Aviation Investigation Final Report

Location:	Denver, Colorado	**Accident Number:**	DCA25LA275
Date & Time:	July 26, 2025, 14:16 Local	**Registration:**	N306SW
Aircraft:	Boeing 737-8	**Aircraft Damage:**	Substantial
Defining Event:	Sys/Comp malf/fail (non-power)	**Injuries:**	175 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

On July 26, 2025, American Airlines Flight 3023 experienced a failure of the left main landing gear (LMLG) tires and wheels during its takeoff roll, which resulted in a rejected takeoff and subsequent smoke and fire from the LMLG (figure 1). The flight crew subsequently initiated an emergency evacuation. There were no reported injuries to passengers or crew. The flight was scheduled to operate from Denver International Airport (DEN), Denver, Colorado, to Miami International Airport (MIA), Miami, Florida. The flight was the second leg of a duty day following an earlier flight from Miami to DEN using the same airplane.

Figure 1. Damage to the left main landing gear wheels and tires. (Source: City and County of Denver Department of Aviation)

During predeparture planning at DEN, the flight crew noted high ambient temperatures, aircraft weight near performance limits, and fuel loads close to minimum required values. Initial Automatic Terminal Information Service (ATIS) information indicated winds favoring runway 08. Based on performance calculations, the crew planned a bleeds-off takeoff (engine air not used for cabin air conditioning) for maximum thrust during takeoff. Both engines were started early in anticipation of a short taxi and prompt departure.

Upon taxi and clearance to enter runway 08, the tower reported winds that included a tailwind component. The flight crew advised air traffic control (ATC) that they could not accept the departure under those conditions and exited the runway. The airport was in the process of transitioning runway configurations due to rapidly shifting winds, which included reports of windshear and a go-around by another airplane.

The flight subsequently taxied to runway 17L; however, updated wind information again indicated an unacceptable tailwind component. The crew declined that runway and coordinated with ATC for a north-flow departure. Performance data for runway 35R was unavailable, but previously computed data supported runway 34L. The crew accepted runway 34L and taxied across the airfield (figure 2).

Figure 2. Taxi route (red arrows) attempted takeoff (green arrow) for American Airlines flight 3023. (Source: American Airlines)

While awaiting departure at runway 34L, the flight experienced an extended delay of about 25 minutes. During this time, the crew observed a dust devil west of the airport and were advised of ongoing wind variability. The crew notified American Airlines dispatch that they were nearing duty-time limitations and minimum fuel thresholds.

After receiving takeoff clearance with reported calm winds, the first officer (FO), as pilot flying, advanced the thrust levers to approximately 40% N1. Acceleration was described as normal for high-altitude, high-temperature, and heavy-weight conditions. At 80 knots indicated airspeed, the standard callout was made and acknowledged.

Between about 90 and 100 knots indicated airspeed, the captain reported hearing a loud “pop” accompanied by a noticeable bump. Almost immediately thereafter, the airplane abruptly tilted to the left. Both pilots perceived a significant loss of controllability, consistent with a landing gear failure or multiple tire failures. The FO called for an abort, and the captain assumed control and initiated a rejected takeoff above 80 knots.

During the rejected takeoff, the captain used differential braking and rudder to maintain directional control. Thrust reversers were not deployed due to concerns about controllability. The airplane came to a stop near the runway centerline.

Tower personnel reported observing smoke and fire beneath the left wing. The airplane remained significantly tilted to the left, and smoke began entering the cockpit. About 30-45 seconds after initially instructing passengers to remain seated, the flight crew initiated an emergency evacuation based on the reported fire and cockpit smoke.

The pilots completed the evacuation checklist twice to confirm all actions. Upon opening the cockpit door, the crew discovered that all passengers had already exited the airplane. The captain conducted a cabin sweep to ensure no occupants remained onboard before exiting. Airport rescue and fire fighting (ARFF) vehicles responded, and passengers were later transported back to the terminal by bus. No passenger injuries were reported.

The cabin crew indicated that the rejected takeoff and evacuation occurred rapidly and was accompanied by significant passenger confusion and noncompliance. The lead flight attendant (FA1), stationed at the forward entry door, stated that during the takeoff roll she heard a “loud, rough noise” consistent with a tire failure, followed by the smell of smoke and passengers shouting that the airplane was on fire. After the airplane stopped, passengers began standing and attempting to access overhead bins despite commands to remain seated.

FA1 stated that she assessed the outside conditions through the forward entry door window and walked to first class to look for signs of fire but saw nothing initially. Some passengers began standing, and FA1 smelled smoke with a burning odor. Passengers started shouting that the airplane was on fire and were asking to open the doors. FA1 attempted to contact the flight deck via the emergency interphone but did not receive an immediate response.

When the captain commanded an evacuation, she initiated the evacuation at the left forward door and indicated that it was difficult to open due to wind resistance, but the slide eventually deployed. She repeatedly commanded passengers to leave their belongings behind; however, multiple passengers took their carry-on baggage, which slowed the flow of egress. She reported no visible injuries during evacuation, though one passenger with a preexisting knee condition had difficulty using the slide and required assistance after exiting. FA1 stated she conducted a sweep of the cabin and lavatories and exited last, assisting the passengers to rescue personnel.

FA2, who was seated in the aft galley, stated during takeoff it got severely bumpy while the airplane was still on the ground. Eventually, FA2 heard a loud popping sound followed by the smell of burning rubber. Immediately after the airplane stopped, passengers stood up, opened overhead bins, and began moving toward the galleys despite a passenger announcement (PA) from the captain instructing them to remain seated.

FA2 stated passengers did not comply with crew instructions, continued retrieving carry-on bags, and crowded the exits. After the captain commanded the evacuation, FA2 stated aft slides were deployed and passengers exited, with most retaining their personal belongings. Firefighters assisted at the bottom of the slides and after the airplane was cleared, the crew exited, accounted for passengers, and later were transported to the terminal by bus.

An Aerospace Engineer from the National Transportation Safety Board (NTSB) examined the airplane on the ramp while maintenance personnel were actively performing work on the aircraft. The airplane sustained damage to the LMLG strut, wheels, brake assemblies, and tires; the left inboard aft flap; one left inboard flap fairing; the LMLG door; the left inboard fixed leading edge; the left inboard and outboard thrust reverser doors; the left inboard and outboard fan cowl doors; and the left wing lower skin. With the exception of the left wing lower skin, all damaged components were excluded from classification as substantial damage.

The left wing lower skin exhibited dents in two locations, gouges in seven locations, and multiple areas of paint layer damage consistent with impact from fractured wheel debris. The largest dent measured approximately 3 inches in diameter and at least ¼ inch in depth, with a fracture evident on the inner surface of the wing skin at that location. Several of the gouges exceeded allowable limits specified in the Structural Repair Manual (SRM). According to the airline, the left wing lower skin is a one-piece structure that required replacement from wing root to wing tip. As the left wing lower skin constitutes primary structure, the observed damage would adversely affect the structural strength of the wing and necessitated replacement. Therefore, the damage to the aircraft was classified as substantial.

The LMLG outboard wheel (Wheel No. 1) remained largely intact and rolled on both the inboard and outboard rims before seizing. The wheel and brake assembly was then abraded to the axle. The LMLG inboard wheel (Wheel No. 2) initially remained intact and rolled on both rims before the inboard half fractured into multiple pieces. The outboard half of Wheel No. 2 remained on the axle and sustained severe rolling abrasion damage before separating from the LMLG. As the wheels degraded, the lower portion of the LMLG strut contacted the ground and was subsequently abraded down to the axle area. Once the strut and wheels were sufficiently worn, the left engine thrust reverser doors and fan cowl doors contacted the runway, resulting in additional abrasion damage.

Each main landing gear wheel is equipped with four thermal relief plugs that are designed with a portion that will melt and release the pressure in the tire at high temperatures to prevent over pressure. Examination of three relief plugs on the No. 1 wheel, and two relief plugs on the No.2

wheel showed no evidence of the thermal relief plugs remaining. A thermal relief plug recovered from the runway showed that the center meltable portion was missing.

Probable Cause and Findings

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

The failure of the airplane's left main landing gear tires and wheels during the takeoff roll due to the thermal relief plugs melting and releasing tire pressure, which resulted in abnormal airplane handling characteristics and led the flight crew to reject the takeoff at high speed.

Findings

Aircraft	Wheel/ski/float - Failure
Aircraft	Tire casing - Failure

Factual Information

History of Flight

Takeoff	Sys/Comp malf/fail (non-power) (Defining event)

Pilot Information

Certificate:	Airline transport; Commercial; Flight engineer; Flight instructor	**Age:**	60,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:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	March 5, 2025
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	October 27, 2024
Flight Time:	(Estimated) 25000 hours (Total, all aircraft), 3500 hours (Total, this make and model)		

Co-pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	41
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	September 17, 2024
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	November 5, 2024
Flight Time:	(Estimated) 7900 hours (Total, all aircraft), 540 hours (Total, this make and model)		

Cabin crew Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Unknown
Other Aircraft Rating(s):		**Restraint Used:**	5-point
Instrument Rating(s):		**Second Pilot Present:**	Yes
Instructor Rating(s):		**Toxicology Performed:**	
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Cabin crew Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Unknown
Other Aircraft Rating(s):		**Restraint Used:**	5-point
Instrument Rating(s):		**Second Pilot Present:**	Yes
Instructor Rating(s):		**Toxicology Performed:**	
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Cabin crew Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Unknown
Other Aircraft Rating(s):		**Restraint Used:**	5-point
Instrument Rating(s):		**Second Pilot Present:**	Yes
Instructor Rating(s):		**Toxicology Performed:**	
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Boeing	**Registration:**	N306SW
Model/Series:	737-8	**Aircraft Category:**	Airplane
Year of Manufacture:	2021	**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	44488
Landing Gear Type:	Retractable - Tricycle	**Seats:**	181
Date/Type of Last Inspection:	July 25, 2025 Continuous airworthiness	**Certified Max Gross Wt.:**	181200 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo fan
Airframe Total Time:	11815.3 Hrs at time of accident	**Engine Manufacturer:**	CFM INTL
ELT:	C126 installed, not activated	**Engine Model/Series:**	LEAP-1B28
Registered Owner:	WILMINGTON TRUST CO TRUSTEE	**Rated Power:**	28000 Lbs thrust
Operator:	American Airlines, Inc.	**Operating Certificate(s) Held:**	Flag carrier (121)
Operator Does Business As:	American Airlines, Inc.	**Operator Designator Code:**	AALA

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:	Scattered / 12000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	22000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	3003 inches Hg	**Temperature/Dew Point:**	35°C / -2°C
Precipitation and Obscuration:			
Departure Point:	Denver, CO (DEN)	**Type of Flight Plan Filed:**	IFR
Destination:	Miami, FL (MIA)	**Type of Clearance:**	IFR
Departure Time:	13:12 Local	**Type of Airspace:**	Class B

Airport Information

Airport:	Denver International Airport DEN	**Runway Surface Type:**	Concrete
Airport Elevation:	5327 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34L	**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:	169 None	**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	175 None	**Latitude, Longitude:**	39.861698,-104.67299

Administrative Information

Investigator In Charge (IIC):	Banning, David
Additional Participating Persons:	Todd Gentry; FAA AVP-100
Original Publish Date:	August 26, 2026
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=200663

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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.