Aviation Investigation Final Report

Location:	Houston, Texas	**Accident Number:**	DCA24LA065
Date & Time:	January 10, 2024, 10:10 Local	**Registration:**	N62883
Aircraft:	Boeing 737	**Aircraft Damage:**	Substantial
Defining Event:	Tailstrike	**Injuries:**	185 None
Flight Conducted Under:	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 3rd 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

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

Meteorological Information and Flight Plan

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

Airport Information

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

Wreckage and Impact Information

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

Administrative Information

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