



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	San Diego, CA	<b>Accident Number:</b>	DCA14LA137
<b>Date &amp; Time:</b>	07/29/2014, 2240 PDT	<b>Registration:</b>	N553UA
<b>Aircraft:</b>	BOEING 757	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Tailstrike	<b>Injuries:</b>	174 None
<b>Flight Conducted Under:</b>	Part 121: Air Carrier - Scheduled		

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## Analysis

On July 29, 2014, about 2240 pacific daylight time, United Airlines flight 345, a Boeing 757-222, N553UA, experienced a tailstrike while landing at the San Diego International Airport (SAN), San Diego, California. There were no injuries to the 174 persons onboard. The airplane sustained substantial damage. The flight was operating under 14 Code of Federal Regulations Part 121 as a regularly scheduled passenger flight from George Bush Intercontinental Airport (IAH), Houston, Texas, to SAN.

According to the operator, the first officer (FO) was the pilot flying and the captain was the pilot monitoring. The accident flight was the second flight of the day for both crew members. The climb, cruise, and descent portions of the flight were uneventful. The airplane was configured for a flaps 30 landing with the autopilot off for the visual approach to runway 27. The target airspeed for the landing was 130 knots, 5 knots above VREF.

An airplane performance study was completed based on the FDR data from the flight. The study showed the wind was constant during the final descent to the runway with about a 4-knot headwind component. At about 50 feet radio altitude, the FO began to gradually pull back on the column until the elevators deflected 12 degrees airplane nose up at touchdown. Touchdown occurred with a sink rate near 0, a pitch attitude of about 6 degrees and an airspeed of 120 knots (5 knots below VREF). After touchdown, thrust was commanded to idle and the speedbrakes were deployed. The FO then began to gradually release column backpressure; however, pitch attitude continued to increase towards the gear-struts-compressed tail strike pitch attitude. The airplane's pitch attitude eventually exceeded the gear struts compressed tail strike attitude of 10.5 degrees. The FO commanded reverse thrust as the tail strike occurred and then increased to maximum reverse thrust after derotation had occurred.

Published Flight Operations Technical Bulletins issued by the manufacturer in 1988 and 1990 instructed pilots to immediately lower the nose after touchdown (i.e. apply forward pressure) and warned pilots that bleeding off airspeed below VREF prior to touchdown will increase body attitude and thereby increase the likelihood of a tail strike. In this accident, touchdown

occurred about 5 knots below VREF and the nose-up elevator remained for nearly 3.5 seconds, causing the aft fuselage to contact the runway.

Inspection of the airplane revealed substantial abrasion damage to two aft, lower skin panels spanning an area about 4 feet long by 1.5 feet wide. In addition, the forward and aft lower chords on the aft pressure bulkhead (APB) were deformed and the lower APB web was buckled.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

the first officer's failure to maintain the correct airspeed and pitch attitude during landing that resulted in a tailstrike.

### Findings

Personnel issues	Incorrect action performance - Pilot (Cause)
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## Factual Information

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## History of Flight

Landing-flare/touchdown	Tailstrike (Defining event)
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## Pilot Information

<b>Certificate:</b>	Airline Transport	<b>Age:</b>	54
<b>Airplane Rating(s):</b>	Multi-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With Waivers/Limitations	<b>Last FAA Medical Exam:</b>	05/26/2014
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	04/15/2014
<b>Flight Time:</b>	19400 hours (Total, all aircraft), 7000 hours (Total, this make and model), 16000 hours (Pilot In Command, all aircraft)		

## Co-Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Engineer; Private	<b>Age:</b>	50, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With Waivers/Limitations	<b>Last FAA Medical Exam:</b>	04/03/2014
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	03/04/2014
<b>Flight Time:</b>	6000 hours (Total, all aircraft), 258 hours (Total, this make and model), 3000 hours (Pilot In Command, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	BOEING	Registration:	N553UA
Model/Series:	757 222	Aircraft Category:	Airplane
Year of Manufacture:	1992	Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	25277
Landing Gear Type:	Retractable - Tricycle	Seats:	190
Date/Type of Last Inspection:	05/18/2014, Continuous Airworthiness	Certified Max Gross Wt.:	228178 lbs
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:	72854 Hours at time of accident	Engine Manufacturer:	P & W
ELT:	Installed, not activated	Engine Model/Series:	PW2040
Registered Owner:	WILMINGTON TRUST COMPANY TRUSTEE	Rated Power:	18150 hp
Operator:	United Airlines	Operating Certificate(s) Held:	Flag carrier (121)
Operator Does Business As:		Operator Designator Code:	UAUA

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:	0551 UTC	Direction from Accident Site:	
Lowest Cloud Condition:	Few	Visibility	9 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.99 inches Hg	Temperature/Dew Point:	23° C / 19° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HOUSTON, TX (IAH)	Type of Flight Plan Filed:	IFR
Destination:	San Diego, CA (SAN)	Type of Clearance:	IFR
Departure Time:	2148 CDT	Type of Airspace:	Class B

## Airport Information

Airport:	SAN DIEGO INTL (SAN)	Runway Surface Type:	Asphalt; Concrete
Airport Elevation:	16 ft	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	Visual
Runway Length/Width:	9400 ft / 200 ft	VFR Approach/Landing:	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	6 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	168 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	174 None	<b>Latitude, Longitude:</b>	32.733056, -117.188056 (est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Timothy LeBaron	<b>Report Date:</b>	06/08/2020
<b>Additional Participating Persons:</b>	David Keenan; FAA; Washington, DC		
<b>Publish Date:</b>	06/08/2020		
<b>Note:</b>	The NTSB did not travel to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89806">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89806</a>		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).