



National Transportation Safety Board Aviation Accident Factual Report

Location:	DENVER, CO	Accident Number:	FTW96LA111
Date & Time:	02/04/1996, 1647 MST	Registration:	N957DL
Aircraft:	MCDONNELL DOUGLAS MD-88	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Minor, 119 None

Flight Conducted Under: Part 121: Air Carrier - Scheduled

On February 4, 1996, at 1647 mountain standard time, a McDonnell Douglas MD-88, N957DL, operated by Delta Air Lines, Inc., as flight 1879, scheduled domestic passenger service under Title 14 CFR Part 121, sustained substantial damage during a hard landing at Denver International Airport. Visual meteorological conditions prevailed at the time, and an IFR flight plan had been filed. The captain, first officer, two flight attendants, and 115 passengers were not injured, but one flight attendant did sustain a minor injury. The flight originated at Dallas-Fort Worth International Airport, Texas, approximately 1 hour, 44 minutes before the accident.

According to the captain's statement, he flew what he considered to be a normal, stabilized approach, using 28 degrees of flaps and a VREF speed of 133 knots plus 5 knots. He flared the airplane over the runway and realized the sink rate was not being arrested as desired. He made a more "aggressive" pull on the control yoke while advancing the thrust levers "a significant amount. A very firm touchdown occurred." Examination disclosed damage to the tail bumper and wrinkled skin.

Readout of the airplane's digital flight data recorder (DFDR) disclosed subframes 1584 through 1589 contained the accident data, with subframe 1587 containing the runway contact data. The readout showed airspeed remained above VREF+5 up until subframe 1568, when, at a radio altimeter altitude of 238 feet, it was at 138.75 knots; thereafter, it began to drop. When the airplane touched down on the runway, airspeed was 124.75 knots, and the pitch attitude was 10.62 degrees nose up. There was a +5.54 vertical acceleration spike (see attached DFDR factual report).

Pilot Information

Certificate:	Airline Transport; Commercial; Flight Engineer	Age:	48, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	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--w/ waivers/lim.	Last FAA Medical Exam:	01/03/1996
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	14954 hours (Total, all aircraft), 4515 hours (Total, this make and model), 186 hours (Last 90 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MCDONNELL DOUGLAS	Registration:	N957DL
Model/Series:	MD-88 MD-88	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	49976
Landing Gear Type:	Tricycle	Seats:	150
Date/Type of Last Inspection:	01/17/1996, Continuous Airworthiness	Certified Max Gross Wt.:	149500 lbs
Time Since Last Inspection:	128 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	16529 Hours	Engine Manufacturer:	P&W
ELT:	Not installed	Engine Model/Series:	JT8D-219
Registered Owner:	WILMINGTON TRUST COMPANY	Rated Power:	15500 lbs
Operator:	DELTA AIR LINES	Operating Certificate(s) Held:	Flag carrier (121)
Operator Does Business As:		Operator Designator Code:	DALA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	DEN, 5431 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1653 MST	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	330°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	9°C / -11°C
Precipitation and Obscuration:			
Departure Point:	DFW AIRPORT, TX (DFW)	Type of Flight Plan Filed:	IFR
Destination:	(DEN)	Type of Clearance:	IFR
Departure Time:	1605 CST	Type of Airspace:	Class B

Airport Information

Airport:	DENVER INTERNATIONAL (DEN)	Runway Surface Type:	Concrete
Airport Elevation:	5431 ft	Runway Surface Condition:	Dry
Runway Used:	35L	IFR Approach:	Visual
Runway Length/Width:	12000 ft / 150 ft	VFR Approach/Landing:	Full Stop

Wreckage and Impact Information

Crew Injuries:	1 Minor, 4 None	Aircraft Damage:	Substantial
Passenger Injuries:	115 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 119 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ARNOLD W SCOTT
Additional Participating Persons:	RAYMOND J RYAN; DENVER, CO
Investigation Docket:	NTSB accident and incident docket 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/ .