

iPad has made its popularity to various domains and the Aviation community is certainly in for the tablet fever as the device is light weight with its touch screen easy to manipulate in the cockpit environment. The cool thing on iPad vs. other portable electronic devices is that it has demonstrated that it would not impair the functioning of onboard electronics. Alaska Airlines has taken the lead in May of this year to use iPad to replace traditional paper charts and operating manuals which the device has helped to save on weight as well as improving cockpit efficiency. Other airlines such as United and American have also followed suit within a month to launch the iPad program for pilots to replace the heavy flight bags. However, it was not until Jeppesen launched its app "Mobile FliteDeck" in July, the successor of the less convenient "Mobile TC" app which has made iPad become a hit on General Aviation.

I have made a visit to US in November and have planned some time for cross country flight on a Cirrus Design SR22 during the visit. To try out the iPad on the trip was one of the objectives and since a standard SR22 has well equipped avionics and MFD (multi-function display), should the iPad fail, it would have minimal impact on navigation. The SR22 is a high performance single piston engine aircraft rated at 310 hp. With this much power on a 4-seater aircraft, you can bank 30° on a tight circuit climb and still achieve a descent climb rate vs. on a C172, you would lose the climb performance if you bank at this rate. TAS (true airspeed) at cruise is around 180 kt which is a pretty good deal for a light single piston engine aircraft. It has a 3 blade constant speed propeller but the prop control is coupled with the throttle, so only control is required on the throttle lever and there is no separate propeller control lever. Some of the terminologies are different such as flap setting is at 50% (16°) and 100% (32°) where normal take off is being done at 50% flap setting. It would be useful to check on airplane systems description from the airplane information manual apart from studying normal and abnormal procedures. The Avidyne glass cockpit is integrated with two Garmin 430 GPS and a L3 TCAS (traffic collision avoidance system). The auto-pilot is 3 axis and you can basically fly by turning the knobs.

On the iPad, I have purchased the 16 GB Wi-Fi iPad 2 in September based on what I have learned from US AOPA (Aircraft Owners and Pilots Association) newsletter. In Hong Kong, you can also connect the Wi-Fi iPad to internet by using a 3G phone as the router which obviously needs to have a data plan. On the air, GPS based on 3G connectivity may not be effective and it is far better to couple the iPad with an external Bluetooth GPS receiver. I have bought the XGPS150 which is one of the current hottest selling accessory items for iPad in US General Aviation. The Jeppesen charts are within 2 GB, so unless you have lots of other stuff and movies, 16 GB would be sufficient. I have also purchased a kneeboard for iPad which I can set the iPad in position on my thigh during the flight. An external battery pack for the iPad would be essential as I have mistakenly upgraded my iPad 2 from iOS4 to iOS5. iPad 2 can last for 8 hr or more with iOS4 but iOS5 has reduced the fully charge battery endurance to about 5 – 6 hr.



For the trip planning, I have started preparation few weeks ahead which has included preliminary flight plan on routes and airports, getting familiar with eAPIS (electronic advanced passenger information system) which is a mandatory electronic submission to "Customs and Border Protection" for flying across US border, purchasing liability insurance from AOPA, etc. I have an aggressive route planned to make it to Abbotsford, British Columbia from Los Angeles on same day which means departing by 08:00 and arriving at Abbotsford, the AOE (Airport of Entry) by 16:00 before the immigration and custom shut down at 17:00. In order to fly direct and obtain higher true airspeed, the victor airways planned was west of the Sierra Mountains at 10,000 ft with one stop at Eugene, Oregon for fuel, lunch and to notify CBSA (Canada Border Services Agency) on border crossing 2 hours ahead. However, as with all flights, weather is the critical uncontrollable factor which is difficult to plan ahead. The outlook for northern Oregon and Washington was disturbing as I checked DUATS (online weather briefing system) before leaving Hong Kong. There was no improvement as I got into L.A. as a ridge of high pressure system from Northern California to Oregon has fenced off movement on the low pressure system in Washington and British Columbia and basically kept the weather condition to remain in IMC (instrument meteorological condition). The key challenge here was the enroute MEA (minimum enroute altitude) near Sierra Mountains which would put the aircraft in freezing level and the SR22 is not certified for icing condition. On the day of planned departure, there was no change on the weather condition and reluctantly, I have to abandon my original plan. As I got in the airport early and was not bounded by the time pressure on arrival anymore, there was ample time to work out an alternate plan and I have decided to head East instead of North. I then went on-line and used FltPlan, a flight planning system which you can select the aircraft from the database, input departure/arrival airports, time of departure and the system will generate flight plans with recommended waypoints and cruising altitude. The system is fully integrated with weather outlook and winds aloft information, hence, heading, enroute time, fuel burn, etc. are all included on the automated flight plan. Other useful website would be AirNav where you can check on fuel prices, F&B facilities, etc. I had also purchased the Pilots Guide (iPad version) by Optima for detailed airport information. After I have reviewed a no. of flight plans, I elected to fly to a more familiar location, Las Vegas for lunch stopover, and then continued eastbound to Grand Canyon, afterwards to Arizona and New Mexico depending on how the time would work out and then back to L.A.

The VFR (visual flight rule) leg from L.A. to Las Vegas at 9,500 ft was pretty straight forward. I retreated from manual control at cruise climb and put this on auto-pilot. Heading and cruise altitude can be set by turning the knobs which the auto-pilot took over seamlessly. One drawback on the system was that the aircraft would not react until you hit the vertical speed and altitude hold buttons on the panel which was one more step. After reaching cruising altitude, I set the auto-pilot on NAV and waited for the aircraft to perform its act.



In the meantime with auto-pilot in command, I checked on my iPad and set up the camera inside cockpit for pictures while keeping lookout in between. The iPad had worked out pretty well with my current aircraft position indicated on the chart. Zooming in and out of the chart for information was convenient and efficient inside the cockpit. As the aircraft reached its first waypoint, I watched the auto-pilot changed heading and acquired the new waypoint as planned. As the leg to Las Vegas from L.A. was within 1.5 hr, I called up the airport information (McCarran) and approach plates on the MFD for review. The same information was also available on the iPad. Obviously, the MFD is located at a better



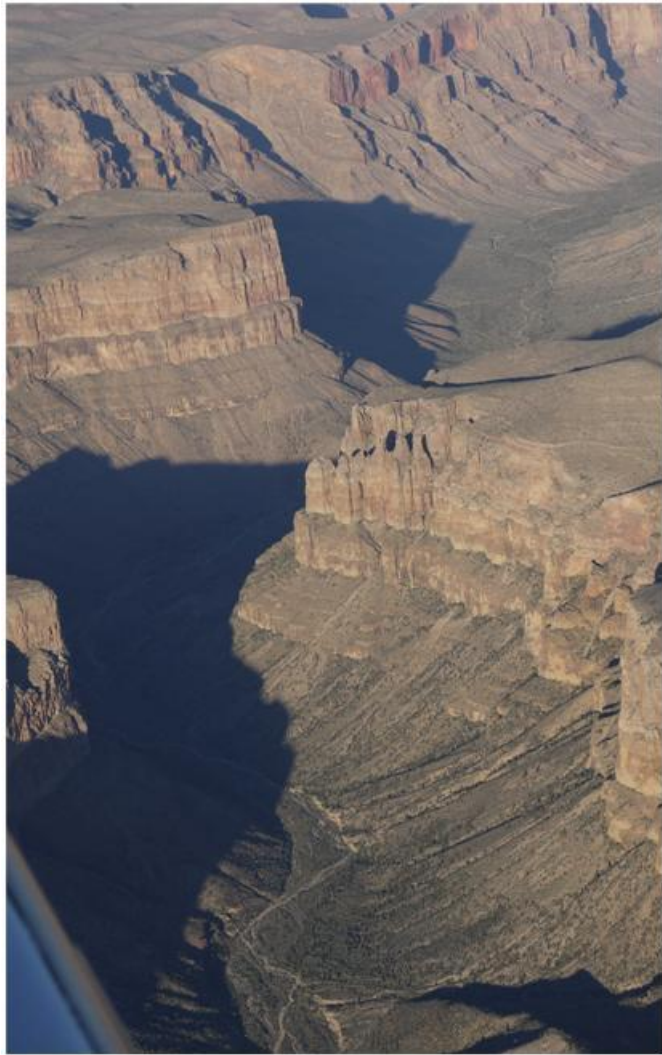
viewing position in the front and bigger size off course. (I had subsequently flown on a C172 with an analog cockpit and the iPad definitely worked better than the paper approach plates and cockpit management was at ease.)

At McCarran airport, I parked at Atlantic Aviation situated at the North side of the field for a very simple reason, lower 100LL price vs. Signature at the South. However, even at Atlantic, fuel prices were 60% higher vs. L.A. ☹ I have the choice of paying \$60 for parking or free parking with minimum 15 Gal purchase of fuel which I had selected the minimum fuel offtake. It was \$15 for parking few years back here and cost has increased substantially with the Western economic tumult of recent years. With reduced funding from the Fed, there is a trend of General Aviation airports started to impose landing fees and other charges. As I have taken fuel, Atlantic provided free shuttle service to and

back from the Stripe which I have gone to Mandalay for lunch as this was close to the airport.



As I left Las Vegas for Grand Canyon, I set the aircraft on auto-pilot again which I could then take pictures and enjoyed the trip. I made an ILS 3 approach to Grand Canyon by loading approach procedures on the Garmin 430 and watching the auto-pilot capturing the localizer just as I would turn earlier to intercept the localizer if I have flown this by manual. I then reverted the aircraft from auto-pilot back to manual control as the glideslope has been acquired. The local ATC (air traffic controller) wished I could stay for longer since I was the only aircraft there at the time. I have then moved on and made stops in Phoenix for fuel and rest, and other airports just to shoot some approaches.



Towards day end, I cruise IFR (instrument flight rule) at 200 kt groundspeed with a tail wind to return to L.A. Basin. While transiting through Ontario International Airport airspace, SoCal (ATC) was not happy on my descent from 10,000 ft which was slow as I set this at 1,000 fpm by the knob. Hence, I disengaged auto-pilot and reduced the power back to 15% for rapid descent to 4,000 ft in order to make way for an arriving airline jet (United), which added some flavor to the flight as it has been smooth all along. In summary, the iPad had demonstrated to be a useful gadget for both pre-flight planning and in-flight guidance. In addition, managing update on approach plates is simpler via electronic vs. paper. To facilitate workload management during the flight, prior preparation to familiarize with the tools and systems would be beneficial. I had spent time in Hong Kong to practice on using the iPad app and had tried out the XGPS at Shek Kong. As for the avionics, fortunately I have done some instrument training on Garmin 430 years back and had purchased the King School DVD for refresh so that this would not be foreign to me on board the aircraft. In short, it has been a fun trip with mobile technology.

