Aviation Investigation Final Report

Location:	Denver, Colorado	**Accident Number:**	DCA23LA468
Date & Time:	September 30, 2023, 15:00 Local	**Registration:**	N37560
Aircraft:	Boeing 737-9	**Aircraft Damage:**	Substantial
Defining Event:	Fire/smoke (non-impact)	**Injuries:**	173 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

United Airlines flight 329 conducted a rejected takeoff after experiencing abnormal acceleration while on Runway 16R at Denver International Airport (DEN), Denver, Colorado. The flight was a regularly scheduled passenger flight to Boston Logan International Airport (BOS), Boston, Massachusetts. As a result of a subsequent brake fire following the rejected take off, the aircraft suffered substantial damage. No injuries were reported.

The flight crew reported that before the flight, the captain and the first officer (FO) met to review the flight plan, maintenance documents, weather, and Notice to Airmen (NOTAMS). It was then that the captain noticed that the airplane had just come out of maintenance. The flight crew reported that the airplane would be close to maximum takeoff weight, and that the temperature would be high, and the flight would be taking off on runway 16R. Airport operations made runway 16R the designated runway for departures that day since it is the longest runway at DEN, with a length of 16,000 feet.

Once the flight crew were onboard the airplane they reviewed the takeoff performance data where they noticed that the planned takeoff weight was more than what would be allowed for a takeoff from runway 16R. The weight at the gate was 172,800 lbs. but needed to be below 171,700 lbs. for a safe takeoff, taking into consideration the atmospheric conditions at the time. The captain reported making a call to dispatch where he spoke with a different dispatcher than the one who had created the original flight plan. The original flight plan had been created using a lower temperature of 29 Celsius which had been correct at the time, but the temperature had since risen to 31 Celsius.

The new dispatcher sent 3 flight plan revisions. The flight crew reported that the first revision removed 1,000 lbs. of cargo, but did not remove enough weight to be within limits, and a

second flight plan revision was requested. The second revision removed another 1000 lbs. by removing 8 passengers. The flight crew mentioned to dispatch that there was about 1000 lbs. of extra fuel onboard that could be burned off with an extended taxi, and dispatch sent a new revision to the flight plan that required an extended taxi to burn off the 1,000 lbs. of excess fuel to reduce the takeoff weight instead of removing passengers.

The flight crew reported experiencing a normal pushback before preforming a “long slow” taxi to the runway with the power elevated while applying additional braking to burn more fuel.

Once reaching the runway, the flight held there for an additional 10 to 15 minutes with the parking brake set to burn the additional fuel. The pilots reported that they never had any indication that the brakes were getting hot, and the Boeing 737 has no brake temperature monitoring system to inform the flight crew of brake temperatures. The flight crew commented that every other Boeing aircraft they have flown had a brake temperature monitoring system.

Once below the required weight requirement, the flight crew notified Air Traffic Control (ATC) and were subsequently cleared for takeoff.

The captain was the pilot flying and reported quickly noticing the aircraft not accelerating normally during the takeoff roll. He immediately rejected the takeoff and the FO informed tower. The tower then observed and notified the flight crew that there was smoke and fire on the right side of the airplane. The flight crew had no indication of fire in the cockpit. The captain then requested Aircraft Rescue and Fire Fighting (ARFF) and declared an emergency with ATC.

ARFF fought the fire by releasing fire retardant on both main gear while the FO ran through the rejected takeoff checklist.

The captain coordinated with the flight attendants to ensure the safety of all passengers. The captain reported making multiple public announcements (PA) to the passengers to inform them of the situation.

After all appropriate checklists were complete, the captain decided against immediate evacuation based on communications with ARFF and the passengers disembarked via the air stairs that were provided by airport operations. The passengers were then driven back to the passenger terminal in buses.

Postaccident investigation of the airplane revealed that the No. 1 and 2 tires had deflated. Number 3 and 4 tires had separated from the wheel assembly and there was evidence that tire fragments had impacted the airframe in several areas. The number 3 wheel assembly scraped the runway and had ground down with about 1/3 of the assembly missing, the number 4 wheel assembly was ground down to about half, and the number 2 engine nacelle had scraped the runway. In addition, several panels of the wing to body (WTB) fairing panels had suffered heat

damage and tire debris was imbedded in the inner face of the engine inlet inner barrel acoustic panel. The right horizontal stabilizer also received structural damage.

Probable Cause and Findings

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

Overheated brakes due to the extended taxi at a higher power setting in an attempt to burn off fuel to achieve the proper takeoff weight that resulted in a wheel fire during takeoff.

Findings

Aircraft	Brake - Incorrect use/operation
Personnel issues	Incorrect action performance - Flight crew

Factual Information

History of Flight

Takeoff-rejected takeoff	Fire/smoke (non-impact) (Defining event)

Pilot Information

Certificate:	Airline transport	**Age:**	51,Male
Airplane Rating(s):	Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	August 10, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 11, 2023
Flight Time:	16000 hours (Total, all aircraft), 6000 hours (Total, this make and model), 5000 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 80 hours (Last 30 days, all aircraft)		

Co-pilot Information

Certificate:	Airline transport	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	May 2, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 25, 2023
Flight Time:	5390 hours (Total, all aircraft), 496 hours (Total, this make and model), 4569 hours (Pilot In Command, all aircraft), 112 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Boeing	**Registration:**	N37560
Model/Series:	737-9	**Aircraft Category:**	Airplane
Year of Manufacture:	2023	**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	67184
Landing Gear Type:	Retractable - Tricycle	**Seats:**	48
Date/Type of Last Inspection:	July 2, 2023 Continuous airworthiness	**Certified Max Gross Wt.:**	169100 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo fan
Airframe Total Time:	3872 Hrs at time of accident	**Engine Manufacturer:**	General Electric
ELT:	Installed	**Engine Model/Series:**	LEAP-1B
Registered Owner:	UNITED AIRLINES INC	**Rated Power:**	28000 Lbs thrust
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:	KDEN	**Distance from Accident Site:**	-1 Nautical Miles
Observation Time:	13:40 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few	**Visibility**	9 miles
Lowest Ceiling:	Broken / 20000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots / 20 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	32°C / 4°C
Precipitation and Obscuration:			
Departure Point:	Denver, CO	**Type of Flight Plan Filed:**	IFR
Destination:	Boston, MA (KBOS)	**Type of Clearance:**	IFR
Departure Time:		**Type of Airspace:**	Class B

Airport Information

Airport:	Denver International KDEN	**Runway Surface Type:**	Concrete
Airport Elevation:	5430 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16R	**IFR Approach:**	None
Runway Length/Width:	16000 ft / 200 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	6 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	167 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	173 None	**Latitude, Longitude:**	39.849312,-104.67382

Administrative Information

Investigator In Charge (IIC):	Lovell, John
Additional Participating Persons:	Ryan Hurling; UAL Matthew Rigsby; FAA
Original Publish Date:	February 26, 2025
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=193204