Ottawa Amateur Radio Club

Groundwave

P.O. Box 8873, Ottawa, Ontario, Canada, K1G 3J2

June 2021

Contrary to the usual procedure, the OARC annual General Meeting will not be held in June this year, but sometime in the fall instead.

Therefore, we are having a speaker this month, Mike Walker, VA3Mw, giving an overview of the FlexRadio SDR products. See the details on page 5.

Don't forget Field Day, see page 6, and the RAC Canada Contest. Unfortunately, again this year, there will no OARC Hamfest in September.

I would like to thank Mike Kelly, VE3FFK, for his monthly column in the *Groundwave*. I don't believe he has missed a single column in the last 17 years . Thanks also go to Greg Danylchenko, VE3YTZ, who also contributes regularly to the *Groundwave*.

Your *Groundwave* editor has decided to resign his position after 17 years at the helm. He thinks both he and the OARC need a change. So the OARC is looking for the next *Groundwave* editor who will commence with the January edition (or earlier).

Ian Jeffrey, VE3IGJ
Editor

Check out our Web Page: ***www.oarc.net***

Next Meeting: Wednesday, June 9, 2021, at 19:30 using Zoom software.

In This Issue....

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*Articles may be submitted for use in this publication provided that they portray events or activities that promote Amateur Radio. **Letters** and comments are also welcome. Submissions may be made by mail addressed to the Editor care of the OARC, or by e-mail to "ve3igj@rac.ca". Deadline for submissions occurs three days after the regular monthly meeting of the OARC.*

Please support your local radio organisations. They support you!

Club Information

The Ottawa Amateur Radio Club Inc. is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the National Capital Area and to the advancement and achievement of club members.

Regular Meetings of the OARC Inc. are held on the second Wednesday of each month (except July and August) in the Colonel By Room which is on the second floor of Ottawa City Hall, formerly Regional Municipality of Ottawa Carleton Headquarters, on Lisgar Street. Meetings commence at approximately 19:30 local. Further details about each meeting are noted elsewhere in this publication.

Executive Meetings of the OARC Inc. are normally held on the first Wednesday of each month at 19:30 local. Contact the President to confirm the date, time, and place of the next

The CAPITAL CITY FM Net meets every Monday (except some holidays) at 20:00 local on the club repeater VE2CRA (146.940-, 100 Hz) to pass traffic and to make announcements of interest to amateurs in the National Capital Region.

The Rubber Boot Net runs week days at 07:30 local on VE3MPC (147.150+, 100 Hz CTCSS tone) hosted by Roger, VE3NPO. The Rubber Boot net has been running since the early 1980's and is popular for the early risers and the go to work crowd.

The POT-HOLE Net is a SSB/HF net sponsored by the Ottawa Valley Mobile Radio Club and is conducted every Sunday at 10:00 hours on 3.760 MHz**.** All amateurs are welcome to check in.

The POT-LID CW Net is an informal slow-speed **CW** net that meets every Sunday, except during July and August, at 11:00 hours on 3.620 MHz, to promote interest in CW and CW procedures.

The QCWA CHAPTER 70 Net meets every Monday evening at 19:30 local on repeater VE3MPC 147.150+, 100 Hz) You do not have to be a QCWA member to participate.

The Ottawa Valley VHF/UHF SSB Net is sponsored by the West Carleton ARC. Look for it every Tuesday night (except the first Tuesday of the month) around 21:00 local on 144.250, (roll calls after net on 50.150, 432.150, 222.150, and 1296.100.) Horizontal polarization is preferred.

The Phoenix Net meets Tuesday evenings at 19:30 local on VE3MPC (147.150+, 100 Hz CTCSS).

Pete's Cafe Net meets Friday mornings at 09:00 local on VE3MPC.

The regular **OVMRC net** meets Thursday evenings at 20:00 local on VE3TWO (147.300+, 100 Hz CTCSS tone) analogue FM.

VE3TEN

Tuning in the beacon so that it makes sense requires you tune to **28.175** on **CW** and read the tone that is there . The spaces between the elements are the higher tone. If that doesn't work, tune to **28.175.28** on **lower sideband** for better results.

The Ottawa Amateur Radio Club bulletin "Groundwave" is published and distributed to club members. Publication dates may vary but it is hoped that the bulletin arrives at its destination before the events listed in it have expired. The bulletin is not published for July and August when meetings do not occur. Every effort is made to provide accurate information in the bulletin, however we are all human and mistakes can be made. The OARC accepts no responsibility for any damages that may result from this. The opinions expressed in this bulletin are those of the author.

VE2CRA Repeater Information

Voice (VHF) 146.940/146.340 100Hz CTCSS required
(UHF) 443.300/448.300 100Hz CTCSS required

VE3TVA Amateur Fast Scan Television Repeater
Currently off the air and looking for a new home.

IRLP Node 2040 146.940/146.340 (VE2CRA/VE3RC)
(Code 411 for info) (Code 204 for activity)
(Code 88 for time)
For further information please contact the Repeater Chair.

Note: The IRLP link is not connected to ECHOLINK. Please do not try to connect using the alpha keys on your keypad. It just confuses the operator.
Note: The IRLP link is disabled during the Monday night Capital City FM Net from 20:00 to about 21:45 .

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May Minutes

May 12, 2021

19:31 Meeting started by President Dave VE3BOW

Welcome by Dave VE3BOW to May's virtual meeting.

Announcements
Dave thanked Keith VE3TQY for volunteering to be our next Treasurer. Keith also has a number of NiCd battery chargers for various radios - to give away.

Harrie VE3HYS: Has large (fist size) antenna glass insulators to give away. They were originally part of an AM transmitter site.

Field Day (Greg VE3YTZ)
Dave would like to give it a try. Greg commented that nothing has changed from last month's announcement. We're still waiting for the provincial lockdown to end before we can do much advanced prep. Greg feels that if restrictions are ended within the next five weeks, he is optimistic of having at least a 1A station, if not a 2A like normal. Our presence at Corkery Community Centre in June has been confirmed by the administrators of Corkery Community Centre. Please contact Greg at ve3ytz@rac.ca if you're interested in joining OARC's Field Day effort this year. Dave has tested his wind-up tower and says it looks good for Field Day.

Fox Hunt (Roger VA3EGY)
Roger says he's waiting for the lock-down to end before he and his team can plan the next fox hunt. Roger hopes for a mixed-mode Fox Hunt, ie, either or both mobile and on-foot, whenever the next fox hunt does take place.

Repeater (Dave VE3BOW)
The test DMR upgrade has been operational at Tyler's (VA3DGN) QTH in Perth for some time now. Tyler continues to perform software upgrades and Harrie hopes to drive up to Camp Fortune in the near future to install it. BBHN will also be installed once engineering drawings are submitted to CBC and approved. While it's expected that wired Internet will be available to the site indefinitely, the BBHN will augment the wired Internet and allow for remote control of the DMR repeater.

Mike VE3MKX: Presentation on Morse Code on May 13 at the Barrie ARC featuring a Zoom presentation on the History of Morse Code by Virginia NV5F. Details in an email forwarded to the membership by Greg.

Glenn VE3XRA: Dayton Hamvention will be held over the Victoria Day long weekend. While the physical Hamvention is cancelled again this year, they are presenting an online replacement including a Contest University on the Thursday which is free but requires registration. Featured on Friday are three presentations which also require registration. If interested, please register on Hamvention's website: hamvention.org. As in past years, they are also having a QSO party on the weekend. During the Contest University on Thursday and the presentations on Friday, sponsors such as Icom will be giving away US $15,000 worth of ham radio gear including their IC-7300, IC-7610 and IC-705. To be

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Dates to Remember

2021

Feb. 7	Canada Ski Marathon
Apr. 14	Homebrew Night
Cancelled	Dayton Hamvention
Jun. 9	
Jun. 26-27	ARRL Field Day
Jul. 1	RAC Canada Day Contest
Sep. 11	OARC Hamfest **CANCELLED**
Sep.	Radio in the Park
Sep. 30	Membership Renewals Due
Nov. 1	Joe Norton Award Subm. Due
Dec.	RAC Winter Contest

mk's Word

Bits and Pieces
First, I got the heliax that I will be using for my next 160m "compact" loop up on to the roof. It took lots of rope, a few pulleys and a board or two to pry it over the eave. Now I have to figure out how to get it OFF the roof and into the sky. I'm not so keen to hang it in a tree this time, since the previous version swung all over the sky when the wind blew. I could hang it on the mast that holds the almighty 80-m dipole, but the mast is hurting already, and may become my next project.
By the way, the previous version of the 160 loop is toast. In the process of taking it down to make room for the new one, I found almost all the tie wraps didn't survive the winter. Many of the CDs used for spacers had suffered the same fate. It wouldn't have made it to December.

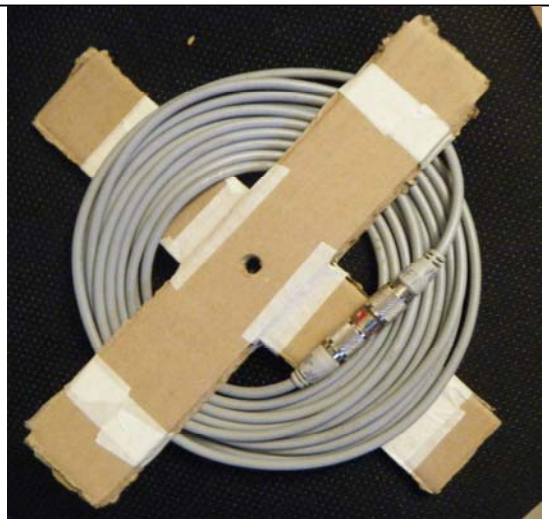
I have been pondering for a while now how to pack and carry the lengths of RG8-X that I use when portable. It hurts to watch some people bunch the stuff up, ignoring the fact that there is a minimum bend radius for any coax, especially foam dielectric types. Some of you have seen my attempts at various events and past homebrew nights. Recently I tried making a thin spool (mostly out of cardboard, 'cause I'm cheap that way).
It worked OK, but is a bit of a pain to wind up. I think I found the answer in an article by VA3KOT in "Feedback", the newsletter of the Georgian Bay ARC. He uses this to avoid sharp bends that will eventually put kinks in antenna wire. John cut up a dollar store cutting board in a + shape, and winds his antenna around two of the arms. Simple, cheap and easy, my kind of gear. Of course, I duplicated it (out of cardboard again) to see if it worked with coax. -Sure does. It has the added advantage over commercial spools that the length of the arms can be cut to just fit the wire or coax that is going on it. No more wasted space. As a bonus, the coax tends to get wound in a spiral with both ends visible, so they can be joined together, and don't need to be taped, bungeed or wired on to the thing to prevent it from unreeling when you don't want it to. When I can go shopping again some more cutting boards are going to get put to good use.

There was much fun to be had in the CQ WPX CW contest, but I'm not so keen on using serial numbers. First, the "decrement serial number" button on my keyer didn't always work, so a few times I ended up sending two different numbers to the same station, usually when they were barely hearing me, of course. Then its a bit intimidating when you are handing out a serial number like 65 when the other guy is sending back a QSO number like 2344 already. I'll take a contest where the exchange stays the same. It may be less meaningful, but easier on the nerves. The CQ VHF contest is coming up and only needs a signal report and grid square.

The spectrum analyzer is still hurting, but Dave, VE3KMV pointed out that it may not be so bad. The display seems to still work, but is missing the backlight, so is pretty much unreadable. Then there is the odour of magic smoke about the thing that demands attention. I still haven't gotten up the enthusiasm to pack it up and ship it out for repair.

With any luck we are done with single digit temperatures for a while, and by Field Day most of us will have at least one shot in the arm.

Look out Corkery, we're coming.
73
mk
VE3FFK



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eligible, you must be online during the draws. Also drawn will be free admission tickets for next year. Greg VE3YTZ commented on the Contest University speakers and highly recommends the talks.

Secretary Needed for next year
After about seven years as club secretary, Arthur VA3BIT will be resigning, and plans to move to Prince Edward Island where he already has a ham radio station. You may have heard him talk about operating VY2BIT remotely from Ottawa. A new secretary will be needed for September. Please contact Arthur at va3bit@rac.ca or Dave at ve3bow@gmail.com if interested.

Dave VE3BOW: Has two motorized HF loop antennas that, when connected to the CI-V jack of Icom radios, will automatically tune to a displayed frequency. Dave also has some short pieces of heliax for sale.

Main Presentation (Greg)
Greg introduced Henrik Smith, a former member of the Canadian Armed Forces who has experience with search & rescue. Henrik's current day job is related to the administration of SAR satellites.
+ Introduction to the International Satellite Based Search and Rescue System (COSPAS-SARSAT)
+ Canada's permanent representative to the COSPAS-SARSAT system.
+ COSPAS: Cosmicheskaya Sistema Poiska Avariynyh Sudov (translation from Russian:
Space System for the Search of Vessels in Distress)
+ SARSAT: Search & Rescue Satellite Aided Tracking Both a space- and ground-based system that receives and validates distress beacons, then passes the distress information to appropriate SAR agencies.
+ History of SAR: For many years ships, aircraft and other groups would monitor 121.5 kHz but detecting/receiving beacons on 121.5 was hit and miss.
+ 1975: Concept of using space technology to detect rescue signals first demonstrated (in Canada)
+ 1979: Canada, France, the Soviet Union and United States collaborated to improve SAR using satellites.
+ 1982: First aeronautical search and rescue in Canada using Cospat-Sarsat.
+ In addition to the original group, an additional 41 countries participate on a best-effort basis.
+ Different kinds/sizes of beacons: aviation, maritime and personal carry.
+ What beacons may transmit:
5 watt distress signal on 406 MHz
GNSS encoded position
121.5 MHz homing signal (0.5 watts): Used by searcher aircraft to beam to the beacon (within 25km)
15 character hex ID

Dave thanked Henrik for his very informative presentation.

Formal meeting ended at 21:20. Participation: At least 38. Thanks to Harrie VE3HYS for use of his Zoom subscription.

Minutes taken by VA3BIT.

June Meeting Speaker

The OARC is very fortunate to have Michael Walker/VA3MW provide us with an overview of the FlexRadio products and how they differ from other SDR and Superhet radio de - signs. Mike will also tell us why a Flex may be the last HF radio you need to purchase regardless of your HF operating style.

Mike, a Toronto-area resident, has been an active Amateur since 1974 and like most of us, loving every minute of it. From repeaters, HF, HF contesting, and satellites, Mike is now in the process of discovering EME digital modes. He loves HF station integration, remote HF operation and currently represents FlexRadio Systems with their Marketing and Education team.

Come out and join us for Mike's presentation on June 9, 2021, at 7:30 pm. OARC members will receive an email with information on how to join the meeting.

Non-members are always welcome. Please send a request to EXECUTIVE at OARC.NET

Date: June 26 and 27, 2021
Setup time: 10:00 (local) Saturday
Contest time: 14:00 Saturday to 14:00 Sunday. (local)
Place: Corkery Community Centre 3447 Old Almonte Road.

Field Day is sponsored by the ARRL and is always held on the 4th full weekend in June.

For 2021, the ARRL has extended the special COVID-19 rules from 2020 ARRL to Extend Field Day Rule Waivers from 2020, Add Class D and E Power Limit
As we are getting closer to the event, here is a status update. Provided that Ontario COVID-19 Rules allow such gatherings on the FD weekend (June 25 -27) we hope to proceed, but it is increasingly looking like a minimal effort like last year. We may not know the situation until just a few days ahead of Field Day. We have no choice but to remain flexible and be ready to shift into high gear at the last minute.

We have excellent facilities outdoors at the Corkery Community Centre where we also have access to kitchen, indoor washrooms, and air conditioning. You can check the map here.

We will set up either Friday June 25 (less likely) or the morning of Saturday 26 (more likely). It will depend on how elaborate our set-up can be under the circumstances.

Anyone interested in coming out to either help set up, operate, or tear down can contact me at ve3ytz AT rac.ca.

If you are not able to participate in person at Field Day, but still wish to contribute to the success of our event you can submit your score to the ARRL and attribute your points under the group effort “Ottawa ARC”. Last year we had over a half dozen members do this adding substantially to our overall score.

Last year we were able to pull off a successful Field Day despite COVD-19. Let’s do it again in 2021!

Greg/VE3YTZ

OARC Accredited Examiner Report

Below are the reports for the 2019-2020 and 2020 -2021 years.

2019 - 2020

21 exams resulting in 10 new hams.

There were 14 Basic exams, of which 3 achieved Basic, 7 achieved Basic with Honours and 4 failed.

There were 3 Advanced exams, of which all three passed.

There were 4 Morse exams, with 2 passes and 2 fails.

2020 - 2021

8 exams resulting in 5 new hams.

5 Basic exams were conducted

One candidate achieved Basic standing and 4 achieved Basic with Honours.

There were 3 Advanced exams and once again all 3 candidates passed.

There were no Morse exams conducted this membership year.

Thanks to VE3HYS and VE3LC, who handled all the requests for exams that came in when exams had to be conducted remotely. The remote exams and the lack of a 2020 Hamfest are the reasons the number of exams is down this year. On the other hand the RAC Internet based Basic and Advanced courses have resulted in a number of newly qualified hams.

Mike Kelly
VE3FFK

Scouts Amateur Radio Testing

While my accreditation is with the Scouts because you can only have one examiner per organization here are my stats.

2019

The class was examined by VE3ZTF and VE3FFK.

2020

I gave 10 basic exams to 9 people. 7 received Basic with honours on the first go, 1 received Basic. The 9th person got a 69 on the first attempt and tried again a couple of days later getting honours. Of this total 7 were from the Scouts course and 2 were folks that Mike sent my way.

I gave 3 advanced exams, 2 exams to course attendees, 1 passed. I gave another exam to an individual in the United States. He also passed.

2021

So far I have given 7 basic exams, 4 to the Nov 2020 to Feb 2021 course, all got honours. I also gave 3 exams to others, father and son who did the RAC course and another individual. All got honours.

I have so far given 2 advanced exams, both passed. I am hoping that the other 4 folk who took the advanced course will take an exam shortly.

Harrie Jones

VE3HYS

New Optical Antennas Harvest 100 Times More Electricity from Heat

The world's most efficient optical rectennas yet can harvest over 100 times more energy from waste heat compared to previous devices, although a new study finds that much work is needed before they can achieve practical value.

Rectennas—short for "rectifying antennas"—pick up electromagnetic waves much like car antennas. When a rectenna's antenna receives a signal, it generates oscillating charges that move through attached rectifier diodes. These rectifiers then convert these fluctuations to a direct electric current.

In theory, rectennas could harvest energy from heat that would ordinarily go to waste. "It would be great if these could help out with climate change," says study lead author Amina Belkadi, an electrical engineer at the University of Colorado at Boulder. "You could imagine adding them to solar cells so you can get even more energy from them."

However, the conversion efficiency of optical rectennas has proven far too low to make them useful for such applications. The problem is that in order to capture thermal radiation, rectennas have to be extraordinarily tiny, but the smaller they are, the more their resistance grows, which can shrink their power output.

Now Belkadi and her colleagues have found a way to dramatically boost optical rectenna efficiency using a quantum effect roughly equivalent to electrons walking through walls. They detailed their findings online May 18 in the journal *Nature Communications*.

In conventional rectennas, electrons must pass through an insulator to generate power. These insulators add a lot of resistance, reducing the amount of electricity these devices can produce.

Using a counterintuitive strategy, the researchers added two insulators to their rectennas instead of just one. If the right thickness and materials are chosen for this narrow trench—a so-called "quantum well"—electrons hitting it with just the right amount of energy can tunnel past it, experiencing no resistance in the process. This is the first time scientists have proven such "resonant tunneling" is possible with optical rectennas.

The scientists tested an array of more than 250,000 bowtie-shaped rectennas made of nickel, nickel oxide, aluminum oxide, chromium and gold that were each only rough 11 nm long and 6 nm wide. They found their devices displayed conversion efficiencies 100 to 1000 times greater than previous optical rectennas.

Still, the conversion efficiencies of these new rectennas remains small—just 0.001%. "We still have a long way to go," Belkadi says.

One potential way to further boost optical rectenna efficiency is to experiment with different materials that more electrons can pass through. "Perhaps we can push the conversion efficiency another 1,000 times," Belkadi says. "At conversion efficiencies of 1 to 2%, given the huge amount of energy lost as waste heat, people are going to start slapping such rectennas on walls."

By Charles Q. Choi

From https://spectrum.ieee.org/tech-talk