



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

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Staying Proficient: Maintaining our proficiency has just become more challenging with the current stand down of most CAP flying recently announced. Many pilots rely on CAP training funding to help maintain proficiency. It's particularly hard on pilots with expiring Form 5's or Form 91's. Hopefully, this stand down will only be of a short duration but we don't really know. This is a good time to take advantage of on line training (FAA Safety web site, AOPA's ASF web site, and others) which costs nothing. Getting out and flying rental aircraft (or your own should you be fortunate to have your own airplane) is another option although more expensive. A less expensive option is to use the Redbird simulators that are now available in several locations. With an instructor, you can log Redbird time as actual flying time. They are great for logging night landings, instrument time, and just doing things you might not want to do in a real aircraft (engine out, instrument failures, and other emergencies).

Sumping Gas: Sumping the gas on our CAP aircraft is one of the required items on pre flight. Although hangared airplanes tend to suffer less from contaminated fuel, any fuel can be contaminated. Sometimes the fuel that comes from the gas truck or pump is already contaminated. This is something we want to do close to engine start – sumping the tanks the night before the flight ignores the possibility of condensation and other phenomena that can contaminate the fuel when the a/c sits for a few hours. When we sump the fuel, we are checking:

- Color – we want blue for 100LL. Anything else means draining the tanks.
- Water – We don't want to see any! A few drops can be eliminated by sumping till there is no more water. Then rock the wings and wait a few minutes before sumping again to ensure there is no more water. But significant amounts of water (anything more than a few drops) could indicate lots of water in the fuel system. Time to call an A&P.
- Contaminants – Dirt or other particles may indicate fuel filter clogging.
- Smell – It should smell like 100LL
- Touch – 100LL will evaporate quickly and not leave any oily residue (unlike Jet fuel)

Often, we fly multiple sorties with refueling in between sorties. If there is water in the fuel, it will take some time after re fueling to settle down to the drains (typically 10 minutes). It can be useful to rock the wings to get water in the tank to settle towards the drains. So if practical, wait some time after refueling to sump.

Most of the time, our fuel is clean and sumping properly can confirm that. But it just takes one case of contamination to ruin your flight. Flying with contaminated fuel usually means you will have just enough flight time to take you to the crash.

And don't forget that sumping the fuel does not mean that there aren't other things floating in the tank like lost dip sticks, jewelry, watches, chewing gum, dead insects, lost copies of CAPR 60-1, and missing tools. It can be a revealing exercise to actually look into the tanks.

Aircraft Credit Cards (G. Jackson): Each plane has a credit card that is specific to that plane. Although it might appear that using any VAWG card for any VAWG plane is OK, it's not. New accounting measures are in place and using the card assigned to the aircraft makes things a lot easier. There are times where we might be able to use a different card than the one assigned but in general that is a bad thing to do. So don't do it unless your IC or some other individual in authority authorizes it. Likewise, if you have any "cards on file" at FBOs, "unfile" them please!

Winter is Coming: Summer has ended and fall will soon be over. It's time to think about winter flying. Winter flying can bring enhanced performance to our fleet because of the very low density altitude. Takeoff runs will be shorter and climbs will be faster. Trying to do a leisurely and careful preflight in the biting wind and cold is a challenge. Dress warmly and take no shortcuts. It's also important to dress warmly in case of an off-airport landing. Pilots often assume the trip will be in a nice warm airplane only to find they are facing a long freezing hike through inhospitable terrain. Make sure your crew dresses warmly as well.

- Engine preheat: When the temperature is below freezing you need to pre-heat the engine unless the engine is already warm (from a previous flight, or the airplane was just in a hangar). Preheat doesn't always pre heat everything so starting may strain the starter. Be vigilant for any signs of starter stress. Cold weather also saps battery strength. So you usually are not only trying to turn over an engine with very thick oil but you are doing it with fewer amps available. Pre-heating doesn't do anything for your electronics so expect them to come up slowly.
- Dealing with frost: Frost must be removed from all flying surfaces before flight. Previously, the FAA advised that it was okay to fly a plane with frost as long as the surface was polished. Not anymore. Experience has shown that any frost on flying surfaces is a safety hazard and must be removed. Here in Virginia, frost can be an early morning problem but gone once the sun comes up. In that case, removing frost just takes some waiting. It can also help to reposition the aircraft so that the sunlight is most effective. For days where waiting isn't going to remove the frost, one needs deicing to get rid of it.
- Snow on the ground: Soft snow can be brushed off with a broom or other soft apparatus. But be careful as carelessness can scratch paint. Even with the snow removed, it may take some time in the sun to remove all traces of snow. It's a good practice to brush snow off right after it accumulates even if you are not going flying soon. This allows more time for the sun to do its work and takes the weight off the tail. Check carefully to make sure that snow was not brushed into mechanical assemblies that could cause controllability problems. If the snow is heavy and icy, you will risk damaging the paint or even mechanical assemblies if you try to remove it. You could order deice or just go home.
- Ice on the ground: Ice is not just a problem on flying surfaces. Frozen water in control linkages or other mechanical assemblies is an accident waiting to happen. Ice can get into enclosures that you can't see. Recently some Citation jets had controllability problems when ice built up in the tail cone and started interfering with elevator control. The best way to get rid of ice is to get the a/c somewhere warm so it will melt. But be sure everything is dry before you take the aircraft out again or you will have just refrozen water in hard-to-get places. If you don't have access to a warm hangar, deicing is your only option.
- Taxiing, takeoff, and landing on icy surfaces: Winter can also mean that even taxiing is a challenge. Snow or ice on taxiways and runways may mean cancelling a flight even after the snowplows do their job. For taxiing, takeoff, and landing a cross wind can cause loss of control due to the slick conditions. Your tires may not provide much tracking at all. Landing can be problematic as there may be little or no braking. Even if flight is possible, you will find that the ordinarily smooth runway is now very rough due to the snow and ice.
- In-flight icing: Our CAP airplanes are not certified for flight in icing conditions and your preflight planning should ensure you don't go there. The best way to avoid icing is to stay in above freezing temperatures. That's not always practical but should be the objective. The ADDS website has some excellent resources to predict and avoid icing. And of course PIREPs can be helpful as well. But if in doubt, don't go! No CAP pilot should ever consider launching if there is any reasonable chance of icing in flight. If you do encounter unforeseen icing in the air, you need to deal with it immediately by exiting the icing conditions as quickly as possible (easier said than done). Keep your airspeed up, don't use flaps, and get your pitot heat on. Turn the heat/defrost on full to keep your windscreen clear if possible. Consider carb heat if you suspect induction icing. Let ATC know and don't hesitate to declare an emergency. But remember, ATC can't fly the airplane, so aviate first. Inflight icing is extremely hazardous to small GA aircraft so the only approach is to ensure before you take off that there is no chance of icing. Otherwise, go home.
- Encountering snow in the air: Your preflight planning should ensure you never encounter snow in flight. Flying in snow is IFR and poses a serious safety hazard. If the snow is dry, chances are you will not accumulate any ice but you need to exit the conditions as quickly as possible. If the snow is wet, you risk in-flight icing.

Engine pre-heats and deicing can be expensive. If you are fortunate to be on a funded mission, both of these items are legitimate expenses that can go on the VAWG credit card. If this is a self funded flight, there is no reimbursement so consider that before heading out to the airport.

What Scares the Experts: There is an interesting video on the AVEMCO Insurance web site presented by Bill Rhodes (<http://www.avemco.com/Information/Videos/Warning.aspx>), a former professor at the Air Force Academy. This video discusses some behaviors we should be on the lookout for in ourselves and other pilots. The point of the video is that certain behaviors can presage an unfortunate aviation event. He identifies eight HTS (How to Scare) behaviors:

- Taking risks – Flying has inherent risks just as many other activities. But there are some who seem willing to accept more than normal risks. Some military flying has great risk but they have a good safety record because they have a very supportive infrastructure unlike GA.
- Know it all – Those with this attitude are incapable of learning because they “know it all”. Usually this behavior is also accompanied by lots of bragging.
- Planning for the unrealistic or barely realistic – This is flying with no margins whether it be weather margins, fuel margins, schedule margins, or margins on the pilots skill and abilities.
- In a hurry – The NTSB file are full of accidents that could have been prevented if the crew had not been in such a rush. It’s always been true that you can’t be in a rush when you fly.
- Overconfident in piloting skills – Like the guy who decided to roll his Baron and crashed, some pilots have an unrealistic view of how skilled they really are.
- Advancing very quickly – Some pilots want to race through ratings and upgrade to faster and more complex aircraft as quickly as the regulations and insurance companies will allow. Although this works in the military, GA does not have the mentoring, training, or monitoring that makes this work.
- Showing off – This usually involves pushing the envelope on aircraft or pilot. Neither is a good idea.
- Ignoring the books and mentoring – Some pilots just refuse to take advantage of any of the help available.

Flying high and on Oxygen: Most CAP flying is low enough that there is no need for supplemental oxygen. However, for some missions, especially high bird missions, we fly high enough that oxygen deprivation becomes a concern. CFAR Part 91.211 specifies the requirements for oxygen. But experience has shown that having supplemental oxygen at 10,000 feet or higher is a good idea. It becomes even more important at night as vision is affected by low oxygen levels before any other senses are. An interesting experiment is to fly at 10,000 feet for an hour without oxygen and then use supplemental oxygen. You will be surprised by what you see when you turn on the oxygen. All of a sudden, that black night won’t be so black! It will only be then that you will realize how it has affected your vision. Note that although we are referring to MSL altitudes, oxygen levels are actually determined by pressure altitude (not density or absolute altitude).

Supplemental oxygen is not part of our CAP equipment so you’ll need to buy this yourself. It requires an oxygen bottle and cannula (or mask). Having an oximeter is also useful so that you can monitor your oxygen levels. If you are on a funded mission, recharging an oxygen bottle is a legitimate expense.

When flying high without oxygen (under 12,500 feet please!!!), be on the lookout for any signs of hypoxia in yourself or your crew. Hypoxia is dangerous as the more hypoxic you become, the less aware you are of the effects. Any sign of hypoxia requires an immediate descent to a lower altitude.

More on filling out the e104 and WMIRS (C. Glass): In last month’s newsletter we reviewed the importance of filling out the e104 properly. It is recommended that the pilot list a cell phone or other contact number for at least one member of the aircrew (preferably the pilot) at the bottom of the "manifest" section and just above the aircraft data before departing on the sortie. This permits the mission base staff a quick reference to contact the pilot in case follow-up is needed on the mission for any reason. If the number is a cell phone number, it also provides one more opportunity to locate the crew in case of search/rescue or other emergency. This is good practice even if you are not on a “mission” but flying in a CAP aircraft. If you are overdue, we are going to go to the e104 to look for a contact number. Make sure it’s there.

One other point of interest is to be sure to check mark the box on the sortie that says “no fuel” if you do not refuel the aircraft for whatever reason. Not doing so makes it hard to figure out if the aircraft really wasn’t refueled or the crew just forgot to fill in the numbers. Checking the box leaves no doubt.

Tail Strike (J. Karanikas): When an aircraft is over rotated, either on takeoff or landing the potential for striking the tail tie down ring and/or the empennage exists (see C172 photo below). The associated damage will typically ground the aircraft until a complete inspection and repairs are performed. One tail strike in VAWG grounded the aircraft for approximately thirty days while the repairs were made (See photos below). The majority of tail strikes occur during landing, which tends to be the most damaging. During the flare, the aircraft is on the backside of the power curve (below L/D Max (which is typically the best glide speed in VAWG aircraft)), and any increase in pitch will cause the airspeed to decrease rapidly. If the pilot flares higher than required with a high pitch attitude, the aircraft is set up for a stall and a firm landing. A hard landing, combined with a high pitch attitude may flex the main gear enough (lowering ground clearance) to strike the tail tie down.

Tail strikes may also occur during takeoff, but typically do not damage the aircraft as much as landing strikes. Most tend to occur during soft field takeoffs. Soft field taxi should be performed with full back elevator pressure to take the weight off of the nose wheel, but as the engine is powered up the elevators will become effective and the pilot will have to adjust the elevator pressure to prevent a tail strike. The following two links are excellent videos on tail strike prevention:

- Minnesota CAP video http://www.youtube.com/watch?v=2qBc9_xUMBs
- UND Tailstrike video <http://www.youtube.com/watch?v=MUQpqtD89fs>

The tail tie down ring on this C172 aircraft is bent back from the impact and has a flat spot on it from scraping the runway. Obviously this is the second tie down ring ground impact for this aircraft; the first was repaired with the aluminum patch. Note that the bottom of the rudder has some paint scraped off, so it is most likely that the first incident tore the tie down ring completely off of the aircraft.



The tail tie down ring on this C182 is bent from a tail strike which occurred during landing. The damage appears to be limited to the tie down ring itself; however the mechanic’s inspection revealed greater damage.



The repair required removal of the vertical stabilizer, rudder, tail cone and associated wiring/control cables.



Photo of the damaged C182 bulkhead; note the deformation and tearing of the metal at the tie down ring hole.



Another view of the damaged bulkhead with the replacement bulkhead below it for reference.



What can we do to prevent tail strikes? Do not try to save the landing, perform a go around if the approach is not set up properly. Feel free to contact your local CAP instructor for additional training.

ATC Towers and Holding Short (courtesy of the FAA): Have you recently been issued "hold short" instructions by a Control Tower and you acknowledged with just your "N" number or even worse, the infamous "roger"? What happens next is the controller tries to get you to say the proper response. This is not because the controller is "having a bad day" and is hassling you. This has been leading to some interesting radio dialog and ties up valuable radio time. All the Air Traffic Control Towers have been mandated to emphasize the use of

proper radio phraseology concerning "hold short" instructions as stated in the AIM. Also please note to always use your "N" number or call sign when acknowledging ATC clearances/instructions.

- EXAMPLE #1: Controller Phraseology; "November One Two Three Four Five, Hold Short of Runway Three Zero Left at Kilo". Pilot Response: "November One Two Three Four Five, Hold Short of Runway Three Zero Left at Kilo", or Pilot Response: "Cherokee Three Four Five, Hold Short of Runway three Zero Left at Kilo"
- EXAMPLE #2 Controller Phraseology: "Piper 54321, hold short Runway Two Eight". Unacceptable Responses: "Piper 321, holding short""Holding short" "321""November 321, roger". Acceptable Responses: "Piper 321, hold short Runway Two Eight" "November 321, hold short of Two Eight".

Complacency and/or the lack of radio discipline have led to numerous runway incursions and other types of miscommunication. We have been getting feedback from Control Towers that many pilots are not using the proper response to acknowledge ATCT clearances/instructions. Please maintain safety and professionalism by adhering to proper and precise radio communications. For more information and examples see the TTD Letter to Airmen and the Aeronautical Information Manual (AIM).

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.