

11/11/2024

Written Statement

N154DC: Aircraft Incident on 10/31/2024

On Tuesday, October 29, 2024, I took a short flight from Prescott Regional Airport (KPRC) to Sedona Airport (KSEZ) for business purposes. On this particular flight I noticed that during my climb-out from KPRC up to cruising altitude, I was leaning less than what I was used to and was running richer than what I was accustomed to in the approximately 70 hours that I've flown my plane. Engine instrument, including fuel flow rates and EGTs were all within normal operating ranges. Cruise and descent into KSEZ that day were normal and nothing else was notable.

On Thursday, October 31, 2024, I had some time from finishing my day at the office and going home and knowing that I had quite a few flight days ahead of me (business & leisure with my kids), I decided to go up for an hour again and see if I would experience the same discrepancy that I experienced on Tuesday. My plan was that if I experienced the same issue of being too rich on the climb-out, I would ground the plane and have it checked out by Eagle Air at the airport (they had recently worked on cleaning and looking into the fuel system for me with no serious findings).

I pulled up the weather at my office prior to driving to the airport to confirm conditions were going to be favorable for the flight ahead. My plan was to fly direct from KRPC to KSEZ, head South to Camp Verde, cross the mountains and head back towards KRPC. After reviewing the weather for KPRC, KSEZ and vicinity, I decided to proceed with the flight and drove to the airport. At the airport, I conducted my pre-flight inspection of the airplane with no abnormalities or discrepancies found. The plane was already loaded with 36 gallons (main tanks) of 100LL at the ramp when I conducted my pre-flight inspection. The flight plan details on my ForeFlight iPad for the planned trip were as follows: Trip Distance was 76 NM, ETE was 33 minutes, Trip Fuel was 10.9 gallons. Minimum fuel required (Day Time: 30 minutes of fuel) for the trip was 23 gallons, so having 36 gallons in the plane I decided to proceed with the flight without any additional fuel. A weight & balance for plane was calculated for 1 person (me), 36 gallons of fuel and my standard front and rear cargo (front: 20 pounds, rear: 25 pounds; conservatively) and aircraft was within limits at ramp weight of 2,461 – my plane's gross max weight is 3,400 lbs.

Airplane and engine instruments presented normal with no abnormalities witnessed or experienced upon engine startup, taxi, pre-takeoff (Runup Test) at KPRC. Upon climb-out on my way to cruising altitude from KRPC, I again experienced leaning the airplane less than I am accustomed to (running richer) to keep my hottest EGT (#5) at around 1,350 degrees. I was able to manage EGT temperatures during the climb, but it was strange to keep more fuel than what I was used to in the past. Typically, I'm leaning the mixture at every 1,000' gain in altitude, but on the preceding Tuesday and on this day, I hardly was

leaning because my EGT temps would start to creep up. Once at cruising altitude of 7,500' MSL, I was able to lean engine to desired EGT range of 1,350 to 1,380 degrees Fahrenheit at approx. 16 gallons per hour on fuel flow. Manifold pressure cruising at around 21" (recommended cruise is 22", but I couldn't make that at 7,500') and 2300 RPM. This cruise configuration is what I flew on all my flights since I bought the airplane – I liked to run richer/cooler at higher fuel flow, instead of higher temps and better fuel economy. I cruised at 7,500' MSL all the way to KSEZ (flew over airport at this altitude & made traffic calls on CTAF frequency for KSEZ), just following the mountain ranges and constantly scanning all of my engine instruments for any indication of issues. After experiencing the same "richer-than-normal" climb out from KPRC, I had decided in my head to ground the plane when I got back to KPRC because it was bothersome to say the least, but I was really wanting to see if I could give the maintenance shop any more findings from this particular flight or any other helpful indications that would help assess/repair the issue. Cruise performance of airplane was normal from KSEZ, over Camp Verde and across the mountains (following the I-17 Southbound) – around this time is when I started to experience some abnormalities.

Shortly after crossing the mountains from Camp Verde to the "Dewey/Humboldt side", I started to see a little bit of EGT temperature creeping higher without any changes to the mixture control valve. I recall it coming up to around 1,450 degrees and I didn't correct anything for a few moments to see what it continued to do and it ultimately crept up to about 1,520 degrees. Knowing that some Cherokee 6 pilots run their EGTs at 1550-1650 degrees and 12 GPH during their normal cruises for fuel economy, I knew I wasn't doing anything out of line for seeing what the engine was showing me. After the temps settling around 1,520 for like 15-20 seconds, I enriched the mixture a bit and returned EGT #5 back to 1,350 degrees. I scanned all EGTs (which I was already doing almost every 5 minutes during this flight) and found that there were no other abnormalities to any other EGTs (no abnormally low or high temps from what I was used to seeing). At this point, I was over the intersection of the I-17 highway and AZ-169 (takes you straight into Dewey/Humboldt) and was approx. 20 NM out from KPRC. I was able to pick up the ATIS in KPRC and called tower inbound for a full-stop. I was instructed to enter midfield, left downwind for runway 21L. At this point, I knew I didn't like that I was experiencing abnormal mixture control settings and my plan was to ground the plane and have it looked at.

My inbound towards KPRC from 20 NM out to 15 NM out was fairly normal, except for the fact that I knew that I was richer than normal at cruise than any other flight I had taken from visually seeing where my red mixture valve was positioned (approx around 80%-85% of full, typically at cruise it's around 70). All engine instruments (oil pressure, temp, fuel pressure, amps, EGTs & fuel flow) during the 20 NM to 15 NM range were within normal ranges with nothing showing abnormalities or discrepancies.

From 15 NM out to 10 NM I had to enrich the system more and more to keep my EGT #5 (hottest) sitting at around 1350 degrees because it kept creeping up on me at around 1420 with no changes to airplane configuration (this never happened before to me).

At the 10 NM out mark, I grew concerned because this was the first time I ever experienced this problem with my airplane and I wasn't sure if I was going to have issues managing my EGTs and/or engine performance heading back towards the airport.

I remember that between 10 NM out and 8 NM out I had gotten to FULL RICH on my mixture valve and I was still making power (manifold pressure gauge reading around 21"), EGT #5 was holding at 1420 and I had no abnormal indications on any of my engine instruments. At this point I was fervently scanning engine instruments to see if anything would indicate serious imminent engine failure or issues, but they remained within normal ranges. By this point, it had dawned on me to declare an emergency, but I couldn't justify doing so yet because I was maintaining altitude, making power, holding at straight and level flight (I had started my descent from 7,500' to TPA for KPRC, but decided to stop my descent I held at 7,100' because of my growing concern of engine issues; I wanted more altitude between me and the homes below).

From 8NM out to 5 NM out I experienced a significant change to aircraft performance that I never experienced before, at FULL RICH my fuel flow gauge was reading 12 GPH, which is way off of what is normal. Typically at full rich (sea level flying and takeoffs), there is easily 20+ GPH of fuel going into engine, but at this point in the flight my GPH was reading 12. Seeing that my GPH was very low based on my mixture valve setting, I turned my aux fuel pump ON and cycled to my other main fuel tank to see if I could increase my fuel flow to engine, but those things didn't work – the GPH flow remained at 12. My main concern at this point was keeping the engine cool (rich) enough until I got back on the ground, but I chose not to reduce (manifold) power because I was only around 2,000 AGL over the Town of Prescott Valley and I didn't want to lose altitude at approx. 8 to 5 NM away from KPRC – I thought to myself that I would push the current engine settings to get me back to KPRC instead of descending and losing altitude with substantial distance to cover back to the airport. During this phase of flight, aircraft was holding 120 KIAS, holding straight and level flight (autopilot was still engaged), making power (21" & 2300 RPM), EGT #5 was 1420 and fuel flow was 12 GPH. Engine temperature wasn't my main concern at this point because 1420 on my hottest was not anything alarming, but I knew I had a serious issue when at full rich the fuel flow gauge was only reading 12 GPH. At this point, I considered declaring an emergency, but I chose not to because I still had good control of the airplane in-flight and other than the low 12 GPH for fuel flow (which I knew that other Cherokee 6 pilots run at 12 GPH at cruise for fuel economy setting), I wasn't picking up any alarming indications from any engine instrument. I maintained straight and level flight, inbound towards KPRC at around 7,100' MSL, but I knew that there was very little that I can do up in the air to better fuel flow, so at this point I was mentally preparing myself for the possibility of an engine failure.

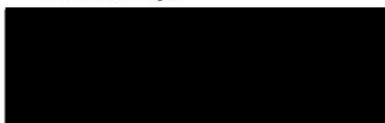
At around 5 NM out I remember feeling a very subtle vibration from the airplane that I have never felt before. I didn't affect my control of the airplane's attitude and flight, but it was noticeable to me – all flight and engine instruments were unchanged. Approx. 15-20 seconds after the subtle vibration, I experienced violent vibrations for about 5 seconds and

following that I heard two large “booms” at the front of the airplane (engine). Immediately after the second “boom” I felt the airplane lose complete power, the nose dove down with a bank to the right towards the ground – I pushed the autopilot disengage button on my yoke, grasped the yoke with my left hand to control the airplane's attitude and set it up for a slight descent (glide). As I was regaining control of the airplane, I called KPRC Tower and declared an emergency. I don't remember much of my comms on that day, but I believe I gave them my tail number and told them I had experienced an engine failure or loss of power or something along those lines. I immediately started looking for the best place to land (identified a large parcel North of SR-89A and turned a heading towards it) – at the same time this was happening I witnessed thick black smoke coming from underneath my feet. I believe that I clicked back into KPRC Tower and told him that I was having a lot of smoke in the cockpit (I recall that the tower controller had acknowledged my mayday call and had asked if I could still make the airport, but I remember saying that I couldn't and that I had to go down where I was, this was prior to me telling him about the smoke problem). The smoke filled the entire airplane in seconds and I lost all visibility outside and I also wasn't able to see my flight instruments right in front of me (G5s). The smoke was thick, burning my eyes and making it difficult to breathe. I kept my left hand on the yoke and did my best to keep the airplane in a glide attitude to the best of my ability. 5 to 10 seconds after the smoke, I felt heat at my feet and saw open flames at the floorboard on the co-pilot side and over by my fuel selector valve – flames were accelerating towards me and the flames were approx. 12 – 16 inches high. At that point, I knew that I wouldn't have a chance to landing the airplane if I didn't address the fire and smoke, so with my right hand I reached behind my seat (rear seat pocket) for my fire extinguisher which I had placed back there, I bit the plastic safety pin off with my teeth and proceeded to shoot flames all over my feet and both floorboards – the flames were extinguished instantaneously. I kept the extinguisher in my right hand for a few seconds longer to see if I saw any more flames flare up, after I didn't see anything I dropped the extinguisher and immediately opened the vent window to my left (common “scooper vent” on Piper Cherokees) to try to air out the cabin. After I opened the vent, I remember putting my mixture control valve to FULL CUT-OFF, pushed throttle to FULL IDLE, turned magneto/ignition keys to OFF and turned the aux fuel pump off (to my left side by vent window) – I wasn't sure of the extent of the fire/smoke within the cockpit, but I knew that I couldn't deal with another smoke/fire problem if I wanted to have a chance to land the plane, so at that point I decided that I wanted the engine completely off and all fuel cut off. 5-10 seconds after opening the window, the smoke began to clear out and I regained visual references outside to see the airplane's attitude and glance at my airspeed. I remember seeing a large housing subdivision (Granville), SR-89A (with powerlines adjacent to the highway) and a very large open field to the North. I decided at that point that based on my altitude (visually assessed because I don't remember looking at my altimeter) and my airspeed which I do remember being around 90 KIAS, that I was going to do everything I could to clear the highway and power lines and land on the open field to the North. I remember making a slight turn to the right (North) at this point to position myself as perpendicular as possible to the highway to stabilize some sort of approach (like a normal short final approach at an airport). At that point, I was maintaining 85-90 KIAS (best glide on my airplane is 87 KIAS) on short final and I committed to the landing when I felt confident

that I was going to clear the highway/power lines. I decided to not introduce any additional drag to my approach, so I opted to perform a no-flap, soft field landing. After cleared the powerlines at the highway by around 50-100 ft and setting myself up to land I remember turning off my Master Battery switch, rechecking that my mixture was fully cut-off and magnetos were in the off position, fuel selector I couldn't quickly manipulate to the OFF position because it was warped and hot to the touch, so I left it alone - at this point I was thinking about not experiencing another fire or explosion upon impact. I cinched my seatbelt and proceeded to put the airplane down on the ground with a focus on not having the front gear touch the ground early at a high speed because my chances of flipping over would be high. I kept the airplane nose up for as long as I could, while tapping brakes softly and applying rudder to wherever side I felt my body fall towards. I eventually came to a stop, I made sure everything was off, I pressed the ELT button (I wasn't sure if the KPRC Tower knew exactly where I was), unlatched the co-pilot side door and hopped out quickly. I walked around to the front of the plane quickly to assess damage and make sure there was no more visible signs of fire or smoke around the airplane - I didn't see anything. I did a quick check on my legs, feet/shoes for fire damage - didn't find any, my throat just felt achy and sore. A few moments later I saw a pickup truck driving towards me at a fast speed from the highway - the gentleman driving was on the phone with a 911 dispatcher, he asked if I was hurt and I said no and I spoke to the dispatcher for a few seconds prior to hanging up when fire and police personnel began to arrive on-scene.

To say that this event has been the most terrifying and stressful event I have ever experienced would be an understatement. From when that subtle vibration started to when I was on the ground felt like 30 seconds to me and I just remember a series of rapid mental processes, assessments and decisions, reacting to the situation at-hand with my sole focus to survive. I did my absolute best to think back to these intense moments and provide the most accurate information that I remember for the purposes of this written statement requested by the FAA and NTSB.

Sincerely,

A solid black rectangular box used to redact the signature of Jonathan Rocha.

Jonathan Rocha
Pilot/Owner of N154DC