

- May 2018 -



Former KWRAA member and current Operations Manager for COPA, J. C. Audet spoke to the KW chapter on May 14, 2018 about his role at COPA, ways we can strive for positive changes in GA and COPA's position on ADS-B.

President's Message

Transport Canada is once again issuing the Transportation Safety Letter! The newest issue is available on their website or use this link: <http://www.tc.gc.ca/media/documents/ca-publications/Aviation-Safety-Letter-1-2018-eng.pdf>

One item of note is the random but targeted "Ramp Safety Checks" they will be conducting.

TC states, "...Unlike traditional methods, targeted inspections are designed to gather information on specific sectors, topics, or safety trends. They go further than measuring compliance with regulations and attempt to uncover why and how things are happening... The outcome is more informed policy and strategic decision making supported through data collection and analysis. This year, we want to learn more about the general aviation community."

As a result these targeted inspections will be conducted across Canada so you may see TCCA Inspectors out in the field looking to talk

to, and learn from, you. In spite of the friendly sounding reasons for these safety checks, be advised that TCCA Inspectors will be enforcing serious infractions during these inspections.

Last May, I wrote a short article on ramp checks and another on passenger safety briefings. At the time, there were no checks being done, but a recent focus on aircraft fatalities and passenger safety changed that. Look at the [May 2017](#) issue to be prepared.

Nav Canada is looking for input into their future plans to decommission some legacy navigation aids like VORs, DMEs, and others, which they believe will be redundant and no longer required in this age of WAAS GPS and Aireon. UAT ADS-B could provide a means of providing critical inflight NOTAMS about GPS losses and national security alerts. Lee and I are working with our friends at COPA to provide input. Please let us know ASAP if you have any comments or concerns.

2018 will be another great year for KWRAA!

Targeted Inspections

In the spirit of continuous improvement, Transport Canada Civil Aviation (TCCA) has introduced targeted inspections as part of its surveillance program. Transport Canada (TC) says these inspections are for bi-lateral educational purposes, but there is little doubt that they will likely be enforcing any infractions they find during those inspections.

The main things they will be concerned with are:

1) Annual Aircraft Information Report

Once you have registered your aircraft in the Transport Canada Aircraft Registry, the only way they can keep the database current is through Annual Aircraft Information Reports, which some pilots failed to file in the past. As a result, TC is cracking down on this to ensure owners are filing them as prescribed by the CARs. Even if your aircraft is not being flown you must still file unless you have notified TCCA that it is out of service. Have you filed your AAIR for 2018? If not, do so immediately!

2) Pilot Decision Making Tools

To understand the issues faced by pilots surrounding aircraft safety, Transport will be asking pilots during these ramp checks what Pilot Decision Making tools you use when planning a flight. In particular:

a. How do you assess your fatigue before flying?

Although pilot fatigue is thought of as something that affects commercial pilots who fly longer trips than we do, fatigue can impact GA pilots as well. Starting a flight when tired can lead to disaster so it's important to be able to self-assess your condition to fly beforehand. Once fatigued, a pilot's cognitive ability is reduced to a point where they are unable to determine the level of fatigue they are experiencing.

Since a fatigued brain is unable to self-assess, it may even be the best option to ask someone else you trust if they think you are fit to fly.

Things to consider before flying are:

- Extended work hours, irregular work hours, split shifts, and frequent rotations between day and night that may influence your sleep
- High levels of physical and/or mental stress are also circadian disruptors that can cause sleep loss, which may lead to pilot fatigue

b. What are your primary and secondary methods of navigation?

As VFR pilots, our primary means of navigation should be through visual clues on the ground such as towns, roads, a hydro right-of-way, railroads ...etc. Keeping a hard copy VNC map is always good; knowing how to read it is even better.

With modern technology, many of us are becoming more dependent upon electronic moving maps that plot our location and display our flight parameters as well as course and ETA to our destination. This isn't really a bad thing since it serves to add more information to our situational awareness. However, it is necessary to know what your back-up options are, and that is likely all the TC inspectors will be looking for. As suggested, redundancy is the key point here.

c. With whom do you file your flight plan or flight itinerary

CAR 602.73(2) lets us know:

(2) No pilot-in-command shall operate an aircraft in VFR flight unless a VFR flight plan or a VFR flight itinerary has been filed, except where the flight is conducted within 25 nautical miles of the departure aerodrome.

The main difference between a flight plan and a flight itinerary lies in the responsibility for letting the authorities know when you are missing or overdue. A flight plan ensures search and rescue is automatically initiated by Nav Canada if you are overdue, but a flight itinerary does not, so the responsible party must make the call to RCMP or SAR before a search can be initiated.

If you file a flight itinerary with a responsible person, it should be someone you trust to notify the authorities if you have not arrived at your destination. Proper flight planning is still necessary and you must provide the responsible party with your planned route of travel, speeds, altitudes, ETA ...etc.

3) Pilot Currency - How often do you complete recurrent training?

What are the activities you complete?

At KWRAA we are fortunate to have annual recurrent training arranged through the chapter each February. This session meets the requirements of the recurrent training specified in the CARs, but there are other options available should you miss these opportunities to stay current. COPA and other chapters of RAA also offer recurrent training sessions. Another good option for maintaining currency is to obtain another rating. This option will cost more, but adds more useful skills to your toolbox as a pilot. Getting a night rating, a seaplane rating, an OTT rating or any other rating or higher licence meets the requirement.

4) Best Practice

a. What emergency equipment do you carry onboard your aircraft?

In the event of an emergency you should have the following equipment onboard. The type, size and placement of each will be different, but you should be able to point it out and explain it to an inspector.

- First Aid Kit
- Fire Extinguisher
- ELT
- PLB (if carried)
- Survival Kit (if carried)
- Flashlight and/or signalling devices
- Emergency Checklists

b. What restraint systems are installed? Are there safer options available?

I believe that Transport Canada's focus here is that some pilots with detachable shoulder harnesses have been flying without them fastened. Although the lap belt is generally fastened, this has still resulted in a number of

preventable injuries. They will want to see the seatbelt assembly and know that you are using it properly. If there are safer options, consider installing and using them.

c. What topics do you cover during passenger briefings?

I suggest you look back at the [May 2017](#) issue to be prepared for an inspection. It would be best to have a hard copy of your passenger briefing checklist on board anyway as it serves as a good reminder. Your list may vary from mine; just make sure you cover the main points. If you want a copy of mine, it's available on the KWRAA website or by clicking [here](#).

d. When did you last re-certify your transcoder?

This topic is a sore spot with many owners of small aircraft. This is understandable in that the annual cost of recertification is often much more than anyone would have you believe. Our own members have experienced situations where the disconnection of pitot static lines to conduct the tests has created more issues (leaks ...etc.) leading to costly repairs.

Many of the technical failure issues in the past were related to the multi-wire input lines that carried Grey Code information between the encoder and transponder. When one of these lines became disconnected, the transponder provided incorrect information to ATC. Modern systems use a single serial data line to do the same job, cutting the chance of failure greatly and creating a go/no-go condition instead.

This recertification requirement seems rather superfluous since ATC confirms altitude every time we enter controlled airspace. A few of our members locally and nationally have been pushing for TC acceptance of harmonization checks with ATC to confirm transcoder operation, but for now there is still a requirement for testing and re-certification.

Hopefully you don't get ramp checked by Transport Canada, but if you do, you will be better prepared to answer any questions and have the expected information ready for the inspector.

- Dan

ADS-B Update

On Friday, April 20, 2018 Lee Coulman and I met with representatives of Nav Canada to discuss our ideas and our proposal to implement ground-based ADS-B for general aviation in Canada. Nav Canada has a vested interest in the Aireon satellite-based tracking system for commercial aircraft and believes it will work for GA. We have serious doubts and believe their solution totally ignores the interests and needs of GA pilots and owners.

Their solution ignores the added safety benefit of receiving traffic and weather while in flight. Without 978 MHz UAT there will be no way to see UAT equipped drones, ultralights, gliders, balloons and of course other aircraft that have met the FAA 2020 mandate but not with 1090ES. Since there is no capacity on Aireon for FIS-B and TIS-B data, the true value of ADS-B for GA will never be realized without UAT.

As prices continue to fall, a relatively large percentage of pilots are installing UAT ADS-B solutions in their aircraft without the need for a mandated solution for GA. As GA pilots are exposed to the benefits of ADS-B, especially the UAT version with weather and traffic, the conversion will be voluntary and relatively rapid. Any future mandate for ADS-B in controlled airspace will certainly be more palatable to GA pilots and owners if the UAT version with weather and traffic is made available in Canada, but this will no doubt be a long uphill battle with Nav Canada.

Here is a brief summary of the items discussed at our April 20th meeting with Nav Canada. *Nav Canada's comments are in italic font*; my comments follow in regular font.

UAT

- *Nav Canada ADS-B equipment is not capable of supporting UAT. New Hardware would be needed to communicate with aircraft using UAT.*

Lee and I based our original report on information we were able to access on the internet regarding the Sensis ADS-B transceivers being used by Nav Canada.

Unfortunately, because UAT was not implemented outside the USA subsequent versions of the Sensis equipment were not dual band, limiting the capabilities of what Nav Canada can do with ADS-B.

- *There may be a significant infrastructure investment required to support UAT.*

This is a relative and mostly unknown figure. We still believe the investment would not be as large as Nav Canada believes. We will be obtaining further estimates from equipment suppliers to try to firm up an amount for each UAT ground station.

- *There may be some significant ongoing maintenance and telecom costs to support UAT and it may not be possible everywhere due to data line requirements to remote sites.*

Although Nav Canada says it will be significant, they already have all the technical resources in place and given the reliability of modern electronics, we believe the incremental difference in maintenance costs would be insignificant.

- *The total area covered by UAT in Canada would be relatively small, just based on the sheer size of Canada and the remoteness of a large portion of the area.*

Granted the overall area covered would be a fraction of all of Canada, but 90% of us live within 100 miles of the US border and GA pilots generally don't fly into the vast wilderness areas that some commercial operators do. Why does Nav Canada think it is necessary to cover the entire country to benefit from UAT ADS-B service? Luckily, most of us have some access to the UAT ground stations in the USA and can access some of the services through them until Canada finally gets on board.

Aireon:

- *The feed coming from Aireon is capable of sharing the last known position for ADS-B aircraft anywhere in Canada, regardless of location and is not restricted to line of sight.*

We assume they mean line of sight from the ground since the aircraft would still have to be within the line of sight of the Iridium satellites that carry the Aireon equipment.

- *Surveillance coverage for all of Canada will be 100%*

As we have stated numerous times in the past, coverage will only be 100% when top-mounted or diversity antennas are used, neither of which exist in the vast majority of the GA fleet.

- *Much better information will be available to search and rescue if needed for all aircraft that fly in Canadian airspace at any altitude and in any topography*

Again, coverage will only be 100% when top-mounted or diversity antennas are used. Even if a bottom-mounted antenna managed to transmit to Aireon, this benefit will only apply to aircraft using 1090ES transponders; again this does not exist in the vast majority of the GA fleet.

- *Space-based ADS-B is being implemented to address a surveillance requirement*

The surveillance requirement is for commercial aircraft flying in Canadian airspace whether Canadian carriers or not. It is for tracking and separation of commercial aircraft and does nothing for most of the GA fleet. "Aireon is for Airliners".

RF Exposure

- *Safety code 6 is the standard used in Canada to determine the limits of exposure of humans to RF Radiation.*
- *Our calculations show that based on duty cycle of transponder, location of typical antenna in proximity to pilot and output power, there is very little chance that any harmful radiation affects the pilot and passengers.*
- *To assess a specific aircraft, RAA would need to work with Innovation, Science and Economic Development Canada (ISED) to have their aircraft tested.*

Personally, I believe any exposure to high level RF radiation should be avoided near the head, especially at these microwave frequencies. 20 watts is safer to be around than 250 watts and pulsed radiation just takes longer to have the same effect on the body. Setting your microwave oven to a 10% duty cycle still cooks the food... it just takes 10 times as long. This is just my opinion, but we are doing further research to confirm that radiation levels conform to Safety Code 6 innocuous levels.

1090 Saturation

- *We are confident that we will not have any saturation on 1090 in Canada based on traffic load and quantity of overlapping radar.*
- *UAV's could have a future impact, however it is highly unlikely that all UAV's will use ADS-B. There are a lot of other technical limitations, such as Mode S addressing which will prevent this from happening.*

We believe UAT ADS-B is a far better and less expensive solution for UATs gliders and balloons. Mode S (1090ES) is far too costly, especially for UAVs.

As for Mode S addressing, Canada could use numbers as well as letters to accommodate the increasing number of UAV drones. ICAO would have to agree and assign the block of registrations, but registrations using numbers like C-3164 or C-5415 could be used for UAVs. Pilots would adapt to know that numbers indicate an unmanned drone.

Traffic advisories

- *There are several applications that could be used for traffic information enroute. 1090ES ADS-B out will provide this information just like UAT would. And just like UAT, it can only be used for information purposes and increase situational awareness*

This one is a stretch since very few GA aircraft owners will install a full 1090ES in/out system willingly because of the cost of installation and maintenance... even less will be Aireon capable. 1090ES out will provide a signal for other aircraft to see, but UAT will do it at a fraction of the cost and provide weather as well. Additionally, UAT will also provide the location of non-ADS-B transponder-equipped aircraft within a 30 nm. range of ADS-B aircraft within the coverage area of ground-based ADS-B stations in the USA.

Weather information

- *NAV CANADA provides Flight information services via Flight Service Stations (FSS) and Flight Information Services Enroute (FISE). These services give you current and up to date weather information with the added benefit of having an experienced*

observer interpret the information thus helping you make a more informed decision. At this time NAV CANADA does not plan on changing how we provide this service.

We are certainly not in dispute of the excellent services provided by FSS and FISE, but as they say, one picture is worth a thousand words. Seeing a weather front on screen gives a new appreciation of the information provided by FSS and FISE. Whether it is obtained through a weather service provider or through UAT, there is great value in having the weather “picture” available in the cockpit.

Cost

- *NAV CANADA’s proposal is to mandate specific performance requirements, not equipment, in order to provide better surveillance.*

Nav Canada has not provided any specific performance requirements to GA that we know of other than to use Aireon on 1090ES.

- What transponder wattage do we need if we are using bottom-mounted antennas? (i.e. signal level required?)
- If equipped with top-mounted antenna only, will ATC still be able to “see” my aircraft at smaller airports like KW and London? (i.e. signal level required?)
- What surveillance services (if any) will Nav Canada actually provide to GA if we equip with top-mounted transponder antennas?

Radar decommissioning

- *NAV CANADA has no plans on decommissioning any of its PSR’s.*
- *The ground based SSR infrastructure in central Canada is nearing the end of its useful life; however, the surveillance capability requirement remains and is expanding.*
- *Space Based ADS B is a means to replace the existing surveillance equipment, and provide the opportunity to introduce surveillance in new areas for both IFR and VFR operations.*

We are thankful that Nav Canada will be maintaining these critical parts of the Air

Navigation System (ANS) for now. We are still concerned however that in the foreseeable future as Aireon reaches full operational status that Nav Canada may reconsider PSRs as redundant. This can only be the case once all of GA is also onboard with ADS-B, especially at smaller Class C and D airports. We still believe that ground-based ADS-B stations providing both 1090ES and UAT will be required for this to be effective and affordable for GA.

Cross boarder compatibility

- *To date, the United States (U.S.) is the only country to approve 978UAT for ADS-B (China has installed it to support domestic flight training operations within a very limited area).*
- *AOPA strongly recommends equipping with 1090ES for any pilot who plans to operate outside the U.S.*

This is obviously a circular argument... the only reason AOPA makes this suggestion is that no one else had the foresight to implement UAT for GA. This is unfortunately one of the few times Canada hasn’t followed in the direction that the USA has taken in regards to aviation.

Mandated Airspace

- *The scope of the study has been amended after customer and stakeholder consultations. NAV CANADA is still proposing a phased in approach, which would incrementally implement ADS-B Out in Class A and FL600 and above, then Class B airspace, and so on into the lower areas as time progresses. Class C, D and E control zones and Class E airspace and airways are expected to be assessed on a case by case basis.*
- *No final recommendation has been made as the study material is still being analyzed.*

We are very thankful that Nav Canada listened to stakeholders regarding Class C, D and E airspace as the original proposal to install Aireon capable equipment in all GA aircraft operating in those spaces would have devastated the GA community.

If the revised proposal is adopted we hope that as individual airspaces are assessed in the future, Nav Canada will still be open to the

possibility of installing ADS-B ground stations at those locations to support the bottom-mounted antennas already installed on many GA aircraft.

Airport trials

- *Airports operate independently of NAV CANADA. If an airport operator wishes to offer a UAT option at their airport, they could do so at their own discretion.*

When asked if they would be supportive of a trial at a smaller airport like KW, this was their response. We certainly had hoped for more since Nav Canada controls the data (Metars, Wx maps, etc.) that may be required to make independent UAT stations a viable option for the GA community.

My Final Comment:

Nav Canada was not supportive of the idea of a ground-based ADS-B system employing UAT at their facilities. We had hoped for further discussions about UAT but Nav Canada will not even consider UAT as an option for Canadian GA operators. It's a sad result given the great promise of affordable UAT ADS-B with traffic and weather in the cockpit of every GA aircraft in Canada.

I want to repeat our position on this topic. We do not believe that mandating ADS-B is necessary. As pilots experience the benefits of UAT, they will want to get on board! Lee and I will be continuing the fight for UAT even if it's done on a piecemeal airport-by-airport basis.

- Dan

Upcoming Events in 2018: (Highlighted lines are KWRAA Events*)

May 26	-	COPA Fly-in and Motorcycle Swap Meet at CYEE (Midland-Huron)
June 5 (KWRAA invited)	-	London RAA Fly-in at Roy Rader's 43°10'43.0" N 81°06'35.0" W
June 16	-	KWRAA Largo Woods Fly-in near Winterbourne
June 21-24	-	COPA National Convention in St. John, NB
July 7	-	KWRAA Fly-In at at CMZ2 – Metz/MacPat Field in Arthur
July 14	-	Zenair Open House – Midland ON at CYEE - Huronia Airport
July 23-29	-	Air Venture Oshkosh in Wisconsin
July 28	-	KWRAA Fly-In at Roger Deming's – Kenilworth ON
August 11-12	-	Gathering of the Classics in Edenvale, ON
August 17-19	-	UPAC Convention – Lubitz Field, Plattsville ON
August 25	-	Aviation Fun Day at CYKF – Waterloo Region International Airport
September 1	-	KWRAA Fly-In at Tom Shupe's in Mount Forest
September 10	-	September Meeting at 7:30 in the Cadet building at CYKF
October 15	-	October Meeting at 7:30 in the Cadet building at CYKF
November 12	-	November Meeting at 7:30 in the Cadet building at CYKF
November 30	-	KWRAA Christmas Party – Details to follow later in 2018

* KWRAA events are fly-in and/or drive-in (Please advise the host in advance if you plan to attend whenever possible.)

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