



Photo: Ben Sheriff

Name withheld by request

## ALTERNATOR ALERT

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It was an afternoon flight late in September: a simple mistake and negligence could have ended with a fatal result. The IFR training flight was conducted in a Beechcraft Baron 55, which started in Bankstown, tracking to Tamworth for several approaches, before returning to Bankstown for the last of these approaches.

The student was on his last flight before his pre-test flight. His standard was quite high, but his previous 200 hours had been flying a parachute plane, so he had a tendency to rush the checks. The whole week's forecast was for daily afternoon thunderstorms which became quite a challenge to avoid in the typical GA-equipped type aircraft. Flight planning was completed without any problems. The whole flight was briefed from start to finish so the student knew exactly what I expected from him.

With the plane pre-flighted and fuelled up, we were ready to go with all the normal start-up

checks conducted as per the checklist ... or so we thought.

Departure from Bankstown went smoothly and we were soon levelling off at an amended altitude of 8000ft. Top-of-climb checks were conducted and the approach into Tamworth briefed. The plan was for an ILS from overhead followed by an R/W 12L VOR from the arc.

Before too long, we had finished top-of-descent checks and the aircraft was on a cruise descent to 6600ft, our grid LSALT, when without warning, our autopilot disconnected. We checked fuses, the autopilot was recycled, but it didn't come back online. Shortly afterwards, we were told to contact Tamworth Tower on 119.4 at 25nm for clearance, which gave us 12nm to run to that point. The VOR was the next to drop offline, followed seconds after by all the radios. 'Typical GA aircraft' was my first reaction, followed by selecting 7600 on the transponder.



The first error happened at start-up: the previous student had left the alternators on. There were no markings indicating the position of the alternator switch, and this was not picked up. So, during our start, the switches were placed from 'on' to 'off' instead of the other way around



At this stage we were maintaining 6600ft, and we began orbiting in our present position at 25nm to try and fix the problem. From fuses to switches – we scanned around the cockpit looking for the culprit. The student was still under the hood, simulating IMC conditions, while the aircraft popped in and out of cloud. We thought we were maintaining the LSALT when I discovered there was a problem with the primary altimeter, an electronic one. It was glued to 6600ft, but it had a small line through the middle meaning it had failed. How long had it not been working? I quickly turned to the standby altimeter, which was tucked away and hard to see, as it was only there to fulfil the requirement to have two altimeters on board. It was showing 6200ft. My heart pounded a little harder and I initiated a climb back up to our 6600 LSALT.

Moments later, we discovered that the alternators were in the off position. We turned them on which triggered the radios, navs, altimeter and autopilot back on line. Problem solved. The battery had powered the electronics until it began to deplete, and then as it ran out of charge, these systems had started falling offline, one by one. We continued circling while we reset the aircraft up before continuing to Tamworth to conduct the ILS and VOR approach. The remainder of the flight onto Bankstown went smoothly.

That flight had a much longer debrief than normal, as we went through the series of errors which could have quite easily ended in tragedy. The first error happened at start-up: the previous student had left the alternators on. There were no markings indicating the position of the alternator switch, and this was not picked up. So, during our start, the switches were placed from on to off instead of the other way around.

The errors then compounded. We missed checking the alternators after start, in the run ups, and in the rolling phase – standard operating procedures for our company. Another major error occurred while we were scanning the cockpit trying to identify the problem, and didn't notice that the primary altimeter had gone offline. This one could have cost us our lives. We didn't see the big picture; too busy trying to solve the immediate problem.

This Baron 55 was new to our fleet. My previous flying had been in the Baron 58, which has slightly different alternator warnings. There, with the alternator switches on or off, and no charge coming through, the warning light positioned right in your scan lights up. In the B-55, the alternators need to be turned *on*, *and* not producing any charge for the warning lights to come on. If we had made the same mistake in the B-58, the warning lights would have been illuminated.

After our debrief, I sat down with the chief flying instructor of the organisation and went through the events of the flight. He made some good points about teachers becoming complacent when they're sitting in the right-hand seat. He also stressed that every aircraft is different: as instructors, it's our responsibility to make sure we are familiar with every system, and how all the instruments are powered and sourced.

I learned some big lessons during this navigation exercise. It changed the way I teach and shocked me out of any 'right-hand seat' complacency.



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This airmanship research is spearheaded by Kirstie Carrick, the program convenor for the Master of Aviation Management, who also teaches in the undergraduate psychology program. Kirstie is a member of the Australian Association for Aviation Psychology, the Australian Psychological Society and the Ergonomics Society of Australia.

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