

McLean, 8 July 2021

Joe:

I started writing a concise (ha!) description of the Manteo event, and ended up writing a mini-novel. I got carried away. Sorry!

It was the third takeoff of the day. My non-pilot (but fellow aerospace engineer) friend and I had flown from Manassas, Virginia (KHEF) to Smyrna, Tennessee (KMQY) to pick up another friend to take her to the Outer Banks. Weather forecasted was severe clear with unusually low winds at altitude. Both the flight to Smyrna and the one from Smyrna to Manteo, NC were absolutely uneventful, with our new passenger in the copilot's seat and her 8-month old but 40 pound Golden Retriever puppy peacefully asleep in my friend's lap in the back.

At Manteo I asked for the aircraft to be topped off, and the Jet-A+ truck fueled us right after fueling a big Citation Latitude that roared off into the sky a few minutes later (significance of this later).

Having dropped off our passenger, we copied the IFR clearance back to Manassas while taxiing to Runway 23, with the overworked single controller in Manteo's summer-time-only tower timesharing the roles of clearance delivery, ground control, local control and romantic advisor, all the while talking to both Cherry Point Approach and Washington Center for the appropriate IFR releases depending on the direction of flight.

We finally got released and cleared for takeoff on Runway 23 with Runway Heading and altitude departure instructions. Wind was 190 at 12 gusting to 17, temperature 29, dew point 20, altimeter 3013... not a bad day given how the summer had been developing.

Soon after we ran out of usable runway I raised the gear, and almost immediately we felt a sudden and rather abrupt loss of thrust that made me look down at the throttle thinking it had slipped (in the past I had the friction adjustment lever slip – which let the throttle slip too - but adjustments I asked for during the last annual fixed it, or so I thought). No, it had not slipped. OK, so next move was to unlock the MOR and gingerly move it forward. God bless Joe Casey that had me do that when he gave me the initial on the Meridian! But unlike what I remembered when I tried it with Joe, there was no sudden rush of power, no nothing. I looked down and the lever was just under half way to full forward... not good! Yes, the emergency procedure called for the throttle to be placed at idle before moving the MOR, but I was NOT going to reduce that throttle, not at 75 feet altitude!

So I secured back the MOR and put my hand on the flap lever in preparation for a minimum-air-speed straight ahead ditching in the muddy and shallow waters of the Croatan Sound.

But at that very moment, thrust returned and the aircraft quickly accelerated. I was instinctively keeping about 100 KIAS, so I reflexively raised the nose and we climbed rapidly. At that point I started to turn left, I don't know if to return to the field or simply to stay a bit closer to the shore so we could wade instead of swim back to land.

There was a brief "burp" in the power but the airplane kept climbing so I decided that I was getting to have altitude and airspeed sufficient to make a full circuit and land back on the departure runway. By then the lone controller was frantically asking me if I needed help so I pushed the mike button for the

first time and mumbled something like “power failure – returning” probably not more than that. He gave me the good old “any runway” clearance and I put ATC out of my mind.

Why not try to land on Runway 35? Hmm... well, for one thing it would have been an almost perfect tailwind, also, it was only a three thousand and something feet long (actually 3,300 but I only remembered the approximate length) so the four thousand and something (actually 4,300) of the main runway looked a lot better, particularly since the engine appeared to produce more than enough thrust to keep level flight. Oh, by the way, we were also by then abeam of Runway 35, so turning into it would have been a bit problematic.

Then the engine decided to change its mind (and mine) again. The aircraft suddenly became a bit of a brick, and I had to nose down to keep 100 KIAS. That made the decision for me: no way I could reach runway 23, and to get anywhere near any runway or the grass I had to turn, and turn rather aggressively. So I pointed the nose down and banked... a lot. I kept the normal G's to what I thought were no more than half a G over level flight while keeping my target 100 KIAS. The good news was that I was now headed in the general direction of runway 35 and the center of the airfield. The bad news was that with the thrust level I had the flight path was leading me to some buildings east of runway 35. Where should I put down this beast?

But then the Canadian angels (Saint Pratt and Saint Whitney) came to the rescue with a brief burst of power that let me nose up just the little bit I needed to cleanly avoid the rooftops. I had to keep the wings level, so I accepted touching down at the intersection of the two runways and what I estimated was about 30 degrees off heading, so the airplane just rode straight ahead and into the grass at a rather substantial groundspeed, because of the tailwind.

I tried to keep the nose up with elevator and see if I could turn this into a nice soft field landing, but the nosewheel encountered what after walking back the wheel tracks seemed to be a depression of soft, muddy ground and neatly sheared off. Down came the nose and I saw, as in slow motion, the propeller blades curling towards me. But other than that, it was a surprisingly low impact event! Neither my passenger nor I had even a seatbelt bruise, much to the dismay of the eager EMT's that showed up and wanted to take us to hospital for catscans!

The FSDO inspector that we contacted to notify the FAA asked me to write an email description of my recollection of the event before my memory faded or became contaminated with facts. So I did, recalling that we were probably 200 feet up and over the water when the first power outage occurred, and that we were 500-600 feet high during our attempt at a downwind leg.

Then that night I woke up suddenly at 1:30 with the word “ForeFlight” in my mind: I had my Sentry on, and my iPad linked to it... could the track of the event be on ForeFlight? I turned the iPad on and yes, there it was, but what I saw made me recoil in horror...

You could tell in the ForeFlight's simple plot when the first power reduction happened because the ground speed all of sudden went from increasing to decreasing. But we were not at 200 feet, the way we remembered it, we were only... FIFTY FEET or so above the runway. That power outage lasted about 8 seconds, during which I did all the throttle, MOR etc. shenanigans. And our altitude during the “downwind” was only 300 feet, not the 500-600 I remembered. Oh, and, by the way, while I remembered very clearly raising the gear, I still don't have any recollection of having LOWERED IT (I

must have, since the gear was down and, judging by the tire marks, locked when we touched down!) And the track data showed I was 35 degrees off the runway 35 direction when the mains touched down

Being a retired but irrepressible engineer, I downloaded the data into one of my computers, wrote a quick Python script to parse the kml (that's Google Earth to you) file, and calculated something called "propulsive power" which is the rate of change in total (kinetic plus potential) energy of the aircraft, not the same as engine power, but it does go up and down like engine power. The ensuing graph shows the various power failures, their duration and their severity. From liftoff to touchdown, the entire saga lasted 72 seconds. The propeller was providing SOME power for 44 of those seconds, and was a big boat anchor for $8+3+17=28$ seconds, or almost 40% of the time.

Of course, there is no sight like hindsight. As of my writing these lines I do not know why the engine did what it did, only to note that I have never heard or read about a turboprop – not least a PT6 – exhibiting this "now on, now off" behavior. Was it fuel contamination? I shake my head: had it been a piston engine, yes, very definitely, although probably it would have simply stopped. But turbines are reputed to be able to run on Old Grad Dad. And the Citation had been fed from the same truck a minute before us and I have not heard of any problems with that flight.

Was it something I did, or that I did not do? In a perverse way I hope we find out it was, because then I would know for sure how to fix it.

As for what other things I did or did not do:

I did NOT pull the throttle to idle before advancing the MOR the way the emergency checklist demands. But then wild horses would not have made me pull the throttle at 50 ft and the engine semi working. That checklist obviously assumes you lose power at FL270 and can easily and calmly perform these steps...

I did NOT push the MOR all the way forward, but only about halfway. Maybe that's why it did not make any difference. But I remembered how the engine responded to the MOR when Joe Casey asked me to demonstrate it 5,000 ft over Jacksonville, TX. Then, the engine started responding – rather vigorously I might add – with only about a third of the MOR travel. Thanks, Joe, that lesson was instrumental on saving our bacon.

And, of course, I did NOT pull the condition lever and feather the prop... I was still getting SOMETHING from the engine, and pulling the condition lever would irrevocably turn me into a glider, and I did not have the altitude to accept that.

Would I have been better off aiming for runway 35 immediately rather than thinking the power was going to stay put until I completed the circuit for runway 23? Oh, well...

When I plotted the trajectory on Google Earth, I realized with great frustration that there is an abandoned runway – now used as a taxiway – that was ideally positioned to receive me from my approaching direction. From the airplane, my mind only saw the two actual runways. Would I have been able to choose it had I studied the 3-D pictorial of the field a bit more before taking off?

For some reason I used the excess thrust of the engine during the abortive downwind to gain speed, not altitude. True, when the final power outage occurred, I immediately slowed down to 100 KIAS while

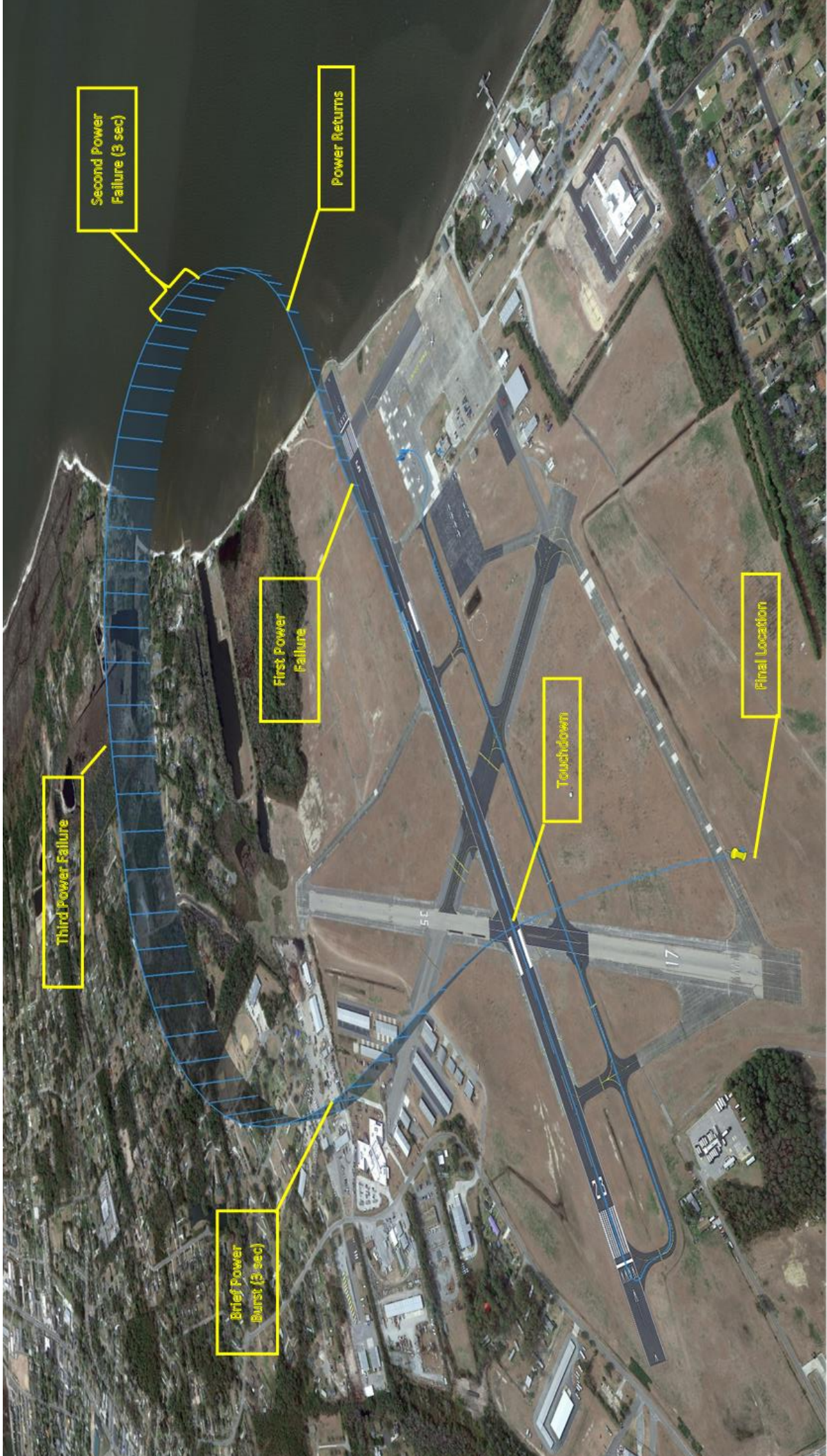
gaining altitude, but would I have been better off gaining altitude at 100 KIAS rather than speed while the engine was producing power?

And, oh yes, before I saw the data I could have sworn that the initial failure occurred between 100 to 200 feet, and that we were at 500 to 600 feet during the downwind... oh, how unreliable our senses! Caveat Believer!

But, in summary, I think that the great training that Joe Casey gave me on my initial, and that the good folks at SIMCOM gave me during my three annual recurrings was the main reason I can be writing these lines today. Oh, and one more thing: as part of my flying obsession, I put together an extremely realistic and sophisticated (including wraparound visuals and electrically loaded controls) basement simulator of not just any Meridian, but of MY Meridian, and spent literally hundreds of hours over the past two years self-training on it, including dozens of “impossible turns” successfully avoiding the dreaded approach stall. And, let me tell you, from a handling qualities standpoint, I felt very much in control of the airplane during my Manteo experience, because IT FELT JUST LIKE THE SIM!

The FAA did a great thing for aviation safety by allowing Basic Aviation Training Devices to be used to satisfy the instrument recency requirements of 14CFR61.57(c)(2). It would be even better if, in addition to the “factory-made” BATDs authorized under the guidance of AC61-136B, they would authorize individual “home simulator builders” recognition of time on their appropriately configured simulators to satisfy 61.57 recency requirements. After all, the FAA allows home aircraft builders to carry passengers, don't they?





Second Power Failure (3 sec)

Power Returns

First Power Failure

Third Power Failure

Brief Power Burst (3 sec)

Touchdown

Final Location

