

CALLBACK

From NASA's Aviation Safety Reporting System



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Perils in Pushback Communications

Effective communication between a flight crew and ground crew is critical to safety during pushback operations. Good pushback communication is accomplished through the use of specific, well-chosen words, phrases, and hand signals that are required at precise times or events by flight and ground crews. Standard Operating Procedures (SOPs) are instituted to formalize communications and actions necessary to mitigate risk.

The pushback event can be busy, rife with hazards, and potentially unpredictable. Aircraft interphone systems or wireless headsets can fail. Surrounding airport activity can produce a flurry of external hazards to be contained. At the same time, human factors are often involved in the communication problems between flight and ground crews. Human factors may include distraction, situational awareness, time pressure, workload, confusion, or fatigue.

This month, *CALLBACK* presents reported incidents that expose communication problems between flight crews and ground crews during pushback operations. Underlying themes include training issues, language barriers, noncompliance with SOPs by either flight or ground crew, and relaxations in judgement. We invite you to contemplate the human factors and interrelated events as you engage in the complexity of each narrative.

Temporarily Stranded

This B737 Captain was stranded when a push crew attempted to solve a ramp traffic jam. Poor procedural compliance with no communication left the flight crew isolated and vulnerable. Fortunately, no damage occurred.

■ *The flight had been cleared to push from [gate] X by Ramp Tower, but with instructions to give way to an inbound Embraer. I communicated to the push crew that the brakes were released, but to give way to the inbound Embraer. The tug driver had a heavy accent that was difficult to understand, but he did reply that he understood the instructions. After sitting there for several minutes, the First Officer (FO) reported that he thought he had seen our push crew run to gate Y to our right to receive an inbound 737 that had been waiting at the top of the [lead in] line. That plane needed to clear the alley to allow the inbound Embraer to pass. I then called several times to the tug*

driver but received no response. The FO and I concluded that the driver had also left without telling us. I decided to reset the parking brake. The FO called Ramp Tower and let them know what was going on. As the FO and I were discussing the situation and getting ready to call Ops, the push crew apparently returned, as I felt a slight movement as if the tug had been put into gear. There had been no further communication from the tug driver. I communicated to the driver that the parking brake was set and that we needed to get clearance to push again, which he acknowledged. Fortunately, the driver did not try to push the aircraft while the brake was set. The pushback was completed without further issue. Due to the...challenge with the tug driver's accent, I was not able to ascertain if the driver actually left the tug during this event.

Short Pushes and Procedural Discipline

This A319 First Officer reported how confusing communication between the flight crew and ground crew and distraction of another aircraft resulted in multiple hazards during pushback.

■ *During pushback from gate X, Ground told Air Carrier X that normally our company stops the push much shorter. Air Carrier X was parked behind us and off our right wing; a shorter push [for us] would have allowed them space to get by us. Ground then called and asked if we had communication access to our push crew, to which I answered yes. At this point, the push crew had us stopped at the point they intended to end the push. Shortly after that, Ground asked us to push deeper, and I relayed to the Captain, who relayed to the push crew. In piecing this together after the fact (since I was on Ramp and the Captain on intercom with the push crew), we believe that right before the request from the Captain to the ground crew to continue the push deeper, the ground crew said, "Set brakes." The Captain did not give the "brakes set, pressure normal" verbal to the push crew, but...asked them to continue the push deeper. They pushed us a few more feet and then Ground called me and said to just stay where we were, which I passed along to the Captain and he passed along to the ground crew. At some point after that, the Captain said to start both engines. I*

started the first [engine], and before...the second start, our attention was diverted to Air Carrier X squeezing through a tight spot off our right wing. The Captain released the crew to disconnect, we received a salute, and the second engine was started. Toward the end of the start, the aircraft started rolling forward, perhaps a few feet at most. We noticed the movement, and the Captain immediately brought us to a stop and set the parking brake. The ground crew was well clear of the aircraft during movement.

I Brake for Ground Crews

This Embraer First Officer related how lack of communication with the ground crew and SOP noncompliance became a life-threatening hazard for the ground crew.

■ During pushback, ... the new ATIS stated conditions codes 5,5,5 and 100% wet for our departure runway. The performance data indicated dry conditions, so I contacted Operations during pushback to have them change the condition code to wet. I also started the Number 1 Engine, then requested new performance data through ACARS. As the ground crew stopped the pushback, the new performance data printed out, and I began inputting the data into the FMS. Simultaneously, the Captain conducted a control check as I monitored and called, "Flaps 2, taxi," to begin movement. I looked at the EICAS and verified steering was disengaged and the flaps were set to 2. I looked up and didn't see any ground crews. I then said, "Flaps set, steering engaged." The Captain then began to taxi forward. That's when I noticed the tug and ground crews directly under the airplane walking back. I immediately yelled, "STOP, STOP, STOP," and applied brakes. The aircraft moved forward about 3 to 5 feet before coming to a complete stop with equipment and personnel directly under the aircraft. The Captain acknowledged and set the parking brake. No ground personnel or equipment contacted the airplane. We then received a salute from ground personnel as they departed the area of operations. The Captain and I discussed the situation and continued the rest of the flight without incident.

This event occurred early in the morning when both crew members were tired. Airfield conditions called for new performance data which caused a slight distraction for both crew members. The Captain has just over 80 hours as Pilot in Command (PIC) following a long break from the Company. Distraction with the performance data, inexperience, and lack of situational awareness caused the Captain to lose focus and forget to wait for ground personnel to leave the area before conducting the control check and calling for taxi. As the First Officer, I should have been more

situationally aware of what the Captain was doing and of the location of ground personnel.

Abandoned on the Apron

This B767 Captain reported non-standard communication and SOP noncompliance during pushback. The aircrew was left without additional guidance, and the aircraft was made vulnerable.

■ The initial contact from the push crew was not SOP. After I received push clearance, I said, "Cleared to push, east taxi." The Ground response was, "Cleared to push." After initial push, Ramp instructed us to push deep abeam Taxiway XX. I vocalized exactly those instructions and my ground crew response was yes. I repeated the instructions and received no reply. We suspected the push crew was new and training, as well as the Marshaller. We pushed abeam Taxiway XX, and the ground crew never vocalized a response. Our ground crew disconnected the aircraft and left without any required commands such as "set brakes," "cleared to start engines," or "disconnecting headset." I held the brakes, and the aircraft did not roll forward. I flashed my taxi light twice and received no reaction from the ground crew or Marshaller. I tried again and used the ground call horn twice. No result. We tried to use hand signals to other Marshallsers to signal that we couldn't hear. They waved and turned around. At this time, I set the parking brake. I asked the First Officer to contact...Ramp to clear our aircraft for engine start. I asked the Relief Pilot to call... Operations and relay information to our ground crew about the noncompliance. Operations reported that they were unable to reach them but would forward the information.

Training and the Least of All Evils

This B767 Captain diagnosed several dangerous hazards prior to pushback. Although not on par with SOP safety, an alternate technique was employed to mitigate the risk.

■ On my flight, the ground crew obviously had a poor understanding of the English language. The ground crew tried their best, but they had a weak understanding of our ground handling procedures, [which were further] complicated by the weak knowledge of the English language. These two problems combined to make for an incredibly dangerous situation! I was unable to comply with Ground Control's push instructions because I had doubt that the ground handler understood the instructions. Therefore, I elected to hold the push until I was assured that no other aircraft were close by. The ground crew did not follow SOP for push at all. They were very nice folks, but they desperately need training to avoid a ground mishap.

ASRS Alerts Issued in October 2022	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	4
Airport Facility or Procedure	5
ATC Equipment or Procedure	3
TOTAL	12

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 A Monthly Safety
 Newsletter from
The NASA
 Aviation Safety
 Reporting System
 P.O. Box 189
 Moffett Field, CA
 94035-0189
<https://asrs.arc.nasa.gov>

October 2022 Report Intake	
Air Carrier/Air Taxi Pilots	4,677
General Aviation Pilots	1,547
Flight Attendants	1,070
Controllers	427
Mechanics	228
Military/Other	218
Dispatchers	135
TOTAL	8,302