



STAN-EVAL NOTES
CIVIL AIR PATROL VIRGINIA WING
UNITED STATES AIR FORCE AUXILIARY
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November 2012



Tail Strike Avoidance Training Deadline has passed: The deadline for completing the Tail Strike Avoidance Training was 31 October 2012. Hopefully, if you are a current VAWG C182 G1000 pilot, you have completed this training. Otherwise, you no longer have G1000 privileges until that training is completed. As previously discussed, we are placing special emphasis on tail strike prevention training. All current VAWG C182 G1000 pilots are required to have taken this one time training which consists of ground and flight training with a CAP Instructor Pilot in a C182T. There are no exceptions – every VAWG pilot who wants to retain their flying privileges in G1000 aircraft in VAWG must take the training. A syllabus is available on the VAWG Web page as well as a suggested slide deck for the ground training. We have also added a frequently asked questions document on the paperless wing.

You are not required to take this training if:

- You are not a C182 G1000 pilot, or
- You are not part of VAWG, or
- You no longer want to retain your C182 G1000 privileges, or
- You become a new VAWG C182 G1000 pilot after 1 August 2012, or
- You have already had the tail strike avoidance training.

Check pilots must include Tail Strike Avoidance as a focus area in any Form 5 (e.g. in any aircraft type) given in VAWG. This does not mean that the Tail Strike Avoidance training must be included in a Form 5 check ride. That is a onetime training requirement. But it does mean that Tail Strike Avoidance be a topic of at least the oral portion of the Form 5.

VAWG Needs Mission Pilots: VAWG is looking for more qualified Mission Pilots. The number of planes that VAWG gets is based in part on the number of Mission Pilots we have and our numbers have dwindled. That's not good. So if you are a CAP pilot or want to be a CAP pilot, you should work on getting your Mission Pilot credentials. It's not hard but it does take some time and work.

Becoming a mission pilot (this is not to be confused with a Transport Mission Pilot which is an ES rating) requires passing a Form 91 (in addition to having a valid Form 5) check ride. Unlike a Form 5, the emphasis is on flying a mission vice flying skills. Part of being a mission pilot means being able to fly particular search patterns and leading a crew in airborne search and rescue missions. It also requires good judgment to keep you and your crew safe in what might be less than ideal flying conditions. The Form 91 check ride must be done every 24 months to keep your currency. The requirements for a Mission Pilot are spelled out in the SQTR for Mission Pilot which lists the tasks that must be accomplished. This includes participating in two different missions as a Mission Pilot trainee.

Once you qualify as a Mission Pilot you will be able to apply your flying skills and newly acquired Mission Pilot skills to a variety of worthwhile CAP missions. You will also be eligible for funded mission flying (with some restrictions – counter drug and mountain flying missions require additional requirements).

Keep doing those VOR Checks!: VAWG pilots are doing a better job on keeping VOR checks up to date since our inspection but we still see aircraft with out of date VOR checks. Why should we bother?

- From a regulatory point of view (read “CFAR Part 91.171”) the aircraft you are flying must have a current VOR check in order to use VOR navigation (and ILS approaches) under IFR conditions for primary navigation.
- Its good practice and ensures that our VOR/ILS equipment is operating properly. If it fails the test, we can get it fixed before we really need it.
- It’s an audit item for CAP. Lots of questions if we don’t comply and could mean less aircraft if CAP doesn’t feel we are taking this seriously.

Here are the top reasons for not doing VOR checks when talking to pilots:

- “Huh? What’s a VOR check?” If you are a VAWG pilot, this is inexcusable. Who signed you off? Get them to call me.
- “I’m a VFR pilot so it’s not relevant.” Strictly speaking, you don’t need a VOR check to fly VFR legally. However, good airmanship says that you should be aware of the condition of all navigation equipment on an aircraft. In CAP, it’s even more important. For example, you may not need it but the Mission Pilot who gets called in the middle of the night the next day will need it. If he/she gets to the airplane and the check is out of date, we have a problem. VFR pilots in CAP have a responsibility to ensure that they keep any VAWG aircraft mission ready. If the check is out of date, or close to expiration, do it. Just takes a minute to do so why not?
- “I’m not planning on using the VOR. I just do GPS navigation.” Unfortunately, GPS is so good and so pervasive; it’s easy to fall into this trap. But GPS is not infallible and there will be times when GPS is either not available or is degraded. All of a sudden VOR’s and ILS’s start looking pretty good. This is critical for CAP. We are the organization that will be called in times of national emergencies. We all know that the first thing that will go out in certain emergencies will be GPS. So just when they need us the most, we could stumble by being over reliant on GPS. Keep your VOR skills up. You will need them!
- “Oh, gee, is it out of date?” Checking the VOR log should be part of every preflight.

CFAR Part 91 specifies that a VOR check must be done within 30 days in order to use VOR equipment (which includes ILS/Localizer). The test must be recorded and kept in the aircraft. Our white notebooks in VAWG aircraft have a VOR form for recording the test. As part of the preflight, you should check to see if the VOR check is current or about to expire even if you don’t plan to use VOR equipment. It doesn’t hurt to do a check every time you fly. When you record a check you need to note the date, where it was done (this doesn’t have to be a precise position – e.g. just recording the VOR you used is good enough (MRB, or LDN, or FAK)), the error recorded, and the pilot’s signature.

There are several ways to check the VOR. Because all of our aircraft have dual VORs, #4 is usually the one used but we should be aware of the others.

1. You can use a point on the airport surface designated as a VOR system checkpoint (see the AFD for a listing of airports with these). In this case the VOR must not exceed a 4 degree error.
2. You can use an airborne checkpoint designated by the FAA (the maximum permissible bearing error is plus or minus 6 degrees).
3. Select a VOR radial that lies along the centerline of an established VOR airway; Select a prominent ground point along the selected radial preferably more than 20 nautical miles from the VOR ground facility and maneuver the aircraft directly over the point at a reasonably low altitude. Note the VOR bearing indicated by the receiver when over the ground point (the maximum permissible variation between the published radial and the indicated bearing is 6 degrees).
4. If dual system VOR (units independent of each other except for the antenna) is installed in the aircraft, the person checking the equipment may check one system against the other. Both systems must be tuned to the same VOR ground facility and note the indicated bearings to that station. The maximum permissible variation between the two indicated bearings is 4 degrees.

5. Although not required, experienced pilots will also check the VOR sensitivity to ensure that full scale deflection occurs between 8 and 10 degrees from the radial.

Check pilots and instructors must ensure (1) that all VAWG pilots know how to do VOR checks, (2) that checking the VOR log is part of the preflight, and (3) that they demonstrate the discipline to keep these up to date.

Dealing with Emergencies (Capt. Lisa de Vries): You are cruising along on a cross country flight. Suddenly there is a terrible noise from the engine. Your airplane is losing power and you are in shock. Where is that emergency checklist? As you start searching around the pockets, the airplane loses altitude quickly than and with it your options for emergency landing sites dwindle....

The value of drill for situations that require immediate action is well known to emergency personnel. When shock takes your thinking brain out of action, training and drill must kick in. Here's a checklist that will help you organize your emergency skills:

A - - - - - B - - - - - C - - - - - D - - - - - E

Each letter represents an action to be taken.

- A = Airspeed. A loss of power will drop the nose and start the airplane in a descent. To maximize your gliding distance set airspeed for best glide speed and trim.
- B = Best place to land. Pick a field nearby and turn towards it. Then aim for a downwind position abeam your intended touchdown spot anywhere between 700 - 1300 feet. See Note 1.
- C = Checklist. An engine needs air, spark and fuel. That means checking carburetor heat, magneto's, fuel pump and tanks. See Note 2.
- D = Declare. Communicate your troubles and intentions as dictated by the situation.
- E = Exit preparation. Unlock the doors before touchdown and have your exit sequence ready.

Note 1: Practice the upper portion of the glide. Go 2500-3000 feet AGL above an airport and glide into the downwind box of possibilities (see below). Then climb back up (remember, nose is trimmed up) and start from a different spot in the sky. See how much ground you cover with a shallow turn. Altitude loss is higher in a 30-40° bank but a circle is completed much faster. Play with bank angle. Observe wind drift.

The lower portion of the emergency can be practiced by varying your downwind position in the pattern. 700 feet AGL, fairly close in. 1300 feet AGL fairly wide. You'll find that 1300 feet close in is not so good, and 700 feet fairly wide requires a well banked turn aiming straight for the touchdown spot. The key position is actually a box of possibilities from which a successful emergency landing can be made.

Note 2: There is a major difference between engine failure and loss of power due to air spark or fuel. A mechanical engine failure has the sound of clonking metal, or perhaps a loud rattle as a piston disintegrates. It gets your attention and perhaps you can squeeze a bit of power out of the working parts but you are going down. In case of smoke or streaming oil, shut the engine down (fuel off and spark off).

- Loss of power due to air or spark results in a rough running engine, not total loss of power. In case of carburetor ice, turning on carburetor heat will sound like no change. Leave it on and reduce the mixture until it sounds smoother. You can hear the water/ice go through the engine. Readjust in a few minutes.

- Loss of power due to icing blocking the engine air requires you to get more air to the engine. On our C172 aircraft you do that by turning on carb heat. This bypasses the air filter. On our C182T aircraft, alternate air is automatic and there is nothing you need to do. On our GA8 aircraft, you must pull the alternate engine air control (not the alternate static source!!!).
- Loss of one magneto (check mags with reduced power) will result in a rough running engine with some loss of power, requiring a diversion to a nearby airport versus ditching in a cow patch. Trim for a slower airspeed with minimum altitude loss. Switching from “both” to the good magneto may help.
- Fuel problems present themselves in other ways. A rapid decrease in power should have you diving for the tank selector before the engine is sputtering. For low wing aircraft turn on the auxiliary fuel pump. Your ears will catch engine problems before anything else. The nature of the problem dictates the choice of action.

Can I fly the airplane if I'm a non CAP pilot?: Many folks in CAP who are pilots but haven't taken a Form 5 are flying with current CAP pilots to become familiar with CAP operations and CAP aircraft. This is a smart thing to do as it allows non CAP pilots to learn about our procedures, our aircraft, and become familiar with the equipment. However, unless that CAP pilot is also an instructor pilot, there are limits to what the non CAP pilot can do.

- No one but a current CAP pilot may handle the flight controls in critical phases of flight. This usually means takeoff and landings or within 1000 feet AGL but could also include other phases of flight. The key term here is “critical”.
- Don't even think of having the current CAP pilot sit in the right seat and the non CAP pilot sitting in the left. Although flying from the right seat is not strictly prohibited, flying with the CAP pilot in the right seat gives the strong impression of an instructional flight. Only a CAP instructor pilot can do that. If there was an issue in flight, the FAA would probably see this as an instructional flight no matter what you say.
- The current CAP pilot cannot instruct the non CAP pilot in flight maneuvers.

The concern would be any situation that a reasonable person might interpret as flight instruction. Such a situation could result in the current CAP pilot losing their certificate by an FAA action and loss of flight privileges with CAP. If there was any damage or injuries during the flight even if unrelated to pilot actions, insurance coverage might be in doubt. There are a lot of grey areas you can think of but wisdom dictates we avoid any behavior that might give the impression of an instructional flight. There are many things that a current CAP pilot can legitimately do with a non CAP pilot in the right seat. Namely:

- The non CAP pilot can handle the radios, navigation gear, and so forth. For example, working with the G1000 MFD would be an excellent thing to do.
- The current CAP pilot can demonstrate flight maneuvers to the non CAP pilot.
- The current CAP pilot may allow the non CAP pilot to handle the controls for brief periods of time, especially if it is part of CRM. For example, the CAP pilot may need to review charts or talk on the radio and having the non CAP pilot handle the controls would contribute to safety. Just make sure that it's not during a critical phase of flight.

If, as a current CAP pilot, you are asked by a non CAP pilot to go flying, be sure everyone understands that the flight is not an instructional flight. Red flags that should be avoided would be things like:

- The understanding is that once above 1000 feet AGL, the non CAP pilot will continuously handle the controls. Although not strictly prohibited, it could give the impression of an instructional flight.
- The non CAP pilot wants to practice a stall series or steep turns or other flight maneuvers. This comes too close to an instructional flight. The current CAP pilot may demonstrate these maneuvers but handing over the controls to the non CAP pilot for the purposes of these maneuvers looks like instruction. If you hand the controls over to a non CAP pilot, the intent should be to allow the current

CAP pilot to focus on other tasks such as loading approaches, reviewing charts, or other activities where handling the controls may overload the pilot. E.g., do it from a CRM perspective.

- The non CAP pilot wants to improve their proficiency by getting the CAP pilot to critique their flying. No way! That's clearly instruction.

We want to encourage folks to fly with current CAP pilots. It's a great way to learn all about CAP flying. But let's make sure we don't make it an instructional flight. Just too much at risk.

FY13 CAP Appropriations (Open Cockpit): In marking up their respective FY13 Defense Appropriations bills the Senate and House Defense Appropriations Subcommittees increased CAP's budget request to \$28.4 million for operations and maintenance, \$9.3 million for aircraft procurement and \$.9 million for vehicles. Unfortunately, neither bill will be passed in time for the start of FY13 because of political issues beyond the control of the subcommittees. A continuing resolution has been passed that will go beyond the election, possibly well into next year.

Leaning our steam gauge aircraft: We've had several instances of rough running engines due to pilots not properly leaning on the ground and in the air. Unfortunately, flight schools often don't teach proper leaning as they are terrified that something untoward will happen when a student over leans. So pilots often come to us with the "full rich" mode deeply ingrained in their flying brain and no idea what the red knob is really for. The reasons for proper leaning are:

- The engine runs cleaner and plugs won't foul.
- It saves lots of gas. Whether you are paying or CAP is paying, that's good for everybody.
- At moderate to high altitudes (or density altitude), the engine will not generate full power unless leaned properly. At high altitude airports, you won't get off the ground at full rich.

It's important to lean an engine when the oil pressure stabilizes after engine start. Some checklists call for leaning on taxi but others don't. You cannot damage an aircraft engine by over leaning at low power settings such as you have on taxi and most ground ops. Unless you taxi at full power (this is frowned upon!), you can lean right up to the point where the engine stops and no damage will occur. The best way to lean on the ground is to do it aggressively enough so if you push the throttle forward, the engine stalls. This ensures you will not take off with the mixture still lean. So pull that mixture back as far as you can and still be able to generate taxi power.

During run-up, you will generally need to go to full rich settings. However, on hot days with high density altitude, you may need to do the run-up slightly lean. You have to be careful here as too lean at high power settings WILL damage the engine. So only lean at run-up if the engine is clearly not generating full power and then lean very conservatively. At high altitude airports in an airplane with a fixed pitch prop, you would lean at full power to achieve peak RPM and then enrichen just slightly. For constant speed props, lean to peak MP and then enrichen just slightly.

After takeoff you will need to lean as you climb as the air thins. On most days in Virginia, you can stay full rich in the climb through 5000 ft MSL but then start leaning. (Note that the POH for the GA8 and the C182 Glass recommend leaning after takeoff when you go to climb power. Always follow the POH!). Of course, that depends on density altitude.

Once at cruise you need to lean even at low altitude. In most cases, you should be cruising below 75% power. At these settings and below, you cannot hurt the engine by over leaning. You may lose power but you won't hurt the engine. There are two ways to lean depending on how the aircraft is equipped where it's assumed you are 75% or less power. Note that if you are over 7500 MSL, as a rule of thumb unless it's a very cold day, you can't generate more than 75% power no matter what you do. Just not enough air!

For aircraft with an EGT, lean to peak EGT for best economy or about 100 degrees rich of peak for best power. Your POH will have the specifics. Note that this setting is only good at a given altitude and temperature. If you change altitude, or the outside temperature changes, you need to readjust the mixture.

For an aircraft without an EGT, lean the engine until it starts to run rough and then enrichen only enough to achieve smooth engine operation. If you change altitude or the outside temperature changes, you need to repeat the procedure.

VAWG Check Pilots and Instructor pilots need to ensure our pilots understand proper leaning and exhibit the discipline to do it on every flight. Be on the lookout for low time pilots as they tend to be the least prepared to properly lean.

Leaning a G1000 C182T: Our C182T G1000 features a lean assist function designed to help pilots achieve proper leaning at cruise. This procedure can be slow and requires a lot of heads down by the pilot. An alternative to the published procedure is a simple but equally effective procedure. This alternative procedure requires the engine to be leaned until the “needle” on the EGT is on the next to last tick mark. No button pushing or special screens are required to do this. Just pull the mixture back slowly until the EGT is stabilized at the next to last tick mark and you are there. You can cross check this with fuel flow to ensure proper setting (depending on altitude you may see fuel flows between 9 gph and 13 gph). EGT does not respond instantly to mixture adjustments so go slowly and make sure the EGT has stabilized when you are done.

The procedure for leaning on the ground in the POH is quick and easy. After the engine starts and oil pressure has stabilized, set the RPM to 1200. Lean slowly until RPM peaks. You are there. Set the throttle back to 1000 rpm.

Orientation Flight and Glider Flight Goals (Open Cockpit): Congratulations on doing an incredible job flying our cadets in FY12; over 31,900 cadet orientation flights were provided in FY12 (over a 20% increase!), and you also gave over 10,200 glider flights (over a 25% increase!) Great work! The FY13 goals will be established once funding for the fiscal year is finalized, but we hope to improve on that again.

Articles for the VAWG Stan Eval Newsletter: We are always looking for brief articles of interest to VAWG pilots 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 steve.hertz@ngc.com. If your article is accepted, you will get a pro rata share of the VAWG Stan Eval Newsletter subscription fees.