**Instrument checkride with S.R. C172S G1000**

**Ground -** He introduced the “rules” for the ground portion to be as if he were a private pilot interested in possibly seeking an instrument rating, and it was my job to answer his questions as if I were a friend or instructor giving him as much information as possible for each item he asked about. He also advised against spending a lot of time looking up answers in Google. “Just teach me what you know” is how he wanted it to go. He didn’t add many comments while I was answering so there wasn’t really a good way to know whether my answers were going in the right direction or not.

* What is required to keep an instrument rating current? What are a few different ways to maintain instrument currency?
* How do YOU plan to keep YOUR instrument rating current?
* What are the requirements a pilot must meet in order to legally act as a safety pilot?
* You earn your instrument rating in October and you are “100% current”. Then you do nothing until Jan 1st when you fly 3 instrument approaches. Then you do nothing more until April when you fly 2 more approaches on April 15th. Are you IFR current on April 16th?
* Are instrument approaches all that is required to maintain IFR currency?
* What is required if you want to fly IFR if you do nothing after April 16th until the summer of the next year?
* Are there different types of aircraft icing conditions? “Is all icing created equal?”
* Which type of aircraft icing is most hazardous?
* You are getting ready to depart from Palo Alto airport and you notice that the temperature is 54°F on the airport surface. At what approximate altitude would you expect to find the freezing level on a day like that?
* How do you determine the actual freezing levels before flight?
* What would you do if you are flying along your IFR route and notice icing beginning to form on the aircraft?
* You are getting ready to fly cross country and you are looking at PIREPs as part of your preflight briefing. A PIREP reports light icing conditions along your filed route of flight. Are you able to make the flight as filed?
* What would you do if you are flying along your IFR route and you see a towering cumulus cloud building in your flight path in front of you?

**Cross Country assignment: KPAO → KPTV** which i received by calling him the morning before the checkride.

Detailed cross-country flight plan / nav log is required and he requires an alternate in the flight plan no matter the forecast weather for the estimated time of the flight. I did not include true courses, true headings, magnetic deviation, or actual compass headings (only mag courses and mag headings), and he seemed fine with that. Strongest winds aloft forecast for estimated time of flight was only 4kt, so I only included 2 examples of wind correction angle and he seemed fine with that. He also asked for weight and balance calculations during the call the morning before the test, but then he never did ask to see them during the test. I chose the GPS 12 approach at KPTV, flying the missed with 0-3 laps in the hold at TTE, then flying to ALTTA for the ILS at KFAT as my alternate. Include fuel for all of those segments plus IFR reserves. He asked for a complete weather briefing; I used ForeFlight maps & charts in the order they were presented.

* Why did you choose Fresno as your alternate?
* Given the weather in your briefing, were you legally required to file an alternate?
* If the forecast weather for your ETA at KPTV were 5 miles visibility and 1,800’ ceilings, would you be required to file an alternate?
* Could you file Palo Alto or Reid-Hillview as an alternate?
* What are the weather minimums for your alternate?
* How many times a day are TAFs issued?
* You keep telling me about the light winds forecast for your cruising altitude, but when I look at that winds aloft chart you showed me, I only see a bunch of 10’s and 11’s. What do those numbers mean?
* What does that KSJC METAR code mean? (pointing to a specific METAR in the weather briefing)
* Describe how you will do a preflight/pre-takeoff check of the instruments required to make this flight. How will you know your instruments and equipment are working well enough to make the flight for IFR?
* What is a VOR check and when do you have to perform one?
* How does VOR work? How does your VOR receiver determine its position?
* How does GPS work? What is RAIM?
* Is RAIM a forecast or a report of current conditions?
* What is WAAS and how does it work? [Note: for this answer I attempted to summarize what’s on this page: <https://www8.garmin.com/aboutGPS/waas.html> and when i started talking about geostationary satellites augmenting the system he seemed to be getting dissatisfied with my answer and wondering why I was talking about “satellites with a fixed position in space,” (his words, not mine)- so I’m not quite sure what he was trying to get at or assess with this question.]
* Along your route of flight, the controller says “N123: cruise 6000.” What does that mean?
* Give some examples of compulsory reporting points
* You receive the following clearance: Palo Alto to Sacramento via radar vectors, San Jose, V334, SUNOL, SAC. You take off and are flying the route as specified in the clearance. Immediately after crossing SUNOL on V334, ATC calls you and says “C123: hold N of ALTAM as published, expect further clearance in 15 minutes.” Describe exactly what you will do then and what you will do when you reach ALTAM.
* Later along the same flight, near reaching SAC, ATC calls and instructs: “C123: hold North of Sacramento on the 036-radial, expect further clearance in 10 minutes.” Describe exactly what you will do when you reach SAC.
* On a different flight, you receive the following clearance: “C123 cleared to Porterville Airport via radar vectors, San Jose, VINCO, KARNN, then as filed (NTELL, FRAME, EXTRA, KPTV). Climb, maintain 3000. Expect 5000 5 minutes after departure. NorCal is on 125.35, squawk 0427.” You take off out of Palo Alto and are handed off to NorCal almost immediately while climbing to 3000’. You receive a radar vector on your initial call to NorCal, but after that call, you never hear from anyone again. Describe EXACTLY how we are getting to Porterville, in IMC the entire time.

**Flight -** For this portion he admitted that he doesn’t typically talk much during the flight, and that did turn out to be true. He asked almost no questions during the preflight or the flight. He informed me that I would be PIC and that as the examiner he is “not allowed to touch anything, except during the preflight check of the controls.” So he won’t be touching any of the controls or buttons. For the most part, whenever he talks during the flight it’s to simulate calls from ATC, so he spent a little while describing how some students get confused by getting calls from him vs getting calls from ATC, but he expects the candidate to read back to him exactly as they would read back to ATC. And since he’s “not allowed to touch anything,” the candidate has to manage all ATC communications.

The flight started taking off from Palo Alto, then to SUNOL then to Tracy. He told me not to put on a view limiting device until after SUNOL to help him scan for traffic around the bay. After SUNOL then it was on to Tracy.

* Request GPS RWY 12 at Tracy using hold at OYOSO as the IAF. This approach is to be “an autopilot-coupled approach.” According to the postflight debriefing, that instruction specifically means “use the approach mode of the autopilot which lets you just sit back and have a cup of coffee while the autopilot flies the approach for you.”
* This part of the flight was a little strange because we requested the hold at OYOSO and ATC advised a lot of conflicting traffic in the area so instructed that we “keep the hold as close to OYOSO as possible otherwise I might have to break you off the approach.” So after passing OYOSO I flew outbound for less than a minute and turned left back inbound, so obviously nonstandard, but he seemed to be OK with that after what ATC advised.
* Inbound I flew the stepdown fixes using VS mode and 800 fpm. During the debrief he said aiming for 500 fpm is better. Deactivated the AP before reaching 800 AGL.
* There was no traffic in the pattern at KTCY and winds were from 300, obviously favoring RWY 30, so the approach terminated by descending to circling minimums, circling NE of the runway (which is contrary to VFR pattern direction) and full stop landing runway 30.
* Then taxi back to RWY 30 and fly the ODP from RWY 30 toward MOD.
* Inbound to MOD on R-264 we turned off course to do unusual attitude recovery.
* After unusual attitudes, he instructs you to dim the PFD screen. I asked him by how much to dim the screen, and he said “all the way down to zero.” Since he’s “not allowed to touch anything” make sure you know how to dim the PFD screen yourself. Also, keep in mind that when it’s time to bring the PFD screen brightness back up later in the flight, you can use the menu button on the side of the MFD screen to do that (as long as the G1000 is in Reversionary Mode, which he allowed) so you don’t have to memorize the PFD menu button & FMS knob sequence on the PFD side with a completely dark PFD screen.
* Once the PFD screen brightness is reduced to zero, he gives you vectors to join the approach course to VOR RWY 26 back to Tracy, partial panel. Use Reversionary Mode to track the inbound course with CDI set to VOR once his simulated ATC instruction is “cleared for the approach”.
* He takes you down to minimums and you can’t take off the view limiting device until he tells you to. By the time he instructs you to remove the view limiting device, you are too high and too close to land on the runway using normal descent maneuvers, so you have to go missed. On the missed approach climb he instructs you to bring the PFD screen brightness back up.
* Once the PFD screen is back up and you’re inbound to LIN, call up NorCal and request the ILS 25R at Livermore. (Note: before the flight, make sure the Livermore ILS is in service and that the winds are favoring RWY25, otherwise you won’t be able to do the ILS there – no circling minimums)
* Follow NorCal’s vectors for the approach and hand-fly the ILS approach to DA, then climb following Livermore tower instructions for VFR flight back to Palo Alto.
* Once back at Palo Alto, the ACS “postflight procedures” are pretty much just making a note of anything from the flight that needs a squawk or a report to Mx.