

CALLBACK

From NASA's Aviation Safety Reporting System



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The Dog Days of Summer

Flying during the summer months can be breathtaking, but it can also present dangerous challenges. High temperatures, water vapor, and Coriolis produce weather phenomena that demand respect. Together or separately, that weather and the high temperatures permeate most flight operations and affect equipment and humans in various detrimental ways.

Rising temperatures and humidity reduce air density, thereby decreasing almost every measure of aircraft performance. Thunderstorms and associated rain, turbulence, strong and gusty winds, hail, windshear, and microburst activity can all be deadly. Human factors may be similarly affected, tending toward decreased acumen and lower efficacy. Moreover, threats can cascade with increasing synergy, as one may impede corrective action for another. In short, the dog days of summer demand keen vigilance and flight deck discipline.

This month, *CALLBACK* features reported incidents that provide insight into a few facets of hot weather operations. Note the threats and their synergy; contemplate crew actions, other possible mitigations, and any system weaknesses.

Part 91 – The Great Escape

This corporate, small aircraft pilot got more than he or she bargained for while navigating a line of thunderstorms.

■ *While flying...to Knoxville, Jacksonville Center rerouted me to NRAVN intersection, then to CABLO to navigate through a line of thunderstorms. This was the suggested route by one of the...Center Controllers. Other aircraft... higher than us were making it through, despite [the] hole we were trying to go through closing up north of TERES intersection. We were at FL280, and once entering IMC, we encountered an updraft that climbed us to 28,125 MSL, then instantly a downdraft descended us to 26,975 MSL over...approximately one minute.... We also encountered severe turbulence, and I immediately made a 180 [degree] turn southbound to heading 180 while trying to maintain... FL270. The Controller at Jacksonville Center was extremely busy, and controlling the airplane was my number one priority. Once established on a 180 heading and level... at FL270, I was waiting for an opportunity to...let the Controller know what I encountered. However, before I could do that, the Controller asked me what I was doing and what I had encountered. I explained...that I had*

experienced an updraft, downdraft, severe turbulence, and severe precipitation, and needed to get out of the situation. He told me to fly heading 180 and gave me a block altitude from FL270 to FL280 upon my request. I climbed back up to FL280 on a 180 heading and quickly exited the IMC. Once stable again in VMC, the Controller asked if we had any aircraft damage or injuries.... I responded, "Negative" to both. He then asked our intentions, and I said I would like to fly [routing]...north to Knoxville. He granted this permission and did a great job assisting us. The rest of the flight was uneventful.... The next time, I will be much more cautious flying in the vicinity of thunderstorms and definitively find a better course than in the vicinity of thunderstorms, despite other aircraft ahead of me making it through.

Part 121 – Could It Get Any Worse?

An A321 Flight Attendant (FA) chronicles significant effects and concerns of high temperatures combined with inadequate air conditioning (A/C) during a stressful departure scenario.

■ *Prior to aircraft arrival, the Captain informed the crew that there was an issue with the air conditioning on the plane. It was 105 degrees...this particular day. We began boarding with very limited airflow in the cabin, and the temperature began to increase to a very uncomfortable level. We closed the boarding door, and before the cockpit door was closed, the Captain had informed the [Flight Attendant]...that we might have an issue with our tires. While waiting for maintenance to come out, the temperature in the cabin began getting even worse. Passengers were vocal about their discomfort. Maintenance took about 40 minutes to tell us that we would need to deplane. During that time, the Captain made one announcement to passengers letting them know what was happening. The Captain claimed that he informed Tower we would need to deplane and needed an agent to bring the jet-bridge back to the plane. That took an additional 30 minutes to get an agent to open the door. During this time, passengers began getting impatient (rightfully so), and a few passengers threatened to open emergency exits. Others started telling other passengers to call 911 for help. Once the door was finally opened, the agent refused to let any passengers off until she took the temperature in the cabin. Drenched in sweat,*

we were then asked to rush to a new gate to board another plane, only to wait an additional 40 minutes for catering. We also had a few elderly passengers claiming they were close to losing consciousness because of the heat. We also had a kid sick from the heat.

We have to stop boarding planes that don't have a functioning APU or proper A/C. It's so inhumane and ridiculous that we even do it in the first place. Something very bad is going to happen to a passenger one day due to these conditions. Captains need to refuse these planes, and they need to be fixed.

Part 121 – Critical Summer Systems Failures

This air carrier Captain battled high temperatures, external factors, and interrelated systems failures that produced a dangerous departure environment for everyone onboard.

■ After pushing off the gate, we positioned on the ramp waiting for a controlled departure time.... We had the APU and Number 2 Engine running. The APU FAULT light illuminated, and the APU shut down. We complied with the QRH and attempted another start unsuccessfully. We contacted Maintenance Control for guidance and possible MEL relief. Maintenance Control instructed another restart, which was also unsuccessful, and we required an inspection of the tail cone area before applying the MEL. At this point, we received a call from the FA to inform us it was getting hot in the cabin. It was 115 degrees Fahrenheit outside, and the loss of the APU severely affected our ability to cool the cabin. We requested a gate return with...Station Operations (Ops) and were informed that gate X was occupied and was the only available gate. We received another call from the FA indicating that it was extremely hot now in the cabin. Our flight deck gauge was indicating 98 degrees. We again requested a gate from Ops and were told we must wait until the aircraft at gate X pushed. The FAs served water, and then we repositioned on the ramp in order to push up the thrust lever on the Number 2 Engine in order to increase airflow of the conditioned air. The Number 2 Engine oil temperature immediately increased into the amber range, and we reduced thrust back to idle to maintain the engine within limits. I called the Operations Control and spoke to the chief pilot on call to convey that this was a dangerous situation and unacceptable. We needed a gate ASAP, as we had no way to cool the cabin below 98 degrees. The next call from the FA informed us that several passengers had passed out, unconscious. We again contacted Ops and informed them that we now had a medical emergency on our aircraft with several unconscious passengers. We were told they

were attempting to get us a gate. We pleaded for any gate, including other airline gates. We were off the gate for 68 minutes by the time we parked back at the gate.

This situation is unacceptable and dangerous. It is not a stretch to say that we could have had a fatality.... The urgency to find us a gate in this circumstance was wholly inadequate. Station Ops...is not prepared for a contingency like this, and that again, is both dangerous and unacceptable.

Part 121 – Air Traffic Control Issues

A seasoned Controller shares ATC distractions, workload, time pressure, and safety concerns frequently precipitated by some of summer's most dangerous atmospheric hazards.

■ I was working ZZZ and North Arrival. I had been on position for about 20 minutes, and there was weather on the scope when I sat down. I was briefed that there had been some deviations, but just light chop. An area of heavy precipitation, which had been west of ZZZ1, eventually moved onto the final, but aircraft were still taking the approach and landing. Eventually we got some Low-Level Wind Shear (LLWS) alerts, which I issued.... In a short time, [the alerts] were followed by several go-arounds and a microburst alert, which I also issued to describe precipitation along the final. Aircraft X said he needed to discontinue the approach, so I issued a 220 heading and 5,000 feet, since Departure was getting a go-around in front of him and I could not turn him left or right due to airspace constraints. I yelled to Departure and shipped him [to Departure]. In the meantime, every...aircraft on final clogged up the frequency saying they also would not take the approach. At some point, Aircraft X said that he encountered almost unrecoverable conditions and had climbed to nearly 8,000 feet.

We need to have a much better plan of action when there is weather in the area. Our current method of giving the approach until aircraft refuse to take it while informing them of the weather will only result in this kind of situation in the future, which I find unacceptable. There was already a ground delay program in place when this happened, but there had been no miles in trail [issued], and I was oversaturated with aircraft. In the future, I will make a bigger point to not run aircraft through a final [that presents] heavy precipitation even if...they are below the [cloud] layer and willing to take [the approach]. Also, I think pilots need to be more vocal about saying what they see outside.... Often times, we have no way of knowing what the weather is really like outside.

Learn More About ASRS [UAS Safety Reporting](#)

ASRS Alerts Issued in May 2024	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	5
Airport Facility or Procedure	9
ATC Equipment or Procedure	10
Maintenance Procedure	1
Other	4
TOTAL	29

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May 2024 Report Intake	
Air Carrier/Air Taxi Pilots	6,510
Flight Attendants	1,839
General Aviation Pilots	1,605
Military/Other	921
Mechanics	432
Controllers	372
Dispatchers	231
TOTAL	11,910