

CALLBACK

From NASA's Aviation Safety Reporting System



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Late Clearance Changes

Detailed planning and execution are important pillars that both enhance and help ensure flight safety. Accordingly, flight crews routinely program FMCs with complex flight plans and clearances, which are then studied and briefed with expectations of near perfect execution. A late clearance change can result in a variety of complications and threats to flight safety, but rarely is it the sole contributor to an incident. Rather, the late clearance change is a stimulus that creates additional priorities and triggers a new sequence of events that a flight crew must then manage in real time.

Late clearance changes occur often and during all phases of flight. Frequently, FMCs must be reprogrammed, and many types of deviations can result. Common problems stemming from a late clearance change include traffic conflicts, track and altitude deviations, unstable approaches, and go-arounds. Human factors that influence outcomes may also be present, such as increased workload and situational awareness.

This month, *CALLBACK* shares reports of late clearance changes that contributed to some less common, but sobering, incident types. Examine the interactions at play between the late changes and the situational dynamics of the moment. Note, also, the workload that each change created and the sequence of events that cultivated each reported incident.

Takeoff Turmoil

A B767 Captain described events surrounding a late clearance change for their assigned departure runway.

■ *Preflight and pushback with normal engine start was accomplished with no threat or stress. This was the second flight using [a new performance procedure] for both me and the First Officer (FO). Our planned runway was 25R at intersection Foxtrot. We received a taxi clearance for Runway 25L (Alpha hold short of Foxtrot). I asked for flaps 5, and we started moving. Then...Ground Control told us to taxi to [Runway] 25L, but to have the numbers ready for [Runway] 25R at Foxtrot intersection. I briefed the takeoff and called for the Before Takeoff Checklist. We both pointed to the flap indicator and responded, "5." The FO started reconfiguring for [Runway] 25L. He finished reconfiguration when we were holding short of Taxiway Foxtrot. We both verified the change of runway by using the Quick Reference*

Handbook (QRH) procedure for "Takeoff Runway or Performance Procedure Change." We then got clearance to hold short of [Runway] 25L. [Runway] 25L was a landing runway, and their intention was to have us take off after two landing aircraft. We got clearance to [line up and wait] with a reminder of aircraft on final. When we got the clearance for takeoff, I advanced the power levers and pushed NI. Immediately, we got the FLAPS Configure Warning. I reached quickly for the flap lever to verify it was in its detent. The flap lever was not in the detent, and I moved the flap lever to flaps 5 quickly. The configure warning silenced quickly, and we proceeded with a normal takeoff. Before rotation speed, I looked at the flap indicator to verify that it was 5 and then executed a normal takeoff and departure. In hindsight, I should have never reached for the flap lever. Instead, I should have initiated a rejected takeoff. When we got a runway change with our taxi clearance, I should have...stopped on the taxiway and accomplished the runway change procedure. The stress factor went from none to very high when we got the runway change and a short taxi with... new performance procedures on a very busy airport. How we both misread the flap indicator on the Before Takeoff Checklist, I have no idea. Maybe we were too occupied in our minds with the new performance procedure.

Arrival Confusion and Altitude Deviations

After expecting one runway, multiple runway changes led to multiple problems for this air carrier First Officer.

■ *Expecting...Runway 33L and approaching ROBUC, we were told to expect Runway 22L. We asked the Controller to confirm Runway 22L and again, read that back. This changed the routing and is also on a different arrival page. We configured the FMC for the new arrival and reviewed the plate.... Level at FL190, we were switched to the Approach Controller, who then said to expect Runway 33L. Again, we asked about the change back and confirmed the new runway. The radio was extremely busy, and it was difficult to tell the Controller about the change. The new Controller was not aware that we were previously given the ROBUC3 [arrival] to Runway 22L. We, again, changed the [FMC] for the new arrival routing and extended the speedbrake*

to meet the altitude restrictions. We also tried to convey our problem about the change to the Controller, but the radio was simply too busy. We crossed PROVI well above 11,000 feet and missed the hard restriction at [JAYNA] by 1,000 to 1,500 feet. [We were] unable to get relief due to the busy radio. We then met all of the following restrictions and landed uneventfully on Runway 33L. I believe the first Controller issued...Runway 22L in error. The ATIS was reporting...Runway 33L. That is...why we asked for confirmation. [It] seemed like a very late change, but not unheard of... The facts that the two arrivals have different routings and that they are on different approach plates make it difficult to change, especially when we were already inbound to ROBUC. The late change back to our original runway caused us a delay in descending, and the busy radios made it impossible to communicate our need for relief on the hard altitude at [JAYNA]. ATC must listen carefully to aircrew readback and confirm that the clearance is conveyed properly. Also, a descend via clearance is far better than step downs on an arrival, and the aircrew can plan better for the arrival. This small change from Runway 22L to Runway 33L on this arrival [led] to a heavy workload in the cockpit. Changes that late should be avoided.

Track Deviation and Controlled Flight Toward Terrain

A Caravan Captain received a late runway change when the preceding aircraft delayed on the runway. Events became rushed, and the situation deteriorated in IMC.

■ Everything was set up for [the ILS to Runway] 5R. While [I was] turning base, ...the preceding aircraft...had a problem and was delaying on the runway. ATC advised to descend from 4,000 feet to 3,000 feet and to expect the [Runway] 5L localizer. I started a descent to 3,000 feet and reset the approach in the radios to [Runway] 5L. I was rushed to change and set up the approach. I was given a late turn to intercept and overshot the localizer. That was followed by a turn to 080 to intercept, ...3,000 feet until established, clearance for the approach, and [a frequency] switch to Tower. ... I corrected back to intercept the localizer, checked in with Tower, and was cleared to land. Intercepting the localizer, I was ...still above 3,000 feet descending. I mistook what I later identified as the Vertical Speed Indicator (VSI) bug (that was about -450 FPM) as being slightly above glideslope, and I continued what I thought was a slightly above the glideslope descent. I broke out about the same time Tower said, "We have a low altitude alert, check your altitude." I stopped the descent and could see I was lower than the glideslope, as the field was further ahead. Tower

asked me to confirm my altitude as 1,780 feet, and I did. I then noticed the green diamond bug had appeared and realized that I had mistaken the [VSI] for the glideslope indicator. I... joined the real glideslope and landed.

When they gave the late change to Runway 5L, I should have asked for a box around until I had everything set up. My acceptance left me rushing, leading to mistakes.

Misidentifying the Landing Runway

After the Captain accepted a late runway change, this First Officer turned toward a runway that had not been assigned.

■ We were cleared for a visual approach to Runway 12L. Approaching the marker, ATC asked if we could sidestep and land on Runway 12R. I was the Pilot Flying (PF). I looked up and mistakenly looked at Runway 11 and hesitated to respond because the PAPI showed 4 white lights. The Captain responded that we can sidestep and proceeded, heads down, to input the localizer frequency for the right runway. I immediately disconnected the automation to fly the aircraft onto profile, not realizing I was...looking at the wrong runway. ... I was fixated on Runway 11, trying to get on profile. ... ATC advised we were turning for Runway 11 and instructed us to correct course toward Runway 12R. Upon the instruction, I noticed the third runway and realized, at that point, the error I had made. I corrected course immediately, and we landed on [Runway] 12R.

Landing Without a Clearance

This B737 Captain described a late runway change and other events that led to landing without landing clearance.

■ On arrival into Miami, the FO briefed Runway 26L. Miami changed the airport around at the last minute to land on [Runway] 8L. I set up the navigation radios and briefed the approach while the FO flew and configured the airplane. The [Runway] 8L localizer did not identify, so the FO switched to LNAV under VFR conditions. ... Miami had not switched the localizer from the [Runway] 26R approach to [Runway] 8L. ... [We got a] late switch to Tower, and I dialed in the incorrect frequency. ... [We] checked in, and we both believed we received clearance to land. After landing, the FO realized we were on the wrong frequency and checked in with Tower.

Due to compressed time because of the runway change with the...wrong localizer identifier, I rushed...and dialed in the wrong frequency. After attempting to check in with Tower, I assumed Tower issued clearance to land when, in reality, we were on the wrong frequency.

ASRS Alerts Issued in August 2020	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	1
Airport Facility or Procedure	5
ATC Equipment or Procedure	5
TOTAL	11

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August 2020 Report Intake	
Air Carrier/Air Taxi Pilots	2,719
General Aviation Pilots	1,370
Flight Attendants	408
Controllers	255
Military/Other	159
Mechanics	153
Dispatchers	108
TOTAL	5,172