

Weak Battery? As Long As I get the Engine Started I'm Good, Right?

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We've all had occasion to deal with a battery that doesn't have quite enough juice to crank the engine. We've all employed some "tricks" to get the engine started and save the sortie. These tricks may include turning off the strobes, positioning the prop (after turning off the mags) so a piston isn't approaching a compression stroke and/or getting a GPU start from the FBO. In a multi-engine airplane one might have knowledge of which engine has the best starter. As long as we get the engine started and the alternator on line we're golden for the rest of the flight, right? Well, let me recount a "weak battery" experience I had several years ago.

I was tasked short notice to fly the Seneca up to Tulsa to pick up a couple of pax. They didn't rate the King Air, the Baron wasn't available and the Seminole was deemed too small. The Seneca hadn't flown for several months. The preflight took a bit longer, but everything was good to go. I knew I would be dealing with a weak battery and employed several of the tricks described above to get the engines started and the alternators on line. "Gollee!" I boasted to myself, "I can't believe I got this sucker started. Am I a bad *ss pilot or what!" Everything was normal as I took off, raised the gear and switched to OKC approach for flight following. Then, "Surprise! Surprise! Surprise!" – the alternator load meters dropped to zero and the entire electrical system went dead. "Well," I thought to myself as I turned back to OUN. "Good thing I'm always asking my students about light gun signals. Assuming ATC assumes I'm heading back I'll be able to recognize the colors they'll be shooting at me." Emergency gear extension – no problem. Wait a minute, no electricity, no gear indicator lights, no warning horn. Guess I'll just yaw the heck out of plane and hope the gear is down and locked. Lucky for me the weather was VFR. Lucky for me, tower was expecting me. Lucky for me, the gear was down and locked. Better to be lucky than good, right?

So, what happened? Even though I got the engines started and the alternators on line the battery capacity (how much juice it had left) was very low. Despite charging from the alternators the demand from raising the gear and full up operation of the electrical system "zeroed it out." With no voltage from the battery there was no electrical field to keep the alternators excited. No battery, no alternators, no electrical system.

How do I know the battery has sufficient capacity to carry me through the flight? In the turbine world maintenance personnel periodically conduct battery capacity checks. When the capacity drops below a certain threshold the battery is replaced. Battery capacity is not normally checked on piston aircraft. I would submit that if the battery doesn't have enough juice to crisply turn the starter with the strobes and fuel pump on than I have a weak battery. Should I then employ one of the tricks to start the engine and continue the flight? It depends. Our FRAT is an outstanding tool for getting us out the door and to the plane. But risk management doesn't end there. Am I employing analysis of the 5P's (Pilot, Plane, Passengers, Plan,

Programming) before takeoff, enroute and before landing? In this case I've Perceived a hazard with the one of the P's – the Plane. Now it's time to employ the 3P – Perceive, Process, Perform. Process: What are the flight conditions – day, night, IFR, VFR? What is the mission profile – local, cross country with a fuel stop, cross country with no fuel stop? Risk Analysis – increased likelihood of electrical failure weighed against the impact of the electrical failure given the flight conditions and mission profile. Perform: Select a course of action. Local day VFR flight – OK, continue the flight. Night XC in IMC with required fuel stop? ...

A final bit of introspection. If the weather for my Seneca flight had been IMC would I have cancelled the mission after detecting the weak battery? Probably not – remember, I thought I was a bad *ss pilot! Now, having experienced the consequences of my poor decision making if presented this scenario today I wouldn't even consider taking an airplane that hadn't been flown for several months on a cross country flight with pax, much less what to do about a weak battery. Hopefully you all will do a better job than me at "learning from the mistakes of others!"