
Main wheel separation, Boeing 737-2H4, January 19, 1994

Micro-summary: The left main wheel of this Boeing 737-2H4 separated as the airplane took the runway.


Event Date: 1994-01-19 at 911 CST


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


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

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		NTSB ID: FTW94IA070		Aircraft Registration Number: N53SW	
		Occurrence Date: 01/19/1994		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By: NTSB	
Location/Time					
Nearest City/Place LITTLE ROCK		State AR	Zip Code 72206	Local Time 0911	Time Zone CST
Airport Proximity: On Airport		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer BOEING		Model/Series 737-2H4		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On January 19, 1994, at 0911 central standard time, a Boeing 737-2H4, N53SW, sustained minor damage during takeoff from Little Rock, Arkansas. The crew of five and 62 passengers were not injured. Visual meteorological conditions prevailed for Southwest Airlines Flight 17, scheduled Title 14 CFR Part 121 service to Dallas, Texas, Love Field.</p> <p>Flight 17 made a left turn onto runway 22R when cleared for takeoff. A witness reported to the Southwest Airlines' station that he observed a left main wheel separate from the airplane. Little Rock Air Traffic Control(ATC) Tower was then notified that the number one left main wheel departed the aircraft. During the climb through about 5,000 feet MSL, the tower informed the crew. The crew reported that all cockpit indications were normal and that they would continue the flight to the destination. Upon arrival at Dallas the crew landed and taxied to the ramp without further incident.</p> <p>The tire and wheel remained intact and other parts of the wheel assembly were recovered. During a visual examination at the Southwest Airlines' Operations Facility, Little Rock, Arkansas, a Federal Aviation Administration (FAA) airworthiness inspector and company officials (statements enclosed) removed the hub cap from the wheel. They reported finding the axle nut with the retainer ring installed in the groove on the nut.</p> <p>The inner cylinder and wheel components were examined at the Southwest Airlines' Quality Control Center, Dallas, Texas, by a FAA airworthiness inspector and company officials. The landing gear inner cylinder out board axle showed gouges in the axle and aluminum residue on the threads.</p> <p>Southwest Airlines submitted the inner cylinder and wheel assembly to the Boeing Company for examination. Evidence collected by the manufacturer indicated that the retainer nut spun off of the axle with the rotation of the wheel and hubcap. According to the manufacturer, "this condition would only occur if the locking capability of the retaining ring was lost." The manufacturer's report is an enclosure.</p> <p>The manufacturer measured (see enclosed report) the thread dimensions of the inner cylinder axles and retainer nuts. Some of the threads on both axles and retainer nuts were beyond the manufacturer's wear limits. Some roll over areas were noted on the incident retainer nut threads. On the incident axle, thread engagement measurement (excluding the damaged area) for the axle was at the manufacturer's wear limit.</p> <p>During a telephone interview with Boeing personnel on July 20, 1994, they stated that the "locking capability would be lost if the retaining ring was not fully seated." They further said the axle and retainer nut "threads that were beyond the wear limits did not compromise the capability of the nut and axle." Their cross sectioning of the nut "did not exhibit enough deformation to support migration of the nut off the axle."</p>					
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 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: FTW94IA070			
		Occurrence Date: 01/19/1994			
		Occurrence Type: Incident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
LITTLE ROCK ADAMS FIELD	LIT	260 Ft. MSL	22R	7173	150
Runway Surface Type: Asphalt					
Runway Surface Condition: Dry					
Type Instrument Approach: NONE					
VFR Approach/Landing: None					
Aircraft Information					
Aircraft Manufacturer		Model/Series		Serial Number	
BOEING		737-2H4		21534	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 130	Certified Max Gross Wt.	115500 LBS	Number of Engines: 2	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
Turbo Jet	P&W	JT8-9A	15000 LBS		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time		
Continuous Airworthiness		Hours	51261 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner		Street Address			
SOUTHWEST AIRLINES		P. O. BOX 37611, LOVE FIELD			
		City	State	Zip Code	
		DALLAS	TX	75235	
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:			Operator Designator Code: 304A		
- 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/Cargo					
FACTUAL REPORT - AVIATION					

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: FTW94IA070
	Occurrence Date: 01/19/1994
	Occurrence Type: Incident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 41
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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; Flight Instructor

Airplane Rating(s): Multi-engine Land; Single-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s): Airplane Single-engine; Instrument Airplane

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--w/ waivers/lim.	Date of Last Medical Exam: 09/1993
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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	19500	13500	2000	17500	3000	2000	150			
Pilot In Command(PIC)	16500	10500			2500	2000				
Instructor	500		500							
Last 90 Days	210	210			10					
Last 30 Days	80	80			5					
Last 24 Hours	2	2			1					

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 LIT	Departure Time 0911	Time Zone CST
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Destination DALLAS	State TX	Airport Identifier DAL	
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Type of Clearance: IFR

Type of Airspace: Class D; Class E

Weather Information

Source of Briefing: Commercial Weather Service; Flight Service Station; National Weather Service

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
LIT	0850	CST	260 Ft. MSL	0 NM	0 Deg. Mag.
Sky/Lowest Cloud Condition: Clear			0 Ft. AGL	Condition of Light: Day	
Lowest Ceiling: None		0 Ft. AGL		Visibility: 10 SM	Altimeter: 30.00 "Hg
Temperature: -8 °C	Dew Point: -15 °C	Wind Direction: 140		Density Altitude: Ft.	
Wind Speed: 8	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				62	62
- TOTAL ABOARD -				67	67
Other Ground	0	0	0		0
- GRAND TOTAL -	0	0	0	67	67

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National Transportation Safety Board

FACTUAL REPORT

AVIATION



NTSB ID: FTW94IA070

Occurrence Date: 01/19/1994

Occurrence Type: Incident

Administrative Information

Investigator-In-Charge (IIC)

JOYCE M. SMITH,

Additional Persons Participating in This Accident/Incident Investigation:

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DFW AIRPORT, TX 75261