

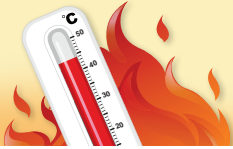
CALLBACK

From NASA's Aviation Safety Reporting System



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Hot Weather Hazards

Summer has returned once again, replete with its hot weather conditions that perennially challenge all aviators and many others in related aviation disciplines.

The adverse effects of hot weather hazards can be manifold and far reaching on any given flight. High temperatures may hamper human performance during an incident and render the human response less than optimum. High temperatures also generally degrade aircraft performance, particularly at high altitudes, where density altitude becomes critical. Engines and airfoils achieve less. Takeoff, climb, cruise, landing, and go-around performance are all affected. Threatening seasonal weather often surfaces as turbulence, thunderstorms, lightning, hail, icing, windshear, microburst activity, heavy precipitation, and reduced visibility, to name a few. Wildfires further complicate visibility as well as operations, and their fast-changing temporary flight restrictions make accurate and timely dissemination difficult. In short, aviators and supporting casts must be proficient and prepared to face a multitude of complex hot weather hazards.

This month, *CALLBACK* shares reported incidents featuring hot weather hazards and phenomena. Enjoy the narratives and crew responses, and savor the wisdom they reveal.

The Green Half-Mile

This C152 pilot experienced a common assortment of hazardous, hot weather factors that combined to produce an insidious, but predictable situation and potential disaster.

■ *After landing at MRC for fuel, we elected to take off using the grass runway. The winds had been relatively calm, and despite training numerous soft field takeoffs and landings for private and commercial ratings, we had never actually used a grass runway. We spoke with some of the regulars in the FBO, who said that the turf condition was good, and they provided some tips for using that particular field. We had two pilots in the aircraft, which put the C152 within 3 pounds of maximum gross weight when full of fuel. We back-taxed the length of the field to reposition and test the smoothness of the turf. At the end, we turned a 180 and conducted a rolling takeoff without coming to a stop.*

The plane reached rotation speed after about 1,000 feet (1,800 feet available), but on climbout, it became apparent that we would not clear the power lines and trees on the far

side of the airport. With no more power to give, the aircraft already in clean configuration, and the stall horn starting to sound, I cut power and put the plane back on the runway, resulting in the plane coming to a stop in the grass after the end of the turf runway across Runway 24 and the taxiway. There was no damage to the plane or facility, or any injuries, but we were definitely two shaken up pilots after a close call.

A combination of factors contributed, most of which were related to operating at maximum gross weight on a hot summer day. Application of soft field considerations (not coming to a stop) over short field considerations (max power before releasing brakes) reduced the amount of available runway to less than full length.

The performance charts indicate we needed a total of 2,020 feet to clear a 50-foot obstacle with approximately 1,000 feet of ground roll. We had 1,800 feet of runway plus another 900 to 1,000 feet of clear climbout space before the first obstacle, which should have been more than adequate, but was not enough on that day.

We suspect the combination of flying a 40-year-old airplane with pilots relatively new to the C152 also significantly reduced aircraft performance from the best-case numbers in the published charts. The biggest lesson learned is that when close to the margins on gross weight and high density altitude, always take the longest runway winds will allow.

Lightning Up the Sky

A corporate jet Captain details a shocking high-altitude hazard experienced during a routine summer flight and the mitigating actions accomplished to contain the situation.

■ *On a flight planned from ZZZ to ZZZ1 we were struck by lightning east of El Paso, Texas while cruising at FL400 along J74 with a clearance to deviate for weather. At the time we were struck by lightning, we were passing between two cells that were approximately 20 nautical miles north and south of us, and we had been flying for several minutes inside a thin stratiform layer between two cells. The air was very smooth, and our radar showed no weather of consequence beyond the two cells. The first indication that we had been struck by lightning...was a loud noise (bang), and the outer layer of the copilot's windshield was completely fractured with visible burn marks. We notified*

ATC and requested a descent to 10,000 feet, and as soon as we were cleared, we began a rapid descent while manually controlling the cabin pressure to reduce the differential pressure per the QRH procedure. ... Reaching 10,000 feet with the cabin differential reduced to the minimum possible and the airspeed [slowed] to 250 KIAS, we elected to continue to ZZZ1 where there is a factory service center. We were cleared to proceed to ZZZ1 with...occasional vectors to avoid high terrain and landed without [further] incident.

Those Hazy Days of Summer

Flying a DA40 Diamond Star, this Flight Instructor was reminded of some obvious, but subtle and serious flight hazards during the hot wildfire season.

■ It was a smoky day with decent horizontal visibility and a milky white sky. We were on flight following, flying east, and we saw...traffic (not with flight following) on our traffic system flying parallel to us on our left, also eastbound. We wanted to turn north, so we decided to make a right 270-degree [turn] to the north in order to pass well behind that traffic. ... Just as we finished the turn, we realized the traffic had turned right and was coming toward us. Out of the haze, there appeared to be a Mooney-like aircraft. Its bank, color, and convergence angle blended perfectly with the white haze. Even though our traffic system said they were 500 feet above, it looked closer than that, so I began a rapid descent and was soon clear of the conflict. The Controller was busy and did not give the traffic alert until just before I saw them out of the haze. Conclusion: Be very careful of traffic during wildfire smoke, especially white aircraft on converging courses. Expect the unexpected when it comes to movement of other traffic, and do not rely on ATC advisories.

A Rough Day at the Office

This B737-800 pilot experienced several hot weather hazards during the latter stages of one flight. Threats multiplied, and the situation deteriorated significantly before it improved.

■ Our flight to PHX had been uneventful until we started the EAGUL SIX arrival. Our radar started painting a substantial amount of thunderstorm activity between us and the airport. The thunderstorm activity ran basically south to north, east of the field by about 10 miles. ATC rerouted us to the north on a different arrival. ... It was the DSERT TWO, but...thunderstorms prevented us from...doing this arrival.

We deviated around the storms, following the aircraft in front of us. Once on the backside of the weather, we noticed a substantial amount of dust being kicked up by strong low-level winds. Even at 14,000 feet, we could see the dust

moving rapidly to the west. ATC advised us that the previous aircraft had reported moderate turbulence ahead. In less than 30 seconds, we experienced...a 45-knot increase [in airspeed] and altitude deviations of 200 feet.

As we followed the line of planes to the airport, the ride did not improve, with wild fluctuations in speed, pitch, and bank. The autopilot kicked off a few times. As we were on downwind for Runway 8, we...could not see the airport due to the dust. We were in the clear, but the dust was obscuring most of the ground below about 1,000 feet. ... Despite having a strong wind from the west at our altitude, you could clearly see the dust moving rapidly from the east below us.

Shortly after that, ATC told us they were changing the airport around due to the preceding 4 aircraft going around. We turned around and got set up on a downwind for Runway 26, all the while still getting a very rough ride. As we passed over the city, we flew beyond the dust clouds and the ride became smooth. Turning base, we could make out the runway. We noticed, however, that the dust front was between us and the runway. We discussed go around procedures, recognizing that landing might not be possible.

I configured the airplane early so we could be stable and recognize any adverse trends as soon as possible. Just prior to the dust, we got the beginning of a microburst. Power was near idle, airspeed increased to almost overspeeding the flaps, and an increase of altitude put us way above the glideslope. We could not have landed if we had to. We called for the go-around, getting a very rough ride.

We told ATC that we were diverting to our alternate of ZZZ. They advised us that it was closed. This was news to us, as we had not received any word from Dispatch that our alternate was no longer viable. We asked ATC what the nearest open airport was. After a minute...he told us ZZZ1 and one other. ... ZZZ1 was the closest but still 234 miles away with weather between us. We put ZZZ1 in the FMS, and it showed us arriving with less than 2,000 pounds of fuel. We declared minimum fuel and told ATC that after deviating around the storms, our route to ZZZ1 would be direct. We notified Dispatch of our diversion and FOB. We climbed fairly high for a short route to save fuel. The Captain did a flaps 15 landing, again to use less fuel. We landed with about 2,700 pounds of fuel on board.

We got painted into a corner due to the weather rapidly deteriorating at both our destination and alternate at the same time. ... My only question is why did we not get any notification from Dispatch about our alternate?... If we had had that one piece of information, we would not have tried to land in PHX. We would have gone somewhere else sooner and would not have been in such a low fuel situation.

ASRS Alerts Issued in June 2022	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	10
Airport Facility or Procedure	4
ATC Equipment or Procedure	5
TOTAL	19

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June 2022 Report Intake	
Air Carrier/Air Taxi Pilots	4,963
General Aviation Pilots	1,451
Flight Attendants	983
Controllers	430
Military/Other	239
Mechanics	206
Dispatchers	189
TOTAL	8,461