
Hard landing, Boeing 757-232, February 12, 2000

Micro-summary: This Boeing 757-232 experienced a hard landing, damaging the nose gear .


Event Date: 2000-02-12 at 1346 CST

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

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

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		NTSB ID: LAX00FA097		Aircraft Registration Number: N671DN	
		Occurrence Date: 02/12/2000		Most Critical Injury: None	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place SAN SALVADOR		State	Zip Code	Local Time 1346	Time Zone CST
Airport Proximity: On Airport		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Boeing		Model/Series 757-232		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 February 12, 2000, about 1346 hours central standard time, Delta Airlines Flight 695, a Boeing 757-232, N671DN, sustained substantial structural damage to the fuselage in the nose wheel area during landing on runway 25 at San Salvador International Airport, San Salvador, El Salvador. Delta Airlines, Inc., was operating the airplane as an international, scheduled, passenger flight under the provisions of 14 CFR Part 121. The airline transport pilot captain, first officer, 6 flight attendants, and 153 passengers were not injured. The flight departed Atlanta, Georgia, about 1134 eastern standard time on a nonstop flight to San Salvador. Visual meteorological conditions prevailed and an IFR flight plan had been filed.</p> <p>The same flight crew flew the airplane back to Atlanta, where another flight crew boarded the airplane and continued on to Los Angeles, California. No discrepancies were reported by either of the flight crews or maintenance personnel in San Salvador and Atlanta. After the airplane arrived in Los Angeles, a post flight walk around inspection by the Delta maintenance department found the outside of the fuselage buckled on the left side above the nose landing gear door. Further examination disclosed that structural members were bent and fractured in the nose wheel well.</p> <p>The crew that landed in El Salvador stated that the nose gear touched down more firmly than the main landing gear. They completed a post flight inspection, but detected no abnormalities.</p>					
PERSONNEL INFORMATION					
<p>The captain held an airline transport pilot certificate with an airplane multiengine land rating. He held a first-class medical certificate that was issued on January 17, 2000, with no limitations or waivers. The operator reported he had a total flight time of 25,000 hours. He logged 145 hours in the last 90 days, and 10 in the last 24 hours. He had 6,916 hours in this make and model.</p> <p>The first officer held an airline transport pilot certificate with an airplane multiengine land rating. He held a first-class medical certificate that was issued on February 11, 2000, with no limitations or waivers. The operator reported he had a total flight time of 6,500 hours. He logged 32 hours in the last 90 days, and 10 in the last 24 hours. He had 809 hours in this make and model.</p>					
AIRCRAFT INFORMATION					
<p>The airplane was a Boeing 757-232, serial number 25332. The operator reported a total airframe time of 27,934 hours. The airplane was operated on a continuous airworthiness maintenance program and had accumulated 8 hours since the last inspection. The airplane had Pratt and Whitney PW2037RTC engines installed.</p>					
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National Transportation Safety Board

FACTUAL REPORT

AVIATION

NTSB ID: LAX00FA097

Occurrence Date: 02/12/2000

Occurrence Type: Accident

Narrative (Continued)

AIRPORT INFORMATION

The operator reported that runway 25 was 10,500 feet long and 148 feet wide.

FLIGHT RECORDERS

A Lockheed model 209F digital flight data recorder (FDR), serial number 4668, was installed. The recorder was removed and sent to the Safety Board's Vehicle Recorder Laboratory for readout and evaluation. A Safety Board specialist conducted a data comparison for the landings in El Salvador, Atlanta, and Los Angeles, and prepared a factual report, which is attached. A summary of the findings follows.


The FDR indicted that, in the El Salvador landing sequence, the air/ground FDR discrete indicated "air" then a second later indicated "ground." A second later it indicated "air" again, and then a second later indicated "ground," and remained "ground" for the remainder of the landing roll out. During this phase, a right roll angle developed, while the pitch angle and control column movements were more pronounced than on the other landings. For the Atlanta and Los Angeles landings, the air/ground discrete indicated "air" then a second later indicated "ground" and remained "ground."


In the El Salvador landing sequence, 1.82 seconds after the air/ground discrete indicated "ground" for the last time, the nose gear squat switch indicated "ground" and remained "ground." The data also indicated that the airplane's pitch attitude was approximately 1.9 degrees when the air/ground discrete first indicated "ground." About 1 second later the pitch attitude was 0.7 degrees, and then 1 second later was approximately 0.4 degrees. The data indicated that 23.55 seconds before the air/ground discrete first indicated "ground," the sink rate discrete indicated "true" for 2 seconds before it indicated and remained "not true."

During the Atlanta landing, the pitch attitude was approximately 3.4 degrees when the air/ground discrete first indicated "ground" and remained "ground." The data indicated that 3.82 seconds after the air/ground discrete first indicated "ground," the nose gear squat switch indicated "ground" and remained "ground." The data indicated that 15.55 seconds before the air/ground discrete first indicated "ground," the sink rate discrete indicted "true" for 1 second before it indicated and remained "not true."

During the Los Angeles landing, the pitch attitude was approximately 3.6 degrees when the air/ground discrete first indicated "ground" and remained "ground." The data indicated that 6.82 seconds after the air/ground discrete first indicated "ground," the nose gear squat switch indicated "ground" and remained "ground." The data indicated that the sink rate discrete indicted and remained "not true."

The FDR ground proximity inoperative discrete, the FDR ground proximity warning discrete, and the FDR GPWS discrete for all three landings were "not true."

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: LAX00FA097			
		Occurrence Date: 02/12/2000			
		Occurrence Type: Accident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
El Salvador International	MSLP	Ft. MSL	25	10500	148
Runway Surface Type: Asphalt					
Runway Surface Condition: Dry					
Type Instrument Approach: Unknown					
VFR Approach/Landing: Full Stop					
Aircraft Information					
Aircraft Manufacturer		Model/Series		Serial Number	
Boeing		757-232		25332	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 191	Certified Max Gross Wt.	232000 LBS	Number of Engines: 2	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
Turbo Fan	Pratt & Whitney	PW2037RTC	38200 LBS		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time		
Continuous Airworthiness	02/2000	8 Hours	27934 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? Yes	ELT Operated? No	ELT Aided in Locating Accident Site? No			
Owner/Operator Information					
Registered Aircraft Owner		Street Address			
DELTA AIRLINES INC.		P.O. BOX 20706			
		City	State	Zip Code	
		ATLANTA	GA	30320	
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: DALA		
- 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; International; Passenger Only					
FACTUAL REPORT - AVIATION					

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: LAX00FA097
	Occurrence Date: 02/12/2000
	Occurrence Type: Accident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 54
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Sex: U	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? 04/1999
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Medical Cert.: Class 1	Medical Cert. Status: Valid Medical--no waivers/lim.	Date of Last Medical Exam: 01/2000
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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	25000	6919								
Pilot In Command(PIC)										
Instructor										
Last 90 Days	145	145								
Last 30 Days										
Last 24 Hours	10	10								

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 ATLANTA	State GA	Airport Identifier ATL	Departure Time 1134	Time Zone EST
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Destination Same as Accident/Incident Location	State	Airport Identifier MSLP	
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Type of Clearance: IFR

Type of Airspace: Unknown

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
MSLP	0700	CST	Ft. MSL	NM	Deg. Mag.
Sky/Lowest Cloud Condition: Clear				Ft. AGL	Condition of Light: Day
Lowest Ceiling: None			Ft. AGL	Visibility: SM	Altimeter: 29.95 "Hg
Temperature: 21 °C	Dew Point: 16 °C	Wind Direction: 30		Density Altitude: Ft.	
Wind Speed: 2	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
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Classification: U.S. Registered/Foreign 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				6	6
Other Crew					
Passengers				153	153
- TOTAL ABOARD -				161	161
Other Ground	0	0	0		0
- GRAND TOTAL -	0	0	0	161	161

National Transportation Safety Board

FACTUAL REPORT

AVIATION



NTSB ID: LAX00FA097

Occurrence Date: 02/12/2000

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

HOWARD D. PLAGENS

Additional Persons Participating in This Accident/Incident Investigation:

MIKE GRIFFITHS

FAA - FSDO

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El Segundo, CA 90245