

The Alameda Aero Club Newsletter

March 2006

President's Corner

I Guess I'm Not The Only One

When I took high school physics, one quarter was devoted to electricity. Fortunately, or perhaps unfortunately, that quarter I was seated next to the luscious Julie B. She never knew that I madly lusted after her, but it sure showed in my physics grade. So, I blame the lovely Julie that I regard electrical devices as operating with a very special mojo that is just this side of black magic.

Apparently I'm not the only person in the club who has a problem with electrical devices. This was brought home on a recent Friday. Here's what happened. An instructor and a student scrubbed a flight in 12R because Oakland Ground reported both radios "weak and inaudible."

Ben Barron and I happened to be hanging around the clubhouse while another pilot prepared for a Bay tour in 9UL. We wondered how we were going to get 12R over to Dale or Matt at Bay Avionics for a quick fix. Without much optimism, we walked out to the airplane to see if there was anything dumb and obvious that was amiss. The 9UL pilot went out for a preflight at the same time.

Turning on the radios in 12R revealed something of a mystery. We could hear Oakland Ground just fine over both radios, but hitting the mic and asking for a radio check got the same "weak and inaudible" response the earlier pilots had heard. Ordinarily, when radios go on the fritz usually you can neither hear nor communicate; when both radios exhibit the same characteristics look elsewhere for the problem.

Then Ben and I noticed that something curious was happening with 9UL. The pilot and his two passengers were strapped in, the engine started, and over 12R's radio we heard ground ask 9UL to respond. The pilot shut the 9UL's engine down and walked over to talk to us, saying that everything was going great, but now he couldn't hear anything. I thought the Club's avionics mojo was very bad indeed on this Friday. How were we going to get two airplanes over to Bay Avionics? And would they have the time to work on them?

Left with 12R, I tried to figure out what we hadn't tried. Hardly knowing what I was doing, I thought I'd try to communicate with ground using the hand mic

on the built-in system. Yes, the 172s have a built-in audio system. A relic of the 1970s, it works, but the engine noise makes ATC instructions difficult to understand. In our complex airspace, headsets are almost obligatory. Old Al Burri and I flew a number of times using only the built-in audio system, but I can't recommend it.

I noticed the hand mic's jack was half out of the connector. I pushed it in more firmly and keyed the mic for a radio check. Ground responded with a "loud and clear." I then switched the "auto" toggle to headset-only and tried both radios using the push-to-talk button. "Loud and clear" again. Somehow the loose jack resulted in some shorting of the microphone circuit, I guess. 12R was now good to go!

That left 9UL, where Ben was trouble-shooting. The patient passengers were still strapped in their seats. This time I toggled the "auto" switch again and lo and behold the radios worked! The pilot was able to take off for a nice jaunt around the Bay. For the first and only time in my life, I felt like an electrical genius.

What can we learn from this? First is that C172s might appear as similar as peas in a pod, but their avionics packages vary widely. For example, each audio panel in the Club Cessnas is a bit different. When you look at the audio panel, remember that all those buttons and toggles are there for a reason. It pays to familiarize yourself with the audio panel. When you are not in a rush, check it out and make sure you understand what each toggle/button does.

Second, if avionics suddenly go away, the problem is often something dumb and obvious. Is something loose? Did a switch get bumped into a different position? Be calm. Also, remember what all those tower light signals are all about. You do remember, don't you?

Steve Bevitt, President

Night Flight

If you've flown in the past few months, you're likely to have flown at night. If you haven't flown at night, your night currency could be about to expire. Since the short days will be with us for a bit longer, it's worth a review of the night flight regulations.

First, what is "night"? The regs define "night" as the time "between the end of evening civil twilight and the

beginning of morning civil twilight, as published in the American Air Almanac, converted to local time." See 14 C.F.R. section 1.1 (defining "night"). The regs don't define "evening civil twilight" and "morning civil twilight," but the U.S. Naval Observatory ("USNO"), the organization that publishes the Air Almanac, states that twilight "begin[s] in the morning, and . . . end[s] in the evening when the center of the Sun is geometrically 6 degrees below the horizon." If you don't have a geometric-sun-center-measuring-device handy, the USNO publishes tables (<http://aa.usno.navy.mil>) that give twilight converted to local time. Or you can estimate: civil twilight ends about 30 minutes after official sunset.

Night flight imposes special pre-flight planning requirements. For any VFR flight that will end at night, you must have enough fuel on board to fly to the first point of intended landing and after that for at least 45 minutes. See 14 C.F.R. sec. 91.151 (a flight that begins in the day but terminates at night is considered a night flight for pre-flight planning and fuel reserve purposes). This is 15 minutes more reserve fuel than required for VFR daytime flight. Prudence dictates having at least an hour of reserve fuel on board, and that will satisfy your obligations under the rules.

Night flight also imposes special equipment requirements. If any portion of a flight occurs at night, the airplane must have all of the equipment required for day VFR flight ("TOMATO FLAMES," listed in 14 C.F.R. sec. 91.205(b)), as well as several additional items. See 14 C.F.R. § 91.205(c). It must have position lights, an anti-collision light system, a landing light (if the airplane is operated for hire - AAC's are not), an adequate source of electrical energy for all installed electrical and radio equipment, and a spare set of fuses. Without these items, the plane isn't legally airworthy for night flight.

Though you technically don't need these items for VFR day flight (unless they're part of the airplane's required equipment list or required by an AD, see 14 C.F.R. sec. 91.213(d)), you must have lighted position and anti-collision lights any time you "operate" an aircraft after sunset. See 14 C.F.R. § 91.209. In other words, the night VFR equipment lights regulations apply before it's legally night. The only exception to this rule is that you may leave off your anti-collision lights if doing so is "in the interest of safety." For example, you are holding short at the approach end of a runway and another airplane is on final - your strobes could ruin the other pilot's night vision. Thus, in the interest of safety, you may legally leave them off.

Unlike the rules regarding position lights, the rules about carrying passengers apply after it's legally night. To carry passengers during the period starting one hour after sunset and ending one hour before sunrise, you must have made at least three take-offs and landings to a full stop in the preceding 90 days in an airplane of the same category, class and type (if a type rating is required). See 14 C.F.R. § 61.57. Notice that you can legally carry passengers at "night," so long as you've parked and shut down within an hour of sunset. Why do the regs set night currency at "sunset + 1 hour," instead of the end of evening civil twilight, which is about "sunset + ½ hour"? Probably because, as the USNO explains, "[c]omplete darkness . . . ends sometime prior to the beginning of morning civil twilight and begins sometime after the end of evening civil twilight." Allowing pilots to meet night currency with take-offs and landings that occur right around the end of evening civil twilight wouldn't prepare them for landing in complete darkness. You must have recent experience operating in complete darkness if you want to carry passengers in complete darkness.

Finally, 14 C.F.R. section 61.51 states that when you log a flight, you should include the conditions of flight, including whether it is day or night. For these purposes, use section 1.1's definition: night is the period beginning at the end of evening civil twilight and ending at the end of morning civil twilight.

Let's take a hypothetical VFR flight from OAK to O88 (Rio Vista) and back on January 24, 2006. According to the USNO tables, sunset on that day was 5:24 p.m. The end of evening civil twilight, again according to the USNO, was 5:52 p.m. The 30-minute rule of thumb would have predicted 5:54 p.m., which is close.

For this night flight, the plane must have the appropriate lights and fuel to reach Rio Vista and fly thereafter at normal cruise speed for 45 minutes; not a problem for a C172 departing with full tanks. If engine start is at 5:35 p.m., then even though it is not yet officially night (still 17 minutes away), position and anti-collision lights must be on. If you depart at 5:50 p.m. (because you had to wait for an airplane departing Rwy 15 . . .), and the flight to Rio Vista takes 25 minutes, you will arrive there at 6:15 p.m. If it takes you another four to five minutes to enter the pattern and approach for landing, your first landing will be at approximately 6:20 p.m. Though this landing has occurred at night (i.e. after 5:52 p.m.), it does not count as a night landing for night currency purposes. Any subsequent landings probably will, including your final landing back at Oakland at, let's say, 7:30 p.m. The total engine-on time would be 1.9 hours, and the night time would be 1.6 hours.

Night flying thus presents a few extra requirements and some added planning. Well worth it to experience the cool, still air and the beautiful city lights.

Frank Riebli

What to Do If...

In our training, we learn how to assure that our plane is airworthy by our preflight inspection, then go blithely off into the sky scarcely questioning that the plane might not work right. We spend time learning emergency procedures, some of which we'll remember. On the other hand, a mechanic, right from the beginning, works on the premise that something is wrong with a plane. Even during the most routine oil change, a good mechanic looks all over the plane for signs of abnormalities. It's often not a question of all being right, but of how long it will be before something's not. It's no coincidence that relatively few mechanics actually are active pilots - the nature of the work changes one's perspective. The more you know each nut, bolt, and rivet on a plane, the more possibilities for failure you can imagine.

Recently 05D developed an as-yet unexplained power problem which appears at 600' AGL. It wouldn't take full throttle, coughing and sputtering until power was reduced to slow cruise. That can really spoil your climb-out and put instant terror into your heart, as 600-800' is the worst possible altitude from which to return to the field. The experienced and cool-headed member who was piloting was able to make an uneventful landing on another runway. Stan and crew spent many hours troubleshooting and speculating, and found nothing that seemed able to cause the symptoms, and so we were ready for another test flight. It fell to me, as maintenance officer and fairly high-time pilot, to give it a go.

There is something uncomfortably strange about climbing into a plane, running up, and taking off, knowing there's a fair chance it's going to crap out. I stuffed my demons, yelling and screaming that I should know better, into a back pocket and rotated. It climbed briskly to 700' and began coughing and sputtering, right on cue. I informed Tower I needed to land, having given them my test flight agenda before departure, and made an uneventful power-off landing. We're still working on 05D.

The point of the story is to not neglect your emergency training, and be aware that a preflight dis-

closes relatively little about an aircraft. The best maintenance can never be a guarantee that nothing will go wrong. Practice your dead-stick landings, flapless landings, pretend-your-nosegear-fell off landings. Review your fire procedures, and think about carrying some protective clothing like a smoke hood and cotton gloves for the door handles. Keep your handhelds charged up, and get a headset-to-handheld adapter. Up in the sky, on those straight, boring runs across the valley, try simulating control surface failures. Get your copilot to stand on one rudder pedal and figure out how to maintain a heading. Have her hold the yoke all the way back, and pitch with trim only. Cover up the whole panel and fly altitude, airspeed and heading with compass and horizon. Practice power-off 180 degree turns, and see how much altitude you really lose. The more of this nutty stuff you do, the more easily you'll handle it when something bails. You'll still be scared poopless, but you'll have some built-in strategies. Oh, yeah - and don't volunteer to be a test pilot.

Ginny Wilken, maintenance officer and test pilot

Coastwise

After a frustrating couple weeks I saw an opportunity for some photos. The weather-guesser kept talking about snow. How about some pictures of snow on the coastal mountains? Mt. Tam? The weather was clearing nicely behind the front, so I got in line on the Half Moon Bay scheduler; 1500 Sunday. Good news, bad news. The weather couldn't have been nicer. Bad news, the bird wasn't running quite as smoothly as last, but within tolerances. With the cool air and a light headwind was almost at pattern altitude before making my crosswind. A little high by the time I turned downwind. Normally a little updraft over the hill there, and a corresponding downdraft just as you get over the houses, around the end of the runway on the downwind. Good news, the clouds were all against the hills. Bad news, any snow there would be under the clouds. But a lovely flying day, and got at least one interesting picture, Pigeon Point. While getting the shot, climbed up to cloud tops at 5500' or so. Leaned the mixture. Saw someone doing aerobatics near Ano Nuevo, going straight up with a slow roll that caught the eye. Good separation, though; a mile or more horizontal and I was a thousand or two higher. On the way home shared the pattern with a Citabria---radiating black and yellow bands on its wing. Followed him in doing little turns to spread us out. Finally got off one of my smoother landings. I guess the engine liked going up and getting a thinner mixture for a while, 'cause it was just purring again.

Charles Warren

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