



# Aviation Investigation Final Report

<b>Location:</b>	Houston, Texas	<b>Accident Number:</b>	DCA23LA221
<b>Date &amp; Time:</b>	March 22, 2023, 17:26 Local	<b>Registration:</b>	N1902U
<b>Aircraft:</b>	Airbus A320-232	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Tailstrike	<b>Injuries:</b>	156 None
<b>Flight Conducted Under:</b>	Part 121: Air carrier - Scheduled		

## Analysis

United Airlines flight 1091 sustained a tailstrike while landing at George Bush Intercontinental Airport (KIAH), Houston, TX. The flight was a regularly scheduled international passenger flight from Mexico City, Mexico to KIAH.

According to the flight crew, the captain was the pilot monitoring, and the first officer (FO) was the pilot flying when they were cleared for the visual approach to runway 27 at KIAH. The airplane was in the landing configuration and on a stabilized approach at 1,000 ft. above ground level (AGL). About 60 ft AGL the captain noticed the airspeed begin to decay and stated watch your speed. The FO subsequently pitched the nose of the airplane down and added a little thrust. About 30 ft AGL, due to a higher-than-normal rate of descent the captain commanded flare, flare, flare. The FO flared the airplane which resulted in a firm landing. As the airplane rebounded from the firm landing the spoilers deployed resulting in a nose high attitude. In an effort to correct for the nose high attitude, the captain and FO pushed forward on their respective sidesticks.

The FO stated that the ground spoiler deployment coinciding with the firm touchdown resulted in an airplane nose-up pitch attitude. As a result, the pitch attitude increased until the tail struck the runway. After the tailstrike, the remainder of the landing and landing rollout were normal with no risk of runway overrun or excursion.

The tailstrike resulted in abrasion damage over an area of about 19 feet long by 1 foot wide along the aft lower fuselage. An inspection revealed substantial damage to the aft pressure bulkhead and frames.

# 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 which resulted in a tailstrike.

## Findings

Aircraft	Pitch control - Not attained/maintained
Aircraft	Airspeed - Not attained/maintained
Personnel issues	Aircraft control - Copilot

## Factual Information

### History of Flight

Landing	Tailstrike (Defining event)
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### Pilot Information

Certificate:	Airline transport	Age:	50,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	5-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:	November 14, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 13, 2023
Flight Time:	19045 hours (Total, all aircraft), 10100 hours (Total, this make and model), 5315 hours (Pilot In Command, all aircraft), 260 hours (Last 90 days, all aircraft), 41 hours (Last 30 days, all aircraft)		

### Co-pilot Information

Certificate:	Airline transport; Commercial	Age:	38,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	5-point
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	May 20, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	February 10, 2023
Flight Time:	3550 hours (Total, all aircraft), 104 hours (Total, this make and model), 1705 hours (Pilot In Command, all aircraft), 110 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Airbus	<b>Registration:</b>	N1902U
<b>Model/Series:</b>	A320-232	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2006	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Transport	<b>Serial Number:</b>	2714
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	200
<b>Date/Type of Last Inspection:</b>	January 19, 2023 Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	170600 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo fan
<b>Airframe Total Time:</b>	22194 Hrs as of last inspection	<b>Engine Manufacturer:</b>	International Aero Engines
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	V2527-A5
<b>Registered Owner:</b>	UNITED AIRLINES INC	<b>Rated Power:</b>	26500 Lbs thrust
<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>	KIAH,90 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	17:53 Local	<b>Direction from Accident Site:</b>	257°
<b>Lowest Cloud Condition:</b>	Scattered / 3600 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>		<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	13 knots / 21 knots	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	170°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.03 inches Hg	<b>Temperature/Dew Point:</b>	26°C / 18°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Mexico City, OF (MMMX)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Houston, TX	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class B

## Airport Information

<b>Airport:</b>	GEORGE BUSH INTCNL/HOUSTON IAH	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	95 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	27	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	10000 ft / 150 ft	<b>VFR Approach/Landing:</b>	Straight-in

## Wreckage and Impact Information

<b>Crew Injuries:</b>	5 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	151 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	156 None	<b>Latitude, Longitude:</b>	29.9778,-95.3057

## Administrative Information

**Investigator In Charge (IIC):** Banning, David

**Additional Participating Persons:**

**Original Publish Date:** June 16, 2023

**Last Revision Date:** December 13, 2024

**Investigation Class:** [Class 4](#)

**Note:** The NTSB did not travel to the scene of this accident.

**Investigation Docket:** <https://data.nts.gov/Docket?ProjectID=106964>

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](#).