CALLBACK

From NASA's Aviation Safety Reporting System

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DISTRACTIONS in the Cockpit

Since the dawn of aviation safety, much has been researched and compiled by psychologists and aviation safety experts regarding Human Factors in aviation. Broadly, the discipline embraces human perceptions, processes, responses, and certain environmental conditions that affect humans and influence outcomes of incidents and accidents. Reports submitted to ASRS reveal Human Factors that include communication breakdown, confusion, distraction, fatigue, human-machine interface, physiological, situational awareness, time pressure, training/qualification, troubleshooting, and workload.

In this edition of *CALLBACK*, we reflect on the legacy of Dr. Robert Key Dismukes of NASA Ames Research Center. Dr. Dismukes and his colleagues at NASA have conducted research examining how skilled operators manage concurrent tasks, errors to which they are vulnerable, and strategies for reducing vulnerability. Included among his many contributions to aviation safety is the ASRS DirectLine publication titled *Cockpit Interruptions and Distractions*[1], which offers universal guidance to pilots for reducing vulnerability to interruptions and distractions.

This month, focusing on distractions, *CALLBACK* begins an informal look at Human Factors evident in reports that we receive. Multiple Human Factors often play party to a given incident, and the narratives herein may present more than one. Our intent is to feature each of the others in a future *CALLBACK*. Ponder the distractions, but don't be distracted.

Distracted, but Not Distressed

Battling multiple Human Factors while handling a medical emergency, this Captain was showered with distractions.

■ *Just after…the flight attendants (FAs)…had secured the cabin as requested and were seated due to expected turbulence on the arrival, I was notified we had a medical emergency in progress.… I informed the First Officer (FO) and Pilot Flying (PF) of the situation and asked him to take COMM 1, inform ATC, and do his best to avoid weather and turbulence, since we would now have people up in the cabin during the descent.… He acknowledged, and I began the STAT MD [radio] procedure and coordination with the FAs. Unfortunately, the FAs were having a rough time getting their medical headset connected and finding a doctor onboard. The passenger was unconscious with a very low breath and heart rate. By the time the FAs were able to respond to STAT MD,…a new [STAT MD radio] patch had to be made.… The FA could not communicate on the headset and decided to put the headset on the doctor assisting.*

This caused a complete lock-up of the COMM due to the doctor…not knowing our procedures and keeping the transmit button depressed, causing a hot microphone. STAT MD was trying to give us instructions but was inaudible due to the blocked frequency. After repeated attempts of calling the FAs over the intercom and…PA announcements, the doctor was…removed from the headset, so we could make a plan…with STAT MD and Dispatch. I immediately made contact with the FAs and requested to not put the doctor on the headset again.… I could relay if needed.… At that point, I heard the autopilot disconnect and felt a semi-abrupt pitch-up.… Immediately, I observed the FO hand-flying the aircraft at a 2,000 FPM climb through FL360 with power at idle and speedbrakes deployed. Airspeed was close to overspeed.… I made a callout…and inquired what was going on. The FO stated that he had an updraft and was preventing an overspeed. I aggressively called for him to lower the nose, observing the airspeed decreasing rapidly and the engines…near idle. The FO immediately lowered the nose and regained control of the aircraft.… He reconnected the autopilot, and I went back to dealing with the emergency medical issue and inquired of the FO what happened. He was descending to FL240 from FL400 when he said we hit an updraft. We were in moderate turbulence the entire time, but I did not observe much airspeed fluctuation.… I notified Center of the climb during the descent due to an updraft.… We were given another crossing restriction.

Now back in the green, I was trying to get landing data and ATIS for a low visibility approach.… We were experiencing difficulties due to ACARS NO COMM through the weather.… At that point I observed the FO once again near overspeed and made the callout. He corrected speed and was complaining it was the aircraft. Trying to figure out what was going on, I noted the descent [speed] had been set to 320 knots. I immediately corrected the setting to 280 (turbulent penetration speed) and explained you can't set an airspeed that high and not expect an overspeed, especially since we had been in moderate turbulence the entire time. I asked ATC

to waive the next crossing restriction so we could slow,…and we continued safely.… While debriefing the event, we talked about task saturation and what had happened.…

Deviations From a Routine Flow

This air carrier Captain received a surprise on the takeoff roll after several distractions during pushback and taxi-out.

■ *After pushback, while starting the second engine, I noticed…the push crew walking away from the aircraft back to the gate. I did not get a salute, and I could not see anyone carrying the gear pin. I verbalized this to the FO and directed him to call [Company] Operations and inform them of the situation, and that I needed a salute and a visual of the pin from the push crew. After several minutes, someone came back out, retrieved the pin from the floor of the tug, and walked toward the aircraft. Once I got a visual, I flashed the nose light and got a salute. Prior to that, we waited. In the meantime, I called for a review of the instrument data and bugs items, but before that was completed, we got the salute, so we continued with the control checks. However, I may have missed the flaps call. I cannot recall. Nevertheless, we continued and taxied out as usual and went through all the checklist items. When it came to flaps, I remember putting my hand on the lever and called, "One, green light," but failed to look long enough at the actual lever position or flap indicator and notice the flaps were not in the correct position.*

Once on the runway and cleared for takeoff, after 40% N1, I pressed the TOGA switch, and immediately heard the configuration warning horn. I retarded the throttles. We both quickly recognized the problem, and the FO positioned the flaps to the correct position.… Rather than continuing the takeoff from that point, I elected to taxi forward to the next runway exit and exit the runway. I treated the situation as a rejected takeoff below 80 knots, all the while informing… Tower of our intentions. Once clear, we discussed the error, ran a complete Before Takeoff Checklist for a second time, got…back in the green, and were soon back on the runway and cleared for an uneventful takeoff.…

We simply got distracted by the non-standard push crew actions consequent delay and didn't trap the error. We moved unexpectedly out of the green. Expectation bias played a hand. The normal sequenced flow got interrupted. I expected that once the ground crew was clear of the aircraft and I had a salute, I would call for appropriate flaps and control check. Instead of the usual, we (I) got focused on getting the crew back out to see the pin and a confirmation salute. After I got what I wanted, I failed to initiate a definitive restart, and I allowed an [ambiguous] continuation - sort of just picking up where we left off - leading to an error. An abundance of non-standard events happens on the line. We should remind ourselves often that things won't be perfect, regardless of effort, so we must remain vigilant and dedicated to trapping errors as they come.

COVID-19 in Consideration

The Captain, flight attendants, and customer service representative (CSR) all spent excessive time urging a few passengers to practice civility, consider public safety, and comply with airline policy. COVID-19 aside, contemplate the possible aviation consequences from these distractions.

■ *During the initial boarding phase, the lead FA brought to my attention a threat to the safety of the flight. The threat was that she noticed several passengers who were not covering their noses and mouths with a face covering. FAs counseled each passenger boarding without their masks on properly, [explaining] the airline's policy that all travelers are required to wear face coverings during their entire flight. As the Captain, I made three public address announcements (PAs): at the beginning, middle, and end of the boarding process explaining the airline policy.*

The CSR was initially alerted to this health threat and stated that they counseled customers who were traveling together in a large group of about a dozen. He stated that he made PAs [during] boarding announcing the face covering policy. At the end of the boarding process, the CSR again repeated the airline's mask policy and then closed door 1L. Prior to pushback, the FAs alerted me that they again had to tell a few members of the same group to wear their masks. Later one of the FAs stated that some of the passengers from the large group were displaying eating and drinking motions while specifically staring at the FA. While on the ground, [during] each of the multiple incidents that members of the group were told to wear their masks properly, they complied. The lead FA contacted me after initial level off for cruise flight. She requested that I make another PA about the airline's face covering policy because multiple members of the same group were again not wearing their masks to cover their noses and mouths. I made a fourth PA repeating the airline's policy and explained that the masks were mandatory for public health reasons. I also explained that they may be putting the safety of the flight in jeopardy. I then contacted Dispatch to alert the company of the threat to the safety of the flight. Via ACARS the Dispatcher issued instructions to mitigate the threat. The lead FA subsequently informed me that, after my fourth PA, all passengers complied with the face covering policy.

1. *https://asrs.arc.nasa.gov/publications/directline/dl10_distract.htm*

ASRS Alerts Issued in November 2020	
Subject of Alert	**No. of Alerts**
Airport Facility or Procedure	10
ATC Equipment or Procedure	8
Hazard to Flight	1
Other	5
TOTAL	**24**

492

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November 2020 Report Intake	
Air Carrier/Air Taxi Pilots	2,803
General Aviation Pilots	1,208
Flight Attendants	402
Mechanics	218
Military/Other	212
Controllers	181
Dispatchers	106
UAS	1
TOTAL	**5,131**