

ALERT BULLETIN

AB 2020:1/3-1

1/7/2020

1684547

TO: Boeing Commercial Airplane Company, FAA (AFS-900)

INFO: FAA (AVP-1, AVP-200, AFS-200, AFS-280, AFS-100, ANM-100, SEA-ACO, SEA-AEG, AQS-230), A4A, AFA, ALPA, AMFA, APFA, ASAP, ATSG, CAPA, IAM, IBT, ICAO, ICASS, IFALPA, NTSB, PAMA, TWU, SWAPA

FROM: Becky L. Hooey, Director
NASA Aviation Safety Reporting System

SUBJ: B737-800 Brakes Locked on Takeoff Roll

We recently received an ASRS report describing a safety concern that may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the following:

ASRS received a report from a B737-800 Captain describing a brake system anomaly. Reporter stated the First Officer, who was the flying pilot, experienced directional control issues on the takeoff roll and the Captain made the decision to reject the takeoff at approximately 135-140 KIAS. Post flight inspection by Maintenance reportedly revealed a "locked or fused" brake, and the Maintenance Technician commented that he had seen similar anomalies in the past on this aircraft type.

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Gary Brauch at (408) 541-2869 or email at gary.j.brauch@nasa.gov



Aviation Safety Reporting System
P.O. Box 189 | Moffett Field, CA | 94035-0189



ACN: 1684547

Time

Date: 201909

Local Time Of Day: 1201-1800

Place

Locale Reference.Airport: ZZZ.Airport

State Reference: US

Altitude.AGL.Single Value: 0

Environment

Flight Conditions: VMC

Aircraft 1

ATC / Advisory.Tower: ZZZ

Make Model Name: B737-800

Component 1

Aircraft Component: Brake System

Person 1

Function.Flight Crew: Pilot Not Flying

Function.Flight Crew: Captain

ASRS Report Number: 1684547

Events

Anomaly.Aircraft Equipment Problem: Critical

Detector.Person: Flight Crew

Result.General: Flight Cancelled / Delayed

Result.Flight Crew: Rejected Takeoff

Result.Flight Crew: Requested ATC Assistance / Clarification

Result.Air Traffic Control: Provided Assistance

Result.Aircraft: Aircraft Damaged

Narrative 1

This was our third leg. We also had a [deadheading] FO in the main cabin during this flight and event. I briefed all my FA's before the passengers boarded as I do each and every flight. FO did the walk around no issues noted. Logbook review noted #4 tire replaced on [date]. Later review of logbook while completing abort info noted the #2 brake assembly was replaced 10 days prior to this flight on [date]. All briefs, checklists, engine start, ramp taxi and ground taxi to Runway XXR was completely normal. Tower issued us takeoff clearance and I taxied the aircraft onto the centerline and gave [FO] the aircraft. It was his takeoff and leg to ZZZ1. He flew the leg to ZZZ2 to start the trip sequence and I flew the return leg to ZZZ.

Takeoff roll, engine power setting and acceleration all normal to 80 knot callout. Immediately after that the aircraft pulled/yawed to the left and [FO] returned the aircraft to runway centerline with right rudder. Wind was down the runway so this was somewhat unusual. Shortly after 100 knots the aircraft pulled/yawed even more violently than before to the left and this time I heard some kind of noise from the left side. My initial impression was a possible blown tire or some kind of mechanical malfunction based on the sound I heard. Our FO [deadheading] in main cabin told me afterward he felt the aircraft yaw two times and heard the same mechanical malfunction noise on the second pull/yaw as well. [FO] again used more right

rudder to realign the nose of the aircraft to the runway centerline and simultaneously stated out loud "Something is wrong." We were approximately midfield and 135 -140 knots and I elected to reject the takeoff based on the second more severe pull, sound and [FO]'s statement of the aircraft's condition. I announced "Abort, Abort, Abort" (as I said I might say on our first leg initial brief just because that is what I have used in my aviation career) and "My Aircraft."

The abort was instantaneous with the throttles pulled to idle. The ground spoilers deployed immediately and the autobrakes grabbed on just like a "max brake" landing. With very little correction runway centerline was maintained during the abort procedure and brake chatter started around 100 knots on the deceleration. I elected to override the brakes due to anti-skid cycling and manually stopped the aircraft on centerline around 8500 feet down the runway. [FO] contacted ZZZ Tower announcing our abort. After the aircraft was completely stopped I made a PA to both the FA's and passengers. This was my first high speed abort in my aviation career and I am sure for [FO] and the FA's as well. We asked Tower if they could see if we had a blown left tire. They said no. No blown tires, no hot brakes, no fluids and no damage to our aircraft [was reported].

After communicating with ZZZ OPS for a ramp/gate we [were] cleared to taxi to the ramp. The aircraft didn't move. Attempted to taxi again with no movement. I cycled the parking brake (which has NOT been applied during this entire event and never was until aircraft shutdown) just to be sure it was NOT engaged somehow. Informed Ground Control we would have to call for a tug and get maintenance assistance. ZZZ OPS was notified of our situation. During the 20 minute wait we contacted our Dispatcher about our rejected takeoff on Runway XXR. We didn't need any further assistance from him at that time. Maintenance arrived with ZZZ Maintenance Supervisor hooking up on the ground headset. He and I communicated for the next 30 minutes or more on the remainder of procedures they tried. First they confirmed no flat/blown tires, no hot brakes, no fluid leaks and no damage. They had me "pump" the brakes while brake technicians looked over our wheels. Second they hooked up a tug and tried to push the aircraft backward to either release the brakes or remove any debris from failed brakes. No movement. Then they tried to pull the aircraft forward. No movement. We "pumped" the brakes again and tried a second time with the tug. No movement. Supervisor said the brakes may have failed, fused, locked or been damaged somehow. He also stated we have had many similar situations with these particular brakes in the past. I explained to him what we felt and heard during the takeoff roll. He said he expected to find some kind of failure after they performed an inspection.

Supervisor and I communicated more about the AML write ups for the abort and the aircraft info that needed to be included. He was outstanding in communicating what was happening under our aircraft and later what they found with the #1 and #2 brakes. We rejected our takeoff between 135 and 140 knots, our weight was 153,000 LBS. and our fuel weight was 24,000 LBS.

I rejected the takeoff because of many quick decisions. A) The aircraft yawing/pulling left (harder the second time) with the unusual noise either a blown tire or mechanical failure, B) [FOs] direct comment "Something is wrong" justified the aircraft was unsafe to fly in my opinion and C) We were halfway down [the runway] approximately 15 knots below V1. [FO] and I were shown brakes #2 by the Maintenance personnel who already had the aircraft on jacks left side and wheel #2 off. There are 5 or 6 brake elements and the outer two could rotate but inner 3 or 4 damaged, fused or failed somehow. The mechanics suspected that brakes #1 were going to be the same. Later [name] told me that in fact brakes #1 were the same failed, fused or locked. We were called by ZZZ Chief Pilot on Duty who came down and debriefed with me. We contacted Crew Tracking and informed them we were finished for the night. [Deadheading] FO later contacted me about this entire rejected takeoff event. He confirmed to me exactly what I recalled during this abort and he told me he actually expected us to abort the takeoff based on what he felt and heard sitting back in main cabin. He also verified how professional our FAs performed and interacted with our passengers during the entire time. My thanks to [our] First Officer. He was on top of everything helping with decisions

and doing most of the communications.

I suspect that there was a brake failure on either or both of the left side brakes #1 or #2 during our takeoff roll based on the aircraft diversions from runway centerline in a very noticeable pull or yaw two different times as the aircraft accelerated. Also the noticeable noise that I heard from the left side of the aircraft during the second more pronounced aircraft pull/yaw. We occasionally get a rejected takeoff scenario in our [recurrent] training that may be given with a "blown tire scenario." I, personally, have never experienced a blown tire either. I believe we have many documented cases of blown tires with aircrews on both takeoff and landing. I also believe we have had 737 brake failures of many different kinds either during taxi or takeoff/landing rolls. We might need more discussion about the feel, sounds and expectations associated with both of these type of events because I believe most of our [Company] aircrew have never experienced either of these events as well.

Synopsis

B737-800 Captain reported an RTO due to a brake failure/seizure.