



# Aviation Investigation Final Report

<b>Location:</b>	Houston, Texas	<b>Accident Number:</b>	DCA24LA065
<b>Date &amp; Time:</b>	January 10, 2024, 10:10 Local	<b>Registration:</b>	N62883
<b>Aircraft:</b>	Boeing 737	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Tailstrike	<b>Injuries:</b>	185 None
<b>Flight Conducted Under:</b>	Part 121: Air carrier - Scheduled		

## Analysis

United Airlines flight 2498 experienced a tail strike while landing at George Bush Houston Intercontinental Airport (IAH), Houston, Texas. The flight was a regularly scheduled domestic passenger flight from Phoenix Sky Harbor Airport (PHX), Phoenix, Arizona to IAH.

The flight crew statements and flight data showed a stable approach to the landing flare. The first officer was pilot flying and stated he began the flare slightly late. Both crewmembers stated the touchdown was firm with a slight “nose-high” bounce. The flight crew was not aware the airplane’s tail had impacted the runway until the ground crew at the gate notified them.

Flight data showed that the airplane touched down on the runway with a 6.5-degree nose-up attitude and vertical acceleration of 1.87g. The speed brakes deployed two seconds after the initial touchdown. At the same time, the aircraft became airborne again and the nose began to lower. Two seconds later, as the speed brakes retracted, the airplane’s pitch began to increase, and the airplane touched down a second time with pitch of 7.2 degrees and a vertical acceleration of about 2.87g. The airplane became airborne for a 3<sup>rd</sup> time for about a second before it touched down for the final time. The nose was lowered to the ground, and speed brakes were extended again.

Post-accident assessment of the aircraft revealed substantial damage to the auxiliary power unit (APU) firewall bulkhead that occurred as a result of the aircraft’s aft fuselage’s contact with the runway.

## Probable Cause and Findings

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

The airplane’s aft fuselage impacted the runway as a result of a delayed flare and subsequent nose-high pitch inputs during the aircraft’s multiple touchdowns.

Findings	
Personnel issues	Delayed action - Copilot

## Factual Information

### History of Flight

Landing-flare/touchdown	Tailstrike (Defining event)
-------------------------	-----------------------------

### Pilot Information

Certificate:	Airline transport; Commercial; Flight engineer; Flight instructor	Age:	62,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Glider	Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	August 3, 2023
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	July 9, 2023
Flight Time:	31700 hours (Total, all aircraft), 21200 hours (Total, this make and model), 18540 hours (Pilot In Command, all aircraft), 180 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

### Co-pilot Information

Certificate:	Airline transport; Commercial; Private	Age:	45,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):		Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	August 22, 2023
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	December 28, 2023
Flight Time:	5187 hours (Total, all aircraft), 896 hours (Total, this make and model), 962 hours (Pilot In Command, all aircraft), 155 hours (Last 90 days, all aircraft), 106 hours (Last 30 days, all aircraft), 51 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Boeing	<b>Registration:</b>	N62883
<b>Model/Series:</b>	737 9	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2015	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Commuter; Normal; Transport	<b>Serial Number:</b>	883
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	186
<b>Date/Type of Last Inspection:</b>	April 18, 2023 Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	188100 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2
<b>Airframe Total Time:</b>	25323 Hrs as of last inspection	<b>Engine Manufacturer:</b>	
<b>ELT:</b>	C126 installed, not activated	<b>Engine Model/Series:</b>	
<b>Registered Owner:</b>	UNITED AIRLINES INC	<b>Rated Power:</b>	
<b>Operator:</b>	UNITED AIRLINES INC	<b>Operating Certificate(s) Held:</b>	Flag carrier (121)

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Phoenix, AZ (PHX)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Houston, TX	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	22:35 Local	<b>Type of Airspace:</b>	Class B

## Airport Information

<b>Airport:</b>	Houston George Bush Intercontinental Airport KIAH	<b>Runway Surface Type:</b>	Concrete
<b>Airport Elevation:</b>	97 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	27	<b>IFR Approach:</b>	Visual
<b>Runway Length/Width:</b>	10000 ft / 150 ft	<b>VFR Approach/Landing:</b>	Full stop

## Wreckage and Impact Information

<b>Crew Injuries:</b>	6 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	179 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	185 None	<b>Latitude, Longitude:</b>	29.9931,-95.3416(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Silva, Sathya
<b>Additional Participating Persons:</b>	Carson King; United Airlines FAA AVP; Federal Aviation Administration
<b>Original Publish Date:</b>	May 17, 2024
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 4</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=193637">https://data.ntsb.gov/Docket?ProjectID=193637</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).