorological conditions prevailed at the time of the incident. The 14 CFR Part 121 flight was operating on an instrument flight plan. The captain, first officer, two flight attendants, and 48 passengers reported no injuries. The flight departed Milwaukee, Wisconsin, at 1350 central daylight time.</p> <p>Flight 1446 landed at the Bishop International Airport, Flint, Michigan, without incident. The passengers were deplaned through the concourse jetway. According to the captain, he and the first officer noted smoke coming from under the center instrument panel glareshield. The captain said the smoke was billowing out from under the center panel. He said the first officer and he put on their smoke goggles and oxygen masks and performed the emergency checklist.</p> <p>The smoke immediately stopped when the generators were taken off line, according to the captain. He said emergency power was selected to "ON." He said the cockpit smoke had cleared completely within about 4-minutes. The smoke was confined to the cockpit and did not enter the passenger compartment.</p> <p>The on-scene investigation revealed that about 8-inches of the insulation on a 20-gauge wire attached to the position light's switch was charred. The position light switch was stuck in a closed position. The 3-amp circuit breaker marked "Position Light" was found in the closed position.</p> <p>The position light and oscillating position light circuit breakers, the position light switch, the sections of burnt and charred wire, and the position light assembly were sent to McDonnell Douglas for examination. According to the company's report, the position switch examination revealed that one of the internal contact arms was distended and not inline with the other." The report continues, "...the slider for the...contacts was melted... . The contact button corresponding to terminal "B3" was almost completely worn away. The contact arm for the "B" contacts had been partially annealed and was deformed to be higher in the switch body than the other contact arm. This condition would reduce pressure on the contact buttons and increase impedance."</p> <p>According to the examination, the 3-ampere circuit breaker "...passed the acceptance test procedure." The second circuit breaker examination showed it "...was not able to unlock the mechanism latch to permit the breaker to open."</p> <p>The position light assembly examination revealed its autotransformer had failed. Internal examination of the transformer revealed the "...individual winding wires...[were] without [any] insulation."</p>					
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National Transportation Safety Board

**FACTUAL REPORT
AVIATION**




NTSB ID: CHI97IA195


Occurrence Date: 07/05/1997

Occurrence Type: Incident

Narrative (Continued)

The examination report and wiring diagram are appended to this report.

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: CHI97IA195				
		Occurrence Date: 07/05/1997				
		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:						
Aircraft Information						
Aircraft Manufacturer McDonnell Douglas		Model/Series DC-9-30		Serial Number 47415		
Airworthiness Certificate(s): Transport						
Landing Gear Type: Retractable - Tricycle						
Homebuilt Aircraft? No		Number of Seats: 105	Certified Max Gross Wt. 107000 LBS		Number of Engines: 2	
Engine Type: Turbo Fan		Engine Manufacturer:		Model/Series:	Rated Power:	
- Aircraft Inspection Information						
Type of Last Inspection Continuous Airworthiness		Date of Last Inspection 08/1996	Time Since Last Inspection 5887 Hours		Airframe Total Time 3708 Hours	
- Emergency Locator Transmitter (ELT) Information						
ELT Installed? No		ELT Operated?		ELT Aided in Locating Accident Site?		
Owner/Operator Information						
Registered Aircraft Owner CAMBRIDGE AIRC. MGMT. CO.		Street Address 1600 MARKET ST. STE. 2606				
		City PHILIDELPHIA		State PA	Zip Code 19103	
Operator of Aircraft NORTHWEST AIRLINES, INC.		Street Address 5101 NORTHWEST DRIVE				
		City ST. PAUL		State MN	Zip Code 55111	
Operator Does Business As:				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						

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: CHI97IA195
	Occurrence Date: 07/05/1997
	Occurrence Type: Incident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 43
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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?
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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	6685	4053								
Pilot In Command(PIC)										
Instructor										
Last 90 Days		195								
Last 30 Days										
Last 24 Hours		7								

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed?	Second Pilot? Yes
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Flight Plan/Itinerary

Type of Flight Plan Filed: IFR

Departure Point MILWAUKEE	State WI	Airport Identifier MKE	Departure Time 1346	Time Zone CDT
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Destination Same as Accident/Incident Location	State	Airport Identifier FNT	
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Type of Clearance: IFR

Type of Airspace: Class E

Weather Information

Source of Briefing:

Method of Briefing:

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: CHI97IA195
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Weather Information

WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
	0000		0 Ft. MSL	0 NM	0 Deg. Mag.

Sky/Lowest Cloud Condition: Unknown 0 Ft. AGL Condition of Light: Day

Lowest Ceiling: Unknown 0 Ft. AGL Visibility: 0 SM Altimeter: "Hg

Temperature: °C Dew Point: °C Wind Direction: Density Altitude: Ft.

Wind Speed: Gusts: Weather Conditions at Accident Site: Instrument Conditions

Visibility (RVR): 0 Ft. Visibility (RVV) 0 SM Intensity of Precipitation: Unknown

Restrictions to Visibility:

Type of Precipitation:

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				2	2
Other Crew					
Passengers				48	48
- TOTAL ABOARD -				52	52
Other Ground	0	0	0		0
- GRAND TOTAL -	0	0	0	52	52

National Transportation Safety Board

FACTUAL REPORT

AVIATION



NTSB ID: CHI97IA195

Occurrence Date: 07/05/1997

Occurrence Type: Incident

Administrative Information

Investigator-In-Charge (IIC)

FRANK S. GATTOLIN

Additional Persons Participating in This Accident/Incident Investigation:

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