



Stan/Eval Newsletter
CIVIL AIR PATROL
UNITED STATES AIR FORCE AUXILIARY
105 S. Hansell Street
Maxwell AFB, AL 36112



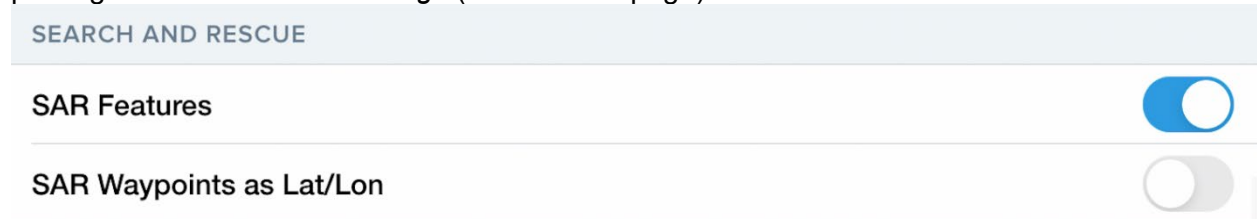
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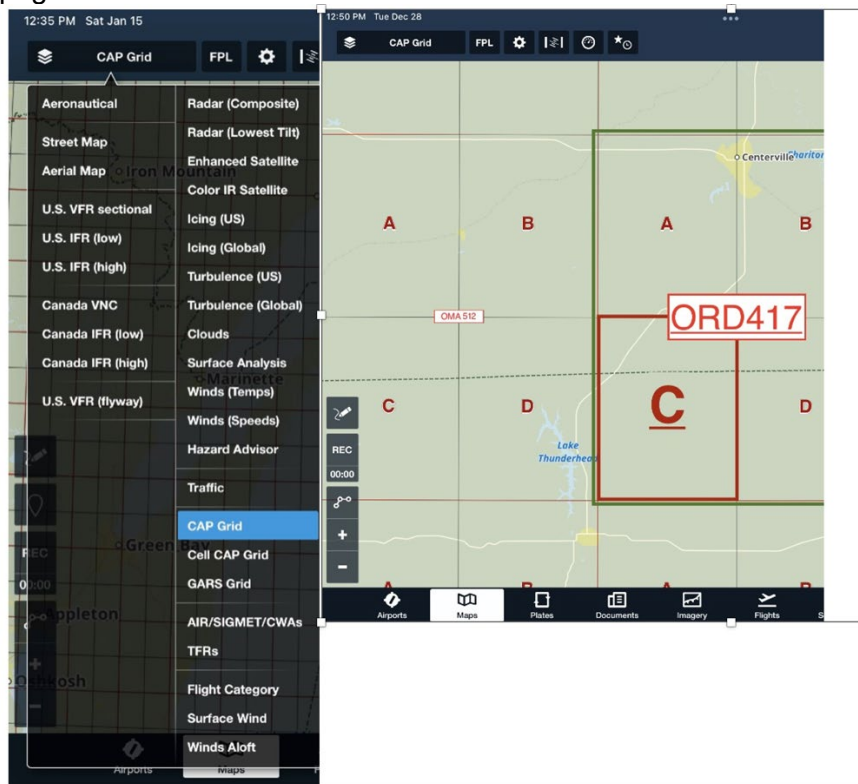
ForeFlight Search and Rescue Package (2nd Lt R. Vernica, CAWG)

ForeFlight includes several Search and Rescue (SAR) features that could come in handy to aircrew participating in SAR missions. Here, we provide an overview of the ForeFlight SAR package in the context of CAP SAR missions. The first step toward using the ForeFlight SAR package is to enable it in *Settings* (on the *More* page):

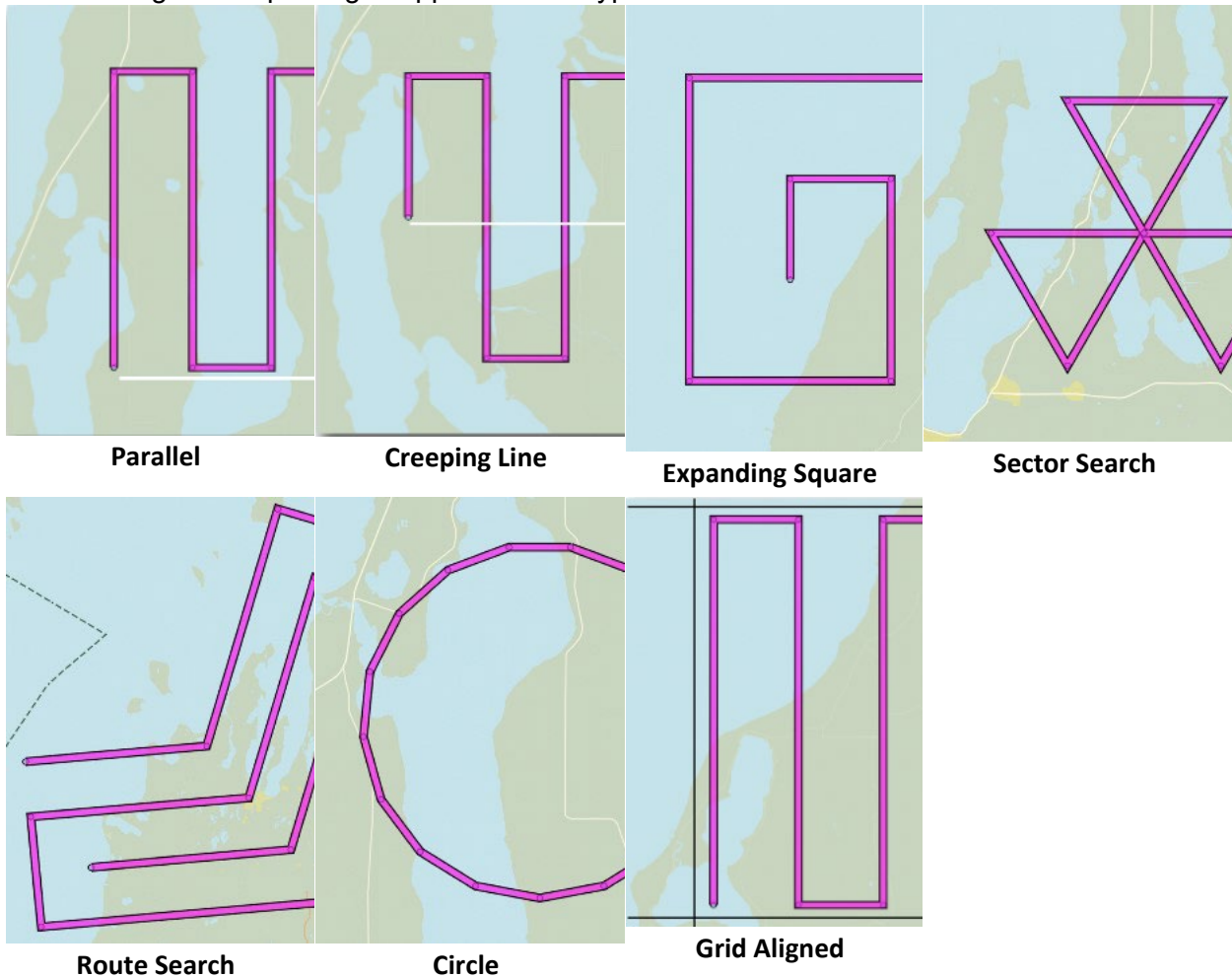


Note that if the *SAR Waypoints as Lat/Lon* feature is enabled, waypoints in a SAR pattern are displayed on the map with Lat/Long coordinates as opposed to the SAR-01, SAR-02 nomenclature. The Lat/Long coordinate format can be set in *More > Settings > Preferences > Units/Time > Coordinates*.

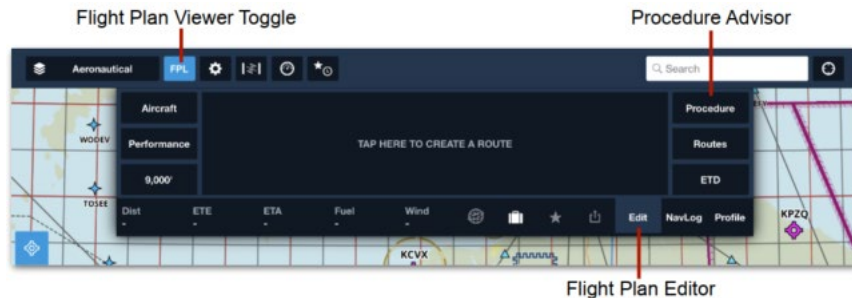
With the SAR features enabled, **CAP Grids** are available as one of the overlays on the *Maps* page.



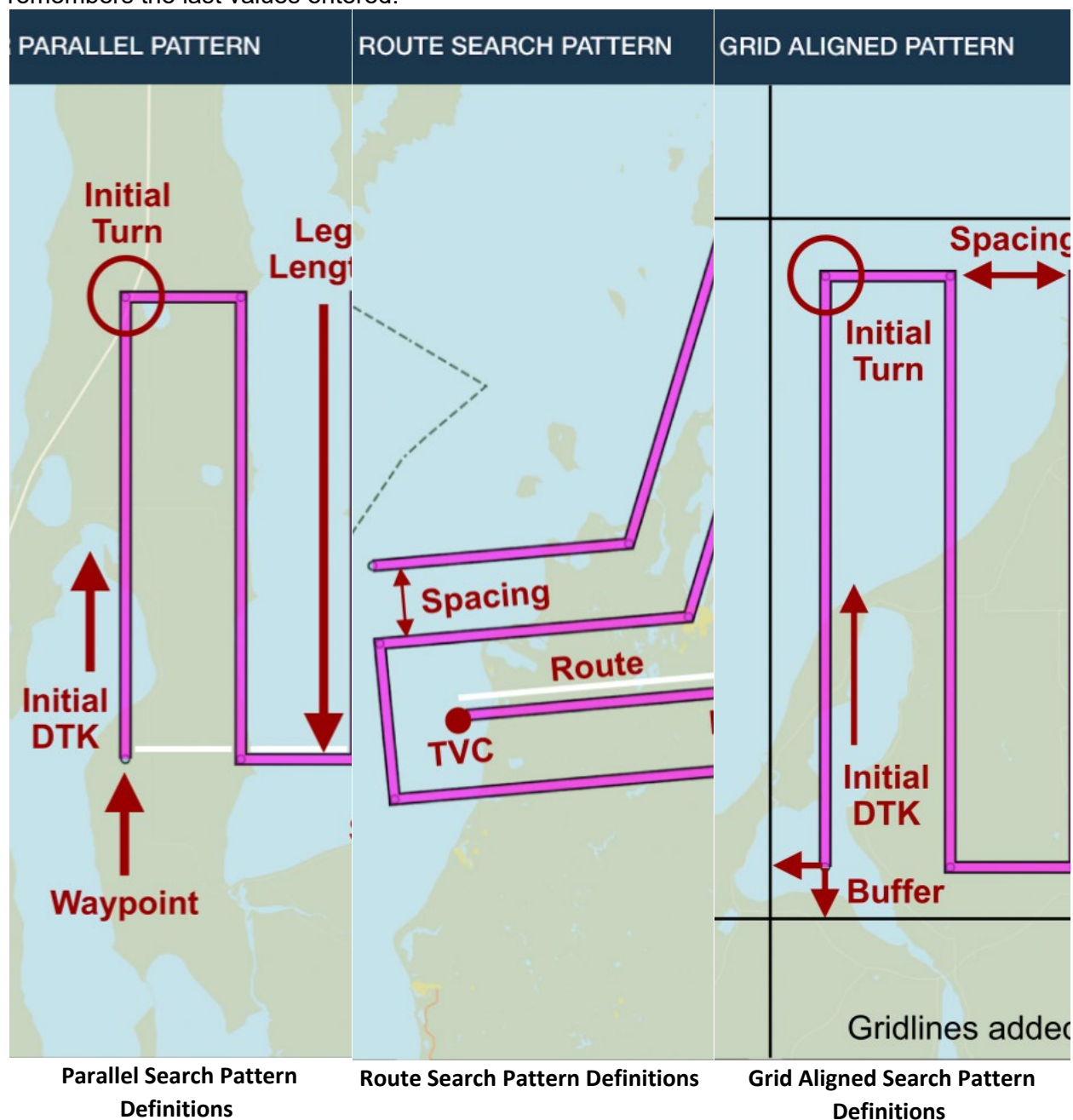
The ForeFlight SAR package supports seven types of **Search Patterns** as follows.



To create one of the supported search patterns, select the *Maps* page and open the flight plan editor using the *FPL* button. Select the *Edit* tab and click the *Procedure* button. In the procedures window, select *Search and Rescue*.

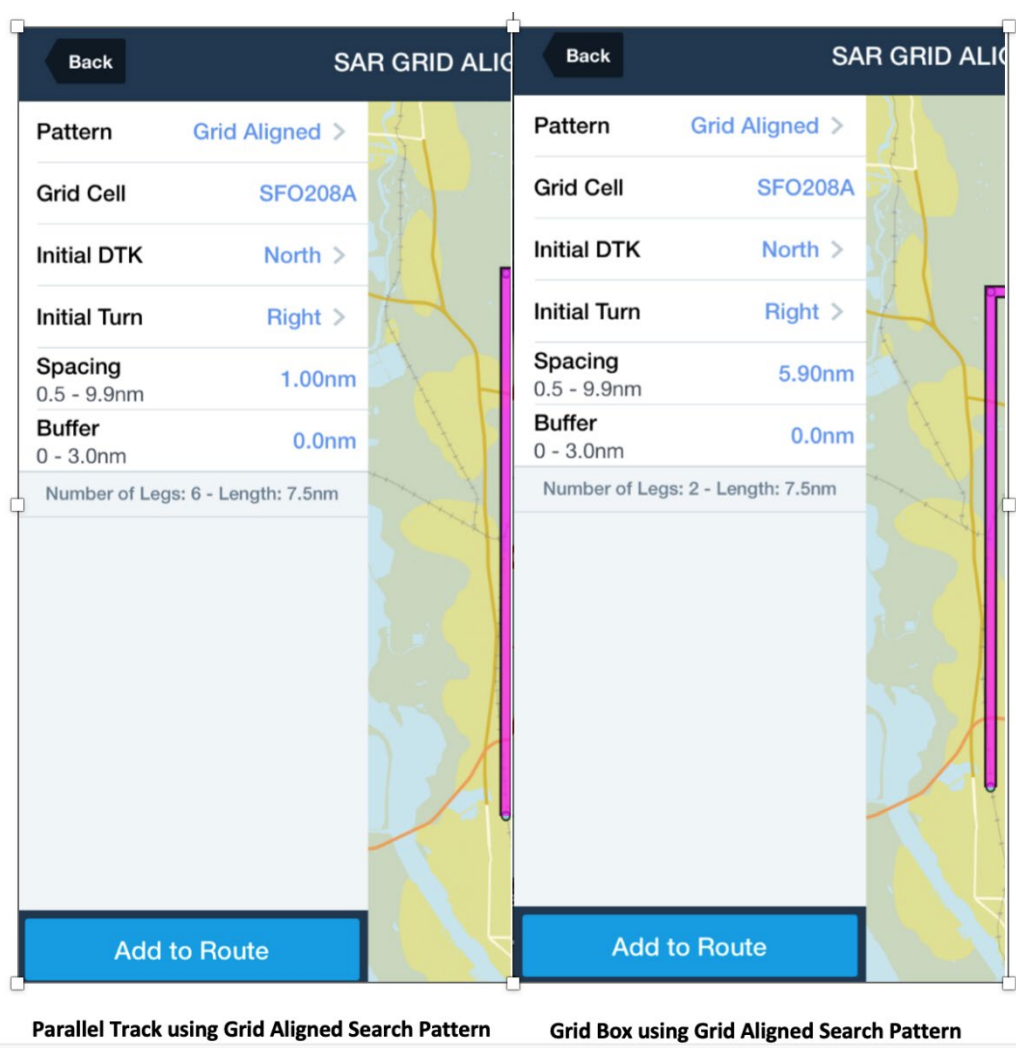


Each of the seven search patterns requires a set of input parameters. The exact parameters depend on the search pattern, but here are some examples: the starting *Waypoint*, the initial desired course (*Initial DTK °True*) from the starting waypoint in degrees true (001-360), the length of each leg in nautical miles (NM), etc. Some search patterns require unique parameters; for example, a *Route Search* pattern requires a route of at least two waypoints, while a *Grid Aligned* pattern requires a *Grid Cell* (e.g. CAP Grid). ForeFlight provides reasonable defaults and remembers the last values entered.

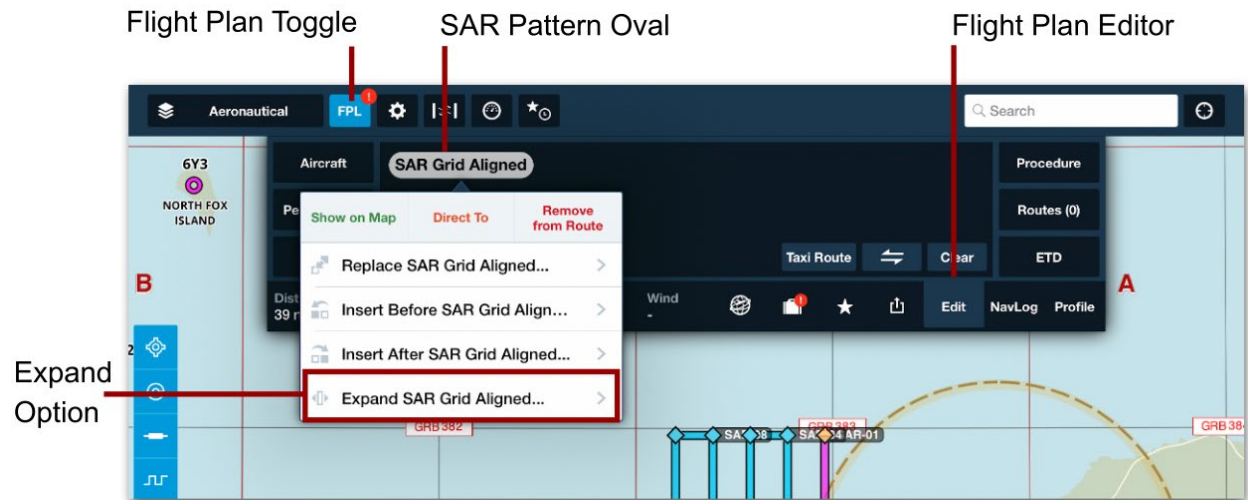


The Grid Aligned search pattern might be of particular interest to CAP aircrew. This search pattern is *confined* within the specified grid. The number of legs is not required as the pattern will use as many legs as needed to fill the grid. This pattern allows us to set a parallel search track within the grid quickly. Note that the Grid Aligned pattern only allows *North, South, East, or West* as the direction for the initial track, while the Parallel pattern supports any value between 001-360.

Moreover, the Grid Aligned search pattern allows us to set a route to box the grid as follows. With an *Initial DTK* of North or South, specify a *Spacing* equal to the cell's width, ranging from 5.8 NM at 40° Lat to 6.5 NM at 30° Lat. This would result in a pattern with three legs, partially boxing the grid. However, if the Initial DTK is East or West, specify a Spacing equal to the cell's height, 7.5 NM. To find out the exact *Spacing* distance to use, temporarily select the perpendicular direction as *Initial DTK* and note the leg *Length* value displayed. Use this value as the *Spacing* for the original desired track.



Once a SAR pattern is added to the flight plan, it appears as one SAR element in the flight plan. The SAR element can be expanded to list the individual points by using the *Expand SAR* option. This allows us to add or remove waypoints from the pattern. It also allows us to add additional SAR patterns to the flight plan. Once expanded, the SAR waypoints are displayed with Lat/Long coordinates in the flight plan and on the map.



ForeFlight flight plans can be transferred to several Garmin Flight Stream and G3X avionics. See [Connect with Garmin](#) for more details. Moreover, ForeFlight plans can be shared between two ForeFlight devices using the *Sent To*. Both devices must be connected to the same Wi-Fi network (including Sentry Wi-Fi), and both must have *Cockpit Sharing* enabled under *More > Settings > Map View*.

Lat/Long coordinates can be entered as waypoints in ForeFlight flight plans in a number of formats. A waypoint in the preferred CAP format of degrees, minutes, and decimal minutes can be entered in ForeFlight as DDMMmmL/DDMMmmL where *DD* represents the latitude (00-90), *DDD* the longitude (000-180), *MM* the minutes (00-59), *mm* the decimal minutes (00-99), and *L* the N/S/E/W letter designating the latitude hemisphere or the longitude meridian. For example, the waypoint 36°00.86'N/75°30.07'W can be entered in ForeFlight as 3600.86N/07530.07W. Finally, CAP grids can also be used as waypoints if entered in the format CAP@AAANNQ where AAA represents the Grid Identifier (e.g., SFO), NNN the Grid Number, and Q the optional quadrant (A, B, C, or D). For example, CAP@SFO321B. Once added to a flight plan, a grid waypoint is replaced with the Lat/Long of the center of the grid.

The complete guide to the ForeFlight SAR package is the [ForeFlight Search & Rescue Guide](#). The guide can also be accessed directly in ForeFlight by going to *Documents > ForeFlight (under Drives) > ForeFlight Search & Rescue Guide*. The guide is a 54-page document that covers the CAP grid overlay and waypoints, seven search patterns individually and as part of a flight plan,

latitude/longitude (Lat/Long) coordinate input and formatting, and flight plan sharing. [Lat/Long coordinate input and formatting](#) are also covered as a separate article in the ForeFlight Support Center.

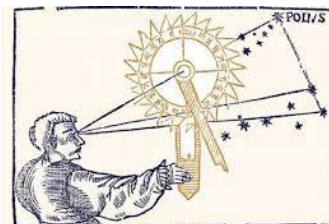
Note in a bottle replaced by a drone

Remember in the good old days when you were stranded on a desert island, you would put a note in a bottle and throw it into the ocean? Well, we have a better way now...click [here](#)! So keep your drone close by!



Celestial Navigation

With all the reports of GPS spoofing, there is a renewed interest in Celestial Navigation. This was the standard means of navigation up through the 50's and even into the 60's. Of course, it's the only way to navigate if you are going to Mars or some other spot in space. If you ever wanted to know what it's about, this is a concise 30-minute guide. If nothing else, it will make you appreciate the ease and convenience of GPS and even VOR navigation! Click [here](#).



Staying IFR Proficient

Unless you fly every day in bad weather (and who wants to do that?), it's hard to stay IFR proficient. Can you really fly to minimums at night with a gusty cross wind, heavy rain, and turbulence making the needles jump to and fro? But of course, is that necessary in CAP given we are limited to 500' ceilings and one mile visibility at the departure and destination airport as a minimum (see CAPR 70-1 9.11.3.4.8.2)? Think again. The 500/1 minimum for CAP is a planning number you use based on weather predictions (primarily the TAF). However, once you are in the air mother nature may surprise you with much lower minimums than what was predicted. So don't think you'll never have to fly a CAP airplane to less than 500/1. Of course, with special permissions you can launch below 500/1 (see CAPR 70-1 9.11.3.4.8.3).

Flying six approaches every six months under the hood with a safety pilot during the daytime in benign weather will not make a proficient pilot. That certainly has some value but by itself it is a poor preparation for real IFR. Keeps you legal but lots of pilots have come to grief legally. So how do we stay proficient and not just legal?

There are several ways, but it takes discipline and maybe some money.

When you fly under the hood with a safety pilot, try to do so "in the system". That is, file an IFR flight plan and talk to ATC. Some folks will do fine flying practice approaches with a safety pilot but fall apart when they have to also keep up with ATC. Try and do both.

Flying an IPC every six months is also helpful. This will allow a CFII to evaluate your skills and suggest areas to improve. Try not to use the same CFII on every IPC as different instructors will provide different insights.

It's amazing how much we can see outside when under the hood in the daylight. No matter how we try to ignore our peripheral vision, we get constant visual clues. So, flying under the hood during the day is not very effective training (worth doing but of limited value). Do the same approaches at night and you will lose that peripheral vision. Now you really can't see anything, but the instruments and things get harder. Oh, and don't forget the safety pilot! (Remember the safety pilot must be fully qualified to fly the airplane.)



Fly in a simulator. The Redbird and similar simulators can be great IFR proficiency machines and it's a lot cheaper than renting a real airplane. Plus, you don't have to drone along to reposition for another approach. It's much more efficient. CAP minimums don't apply in a simulator so try departing and landing in all kinds of weather. Great for practicing emergencies. You can even try an approach below CAT I minimums. Dial in lots of turbulence and gusty winds and rain. Fly partial panel. Lose some instruments. See how you do on a zero approach. Would you be able to survive? If the simulator is properly certified, you may even be able to log the approaches. The fatality rate is fairly low in simulators, so it allows you to push the envelope a bit. Don't do that for real.

Flying IFR in a simulator also allows you to fly departures and approaches to unfamiliar airports. If you are a flatlander, try the LOC DME into KASE (Aspen). How about some of the crazy approaches they have in Alaska?

But there is no substitute for the real thing. Go fly in real IFR as often as weather, time, and money permits. If you are a bit rusty, try higher ceilings and visibility. Better yet, go with an instructor or an experienced IFR pilot in some challenging weather (but not too challenging!). Flying IFR with someone who has more experience than you can be a great learning experience. They can lend a helping hand if you get in over your head. IFR proficiency is very perishable unfortunately. You really must work at it.

Articles for the National Stan Eval Newsletter

These articles have been written to present ideas, techniques, and concepts of interest to CAP aircrews rather than provide any direction. The articles in this newsletter should in no way be considered CAP policy. We are always looking for brief articles of interest to CAP aircrews to include in this newsletter. CAP has many very experienced pilots and aircrew who have useful techniques, experiences, and tips to share. Please send your contribution to stephen.hertz@vawg.cap.gov. You can view past issues [here](#).