December 2021

Feedback

Newsletter of the Georgian Bay Amateur Radio Club

Club Business

President's Report

Minutes of the last meeting

Net Reports

TechTalks

ARES/ACS reports

Feature Articles

Keep Your Rig in the Freezer? – A strange but true caution for winter ops!

No Smoking! – an electronics challenge

On the Bench – Using the nanoVNA to measure the efficiency of Common Mode Current chokes

Nuggets of Wisdom – What did Lt Gov John Graves Simcoe do for Ham Radio?

Merry Christmas

President's Report

John Corby VA3KOT

PHOTO BY BRIAN LOCKHART

Dufferin Amateur Radio Services member John Corby, keys in Morse Code during a 24 hour session held at Hyland Park in Shelburne. Members of the organization invited the public to see what they were all about as they contacted other radio operators from around the world.

QNI?

If you are a phone operator, SSB/FM/AM, you probably don't use a lot of Q-codes. Some hams even frown upon the use of Q-codes on FM – particularly on repeaters. That's a pity really because Q-codes are our own ham jargon that exists for a purpose. Each code has a precise definition that allows an operator to send a clear message with just three letters.

In an emergency, it is essential that messages are brief but precise. I could say: "you got that? And you could reply "yeah gotcha!" We could choose different words depending on our personality and mood and those words may – or may not – be copied correctly. But if I say "QSL?" (the tone of my voice indicating a question) and you reply "QSL" we each understand that the message was correctly received.

There are a lot of Q-codes in common use by hams, but I want to focus on just one of them – QNI. You are unlikely to hear QNI very often unless you check into CW nets. During a CW net it is an invitation to check into the net. Loosely interpreted it is used to mean "Get Involved".

Some clubs have QNI competitions and award handsome certificates to those members with a high QNI score. QNI points are earned by participating in club events. For example, 1 point for checking into a club net; 2 points for passing traffic during the net; 3 points for being a net controller; 5 points for helping out at a charity run etc.

Many people join a ham radio club as a social member and that's ok too. Maybe you could rack up a few QNI points by checking into the Wednesday evening net and chatting with your buddies.

But the lifeblood of every club is the members who step up and really QNI – get involved. If every member is a social member then a lot of fun is had but nothing much gets done.

Even newly licensed members can get involved. It is as simple as keying up the mic and speaking your callsign when the Wednesday evening net controller asks for check-ins.

Georgian Bay Amateur Radio Club

Recognizes the outstanding contribution of

Frank Gufler

VA3-GUF

The certificate holder is an accomplished and outstanding contributor who has qualified for the distinguished and honourable title of

QNI Leadership Contender

Having correctly responded to the decryption challenge in the GBARC newsletter November 2021. The term QNI describes voluntary involvement which is the lifeblood of every amateur radio club.

Dated this 1st day of December 2021

John Corby VA3KOT, President

"I just don't have the time" you might be thinking. During my career I learned about time management. "We all have time for the things we want to do" we were taught.

"I'm sorry but I'm very busy" is another thought that fills people's minds. "If you want to get something done ask a busy man" we were taught. You see busy people are usually good time managers. Good time managers know how to

prioritize and – if necessary – re-prioritize their tasks.

I recall a management assessment course I took many years ago. We were tasked with scheduling a team of plumbers, each with their own set of technical and social skills, to go out and deal with a set of very challenging problems involving difficult, emotional clients. There were many factors to consider most of which clashed with each other.

We were given thirty minutes to come up with a schedule that would complete the day's calls while causing the least upset among clients. It was a daunting task. No solution was perfect. You can't please every client every time but you do your best. It was a very stressful exercise.

With five minutes left in the exercise and all the would-be management candidates perspiring to complete the arduous task in time, we were suddenly instructed to "STOP!" by the class instructor. "Another call has come in and it's an emergency" he said.

But back to QNI and GBARC. Ask yourself what it is that you want to get out of your club? If you have a good idea for something our club could be doing, have you considered doing it yourself? The world is full of people who have good ideas for other people to act on. There are no QNI points for giving other people things to do.

60 Days to Live Revisited

In last month's newsletter we posted a challenge. The newsletter contained a fictional (but based on fact) story about clandestine wireless agents operating behind enemy lines during World War 2. The challenge was an exercise to decrypt a secret message similar to what would have been actually used during that period in history. We even gave detailed instructions on how to do it.

This newsletter has a fairly decent subscriber list but only three entries were received. Could it be that only three people on the subscriber list were able to solve the challenge? Or ... QNI?

Fortunately there are a few among us who need no prodding to QNI and in that vein I give my thanks and congratulations to all the past and present executive members of the club, to our ECs, to our tireless Webmaster, to all club volunteers and to the three newsletter subscribers who sent in the correct solution to the code decryption exercise.

Now how about you? QNI?
Merry Christmas to all.

Meeting Minutes

Acting Club Secretary Marvin VE3VCG

Date: Tuesday November 23, 2021

Location: Zoom

Attendance:

Exec: John VA3KOT
Regular members: Tom VA3TS, Janet VA3EAC, Marvin VE3VCG, Greg VE3RQY, Bobby VE3PAV, Dave VE3WI, Paul VE3PQ, Adam VE3FP, Jim VE3JMD, Philip VE3QVC, Bernie, VE3BQM

** There being only 1 of the required 3 executives present, the meeting was declared inquorate so only procedural voting was permitted.

Minutes Read:

Minutes from last meeting, were read as published in the GBARC November Newsletter
Motion to accept minutes: Marvin VE3VCG
Second: Adam VE3FP
Motion Passed with no objections.

Treasurers Report:

Doug VE3DGY, club treasurer was absent. No Treasurers report was made.

Proposal:

John suggested that tech talks would now be included as part of our monthly club meetings. This then will leave the second Tuesday of the Month open for ACS EC for Bruce County, Marvin VE3VCG or Frank VA3GUF ARES EC for Grey County to make presentations about Emergency Communications.

No motions were made and no vote taken on this proposal due to lack of quorum.

Bruce County SET follow up Report:

John VA3KOT asked Marvin VE3VCG to provide a brief summary of the Bruce County Simulated Emergency Test from October 30th 2021. Marvin did a quick overview of the objectives he set out for the event and how well he felt those objectives had been met. Adam VE3FP commented and provided technical suggestions as to how he felt the 2 meter simplex exercise might be done differently.

New Business:

No new business was presented

Next Meeting:

John VA3KOT made an informal proposal that we should consider what might be done at the meeting of December 28th of 2021. He noted that as this is the last meeting of the year and near Christmas that attendance might be light. A brief discussion ensued.

Discussion:

Adam VE3FP proposed that we should do a radio related activity. Various ideas were brought forward including a GBRAC sponsored event such as worked all states, worked all provinces etc. The discussion included information about such activities which were previously sponsored by ARRL or RAC.

Adam VE3FP presented a map which had been used in prior events. Tom VA3TS also shared a printed map he had on file from a previous event he had worked on.

The discussion ended without a definite planned action or proposal. It is assumed that further discussions will be undertaken on these ideas.

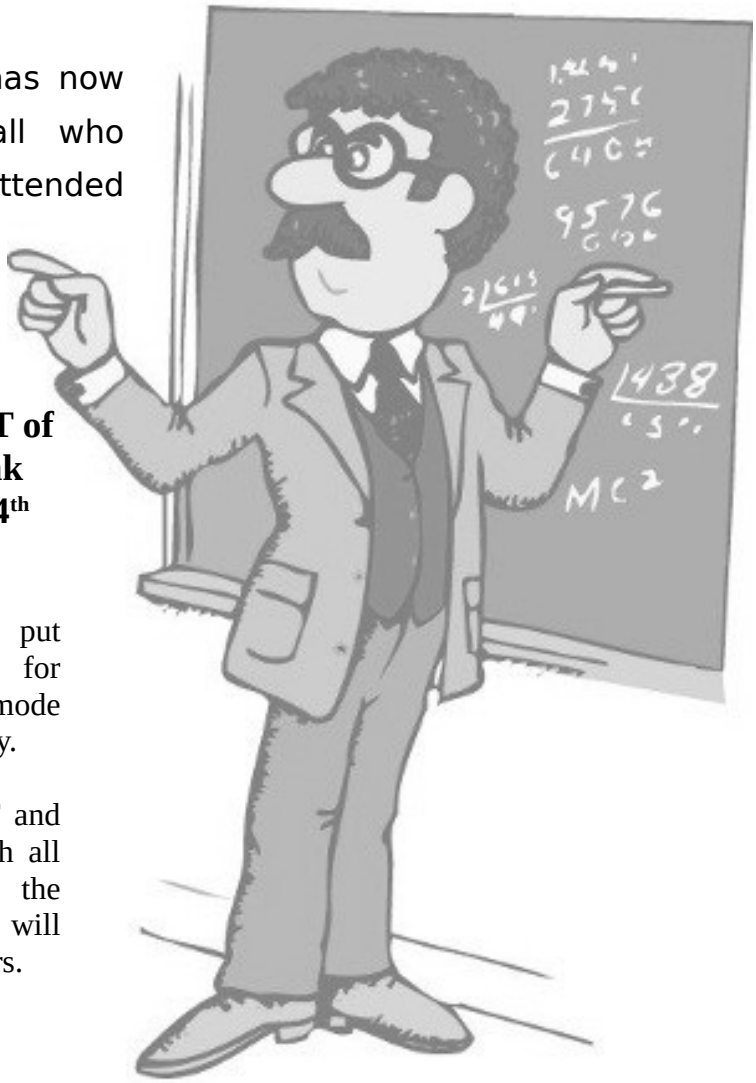
Motion to Close:

John VA3KOT asked for a motion to close the meeting.

Motion: Tom VA3TS
Second: Janet VA3EAC
Motion Carried
Meeting Adjourned

TechTalks

The 2021 TechTalks season has now concluded. Thank you to all who participated as speakers or attended one or more of the sessions.



Presentation by Ian Snow VA3QT of the Barrie ARC and the Winlink Development Group Tuesday 14th Dec 2021

The Winlink development group has put forward a national Winlink strategy for Canada. Their plan is to establish 10 Trimode Winlink RMS locations across the country.

Trimode RMS sites will have HF, VHF and Packet (BBS) service available. As with all RMS modes they will be part of the International Winlink Network, however will also be functional as local message servers.

Net Reports

Georgian Bay Amateur Radio Club meets on-the-air each Wednesday evening at 7:30pm on repeaters VE3OSR (146.94 – CTCSS 97.4) in Owen Sound, VE3GBT (146.73 – CTCSS 97.4) in Paisley, Ontario and immediately afterwards on 3783KHz +/-. VE3OSR can also be accessed on Echolink (node #333014).

03 November 2021 NCS: John VA3KOT

Topic of Discussion: SET comments and feedback

VHF

- VA3KOT John Owen Sound NCS
- VE3MIO Maureen Wiarton
- VE3GIO Larry Woodstock
- KO4DXQ Bob Tennessee
- VE3BQM Bernie Owen Sound
- VA3TS Tom Shallow Lake
- VE3OZW Richard Mildmay
- VE3RQY Greg Owen Sound
- VE3WI Dave Port Elgin
- VE3FP Adam Elmwood
- 9Z4DX Bertrand Trinidad

HF 3773KHz

- VA3KOT John Owen Sound NCS
- VE3BQM Bernie Owen Sound
- VA3TS Tom Shallow Lake
- VE3FP Adam Elmwood
- VE3IJD Gene Honey Harbour
- VE3OZW Richard Mildmay
- VE3GIO Larry Woodstock

---

10 November 2021 NCS – Richard VE3OZW

Topic for discussion:

1. Other than GBARC, what other nets do you join, listen to or participate in?

2. What topics do you suggest for our GBARC net?

3. Thanks to those that volunteer to be a net controller. We are always looking for volunteer net controllers. Would you be interested? See the GBARC website to volunteer.

*** Bonus Trivia questions (150 points) - What significant event happened on this date and almost to this hour, 46 years ago on the Great Lakes?

--- Answer - The sinking of the Edmund Fitzgerald on Lake Superior in 1975. Check out the W8F station to commemorate the event.

VHF

- VE3FAS Phil
- VA3MFO Jim
- VE3VCG Marvin
- VA3EAC Janet
- VE3RQY Greg
- VE3BQM Bernie
- VE3WI Dave
- VA3KOT John

HF

VE3BQM Bernie

*** Conditions did not allow for an HF round

Question #1 Responses:

- CW nets
- Port Elgin repeater net
- ONTARS
- 3640 Tech net
- Moonlighters 7.279
- SCARS
- ECARS
- 1900 net

Question #2 Responses:

- 160m HF antennas (antennas in general)
- Test equipment that you use
- Ham radio software - logging, programming, radio interface
- Homebrew building - rigs, antennas, etc etc
- Contesting
- What does CFRB stand for?
- Digital - HF/VHF/UHF/CW
- non-radio topics - top 3 favourite movies, other hobbies and interests etc

---

17 November 2021 NCS Bernie VE3BQM

Topic: Black Friday

- VE3MIO Maureen
- KO4DXQ Bob
- VE3GIO LARRY
- VA3KOT John
- VA3TS Tom
- VE3RQY Greg
- VE3FP Adam
- VA3MFO James
- VA3EAC Janet
- VE3VCG Marvin
- VE3RWY Rob
- VE3EFQ Bradley Paul
- VE3WI Dave
- VE3OZW Richard
- VY2NX Bob

Net reports continue on next page

24 November 2021 NCS: Marvin VE3VCG

Topic: What HAM radio gear or other things would you like for Christmas?

VHF

- VE3VCG Marvin
- VE3IJD Gene
- KO4DXQ Robert
- VE3MIO Maureen
- VA3EAC Janet
- VE3WI David
- VE3BQM Bernie
- VE3RQY Greg
- VE3JMD Jim
- VE3GIO Larry

80 Meters

Marvin VE3VCG made several attempts to operate on 3.783 but was unsuccessful. Bernie VE3BQM reported via 2 meters to Net Control that 80 meters was flat and no signals were heard. After roughly 10 minutes without success Marvin VE3VCG, Net Controller, closed the net.

- End of Net Reports -

A 49:1 Transformer for End-Fed Half Wave Antennas – Aussie Style

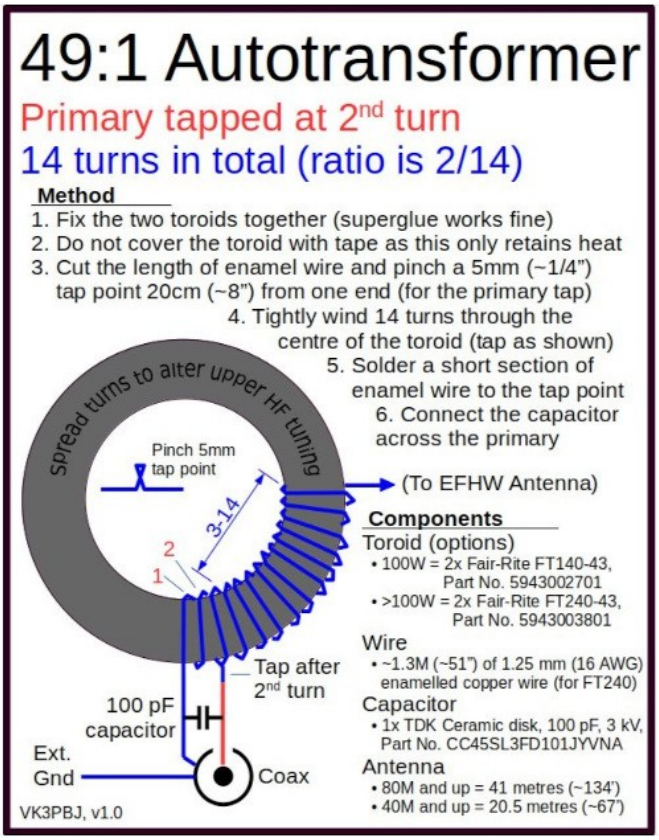
Submitted by Tom VA3TS

Editor's comment: Note the unusual style of winding the wire around the toroid. Usually there is a crossover winding after half the turns are made. This ensures that the end of the wire emerges from the toroid at the opposite end to the start when the windings are spread around the core.

This design also diverges from convention by tapping the coil at the second turn instead of closely wrapping a separate primary wire around the first two turns of the secondary.

Note also that two FT140-43 cores are used instead of the conventional single FT240-43 for 100 watt transformers. This may be an advantage because it encloses more of the windings inside the core and results in a more compact design.

A 3/21 turns ratio would improve performance on the low bands.



Ham Of The Year

Each year GBARC members are asked to nominate one of their own for the prestigious title of “Ham Of The Year”. This year one candidate received multiple nominations and the club executive unanimously voted to award the coveted trophy to ...

Richard Osborne VE3OZW

From Richard’s bio on QRZ.com:

Licenced since May 31, 2019. Started with 2m/70cm including hotspots for C4FM and DMR. I am now enjoying HF 180m - 6m and it is exciting to communicate with fellow amateur radio operators around the world.

I am a Net Controller and Assistant Net Manager for ONTARS (Ontario Amateur Radio Service Net) - www.ontars.com 3.755MHz . Come check in with any of the ONTARS Net Controllers 7 days a week, 7am - 6pm. I am Net Controller on Tuesday mornings at 08:00 plus I fill in for other available opportunities throughout the week. It's a fun, friendly place for all amateurs to check in, pass traffic, get a signal report or a short ragchew. All Amateurs are welcome to check in and join us.

Radios and equipment include (but never limited to ... wink):

2x Yaesu FTM-400XDR (base and mobile). The base is fed to a Diamond X200A antenna. The mobile feeds a Larsen NMO2/70 antenna.

Icom IC-7300 fed to a NI4L 7 band OCF inverted 'V' wire antenna 30 feet off the ground. I am using a Rode Podmic or a Heil Proset iC headset.

Yaesu FT-857D for 2m SSB feeding a 2m halo antenna built by VE3EBM. Thanks again Dave!

I spent the first 36 years of my life in Kincardine, Ontario and now I live in Mildmay, Ontario. Mildmay is approximately 2-1/2 hours NNW of Toronto, Ontario or 1 hour south of Owen Sound.

We are 30 minutes from the shores of beautiful Lake Huron on Highway #9. I am located on 8 acres of land in southern Bruce County, Ontario surrounded by Otter creek before it drains into the mighty Saugeen River.

I am a member of Radio Amateurs of Canada, ONTARS, 3640 Net, Georgian Bay Amateur Radio Club, Wingnuts7230, ECARS member #30741 and SCARS member #13328 and the Moonlighters.

Congratulations Richard!

GBARC's Ham Of The Year History

1993 Tom St Amand VE3TSA
1994 Gene McDonald VE3IJD
1995 Tom St Amand VE3TSA
1996 John Apsitis VE3TXB
1997 Tom St Amand VE3TSA
1998 Carleton Styan VE3BY
1999 Kim Styan VE3DXE
2000 Jim McCLaren VA3CJM
2001 Bob Vary VE3XOX
2002 Bernie Monderie VE3BQM
2003 Stan Guzonas VA3ZON
2004 Bob Droine VE3LKD
2005 Norm Pratt VE3NBJ
2006 Gene McDonald VE3IJD
2007 Jon Skagfeld VA3CIC
2007 Tex Brown VE3USI
2008 Dan Caldwell VE3CLD
2009 Fred Lorch VA3STG
2010 Adam Karasinski VE3IZS
2011 Susan Webster VE3TLK
2012 Jon Skagfeld VE3CIC
2013 Shane Ruther VE3RUT
2014 Adam Karazinski VE3IZS
2015 Tom St Amand VA3TS
2016 Carson Morton VE3OSO
2017 Doug Hall VE3WRF
2018 Frank Gufler VA3GUF
2019 Tom St Amand VA3TS
2020 Maureen Nightingale VE3MIO
2021 Richard Osborne VE3OZW

Noise on HF is absolutely down to just one thing; one thing I tell you!

Now, just one moment and it will come back to me ...

Ah yes, it is ... it is x, where x is defined as ...

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

ARES/ACS

Frank Gufler VA3GUF EC Grey County
Marvin Double VE3VCG EC Bruce County

From Marvin VE3VCG:

At 7:00 PM EST on Tuesday December 14th Ian Snow gave a presentation about Winlink and how it is used in emergency communications.

Ian is part of the Canadian Winlink development group. He is also the licence holder for the Hybrid Winlink Remote Message Server (RMS)located at the Royal Victoria Hospital in Barrie.

Marvin VE3VCG has invited Ian to speak for this tech talk. However, there was an apparent miscommunication between Marvin and Ian as to the exact nature of his presentation. As a result Ian had to quickly revise his planned talk on the fly and this required that he change computers to do so. Regrettably this delayed the start of the presentation by roughly 10 minutes.

However once the presentation was underway Ian provided a slide presentation covering the basics of what Winlink is, where it originated, basics of the Winlink network and how it is now being used by various agencies.

The discussion was broad in scope and briefly touched on how the role of amateur operators is changing with regard to operations in an active Emergency Operations Centre. This includes the evolution of the relationship between amateur radio operators, ACS Emergency Coordinators and municipal Community Emergency Coordinator Managers.

Ian's presentation was nearly 2 hours in length. In the second portion Ian provided a brief overview of Winlink Express including many of the included forms normally used for emergency communications. In addition Ian touched on other features which are part of Winlink Express including weather maps, terrain maps, and current and temperature information for bodies of water. He described how Winlink Express is used in various emergency situations including fighting wildfires, search and rescue and many others.

Ian also demonstrated how Winlink can be used to send text messages directly to a phone from an email service by sending the data stream through the SMS gateway for various service providers. This, it was noted, would be very useful with maintaining communications with a key contact who might be mobile or at a temporary field station and not at a permanent command post.

At the end of his presentation Ian took questions however many attendees left in advance to this portion of the presentation.

Marvin will be doing follow ups to this event to provide additional information about Winlink and to organise Winlink training events. This will include additional information about how to interface Winlink with various radios.

The discussion was broad in scope and briefly touched on how the role of amateur operators is changing with regard to operations in an active Emergency Operations Centre. This includes the evolution of the relationship between amateur radio operators, ACS Emergency Coordinators and municipal Community Emergency Coordinator Managers.

Ian also demonstrated how Winlink can be used to send text messages directly to a phone from an email service by sending the data stream through

the SMS gateway for various service providers. This, it was noted, would be very useful with maintaining communications with a key contact who might be mobile or at a temporary field station and not at a permanent command post.

At the end of his presentation Ian took questions however many attendees left in advance to this portion of the presentation.

Marvin will be doing follow ups to this event to provide additional information about Winlink and to organise Winlink training events. This will include additional information about how to interface Winlink with various radios.

From Frank VA3GUF:

Upcoming Zoom Session with Frank VA3GUF EC Grey County

Emergency Rag Chew: Grey County EOC Forms
Host: Frank VA3GUF
Date/Time: Tuesday 11th January 2022 7:00pm EST
Location: Zoom
Meeting ID: 979 0656 1044
Passcode: 400534
Details:
There are many for all to be aware of and I am presenting the Form Protocol to transmit any of them with greater detail on the forms that we might be communicating. There will be a message handling exercise at the end of the presentation.

Club News

Equipment Donation

Jim VE3JMD, Dave VE3WI and John VA3KOT drove to Thornbury recently to pick up a generous donation of equipment from Eric VE3BYZ and Denise VA3DMN.

Eric has had to retire from the hobby for health reasons. As his wife Denise told us, Eric used to have a “beautiful” voice and very proudly worked a lot of stations on the ham bands.

But, ill health has taken its toll and Eric can no longer project his beautiful voice as he once could so he has decided that it is time to lay down his microphone and donate his equipment for the benefit of the Port Elgin and Georgian Bay Amateur Radio Clubs.

Denise advised us that they won’t actually be getting entirely out of the hobby. Recognizing that ham radio is an essential resource in the event of an emergency, the couple are holding onto a pair of handheld transceivers – just in case!

Eric and Denise approached their friend Jim VE3JMD of PEARC, who contacted John VA3KOT of GBARC (Jim is also a member of GBARC) about dividing the donation between the two clubs.

Once the equipment has been sorted and tested it will be available to the two clubs for sale to raise funds for club projects. On behalf of both clubs we extend our sincere thanks to Eric and Denise Carre, VE3BYZ and VA3DMN for their generosity. They are both really nice people and we assured them that PEARC and GBARC will see to it that the equipment they have donated will be put to good use.

In the picture Denise is proudly displaying a certificate from the era of Hurricane Hazel in the 1950s

GBARC Canada Winter Challenge 2021/22

Tired of Zoom, gloom and shovelling yet? Are you up for a challenge? What better way for a ham to spend the long, long, dark, cold days of winter than to get on the air, hunt down and work Canadians in other provinces and territories?

I see you stand like greyhounds in the slips,
Straining upon the start. The game's afoot.
Follow your spirit, and upon this charge
Cry "God for Canada, worked all provinces and GBARC!"

Worked All Provinces

This is our annual fun challenge for members and non-members alike. A friendly competition to work other Canadian stations during the winter months.

Modes
CW, SSB, Digital

Rules
Work one station in each province/call area, any band, any mode with points assigned as follows:

- Mixed band mixed mode 1 point per province
- Single Band mixed mode 2 points per province
- Single mode mixed band 3 points per province
- Single band single mode 4 points per province

Logs
Logs show Date, Time, Call, Band, Mode.

Contest Period
1 Dec 2021 to 31 March 2022

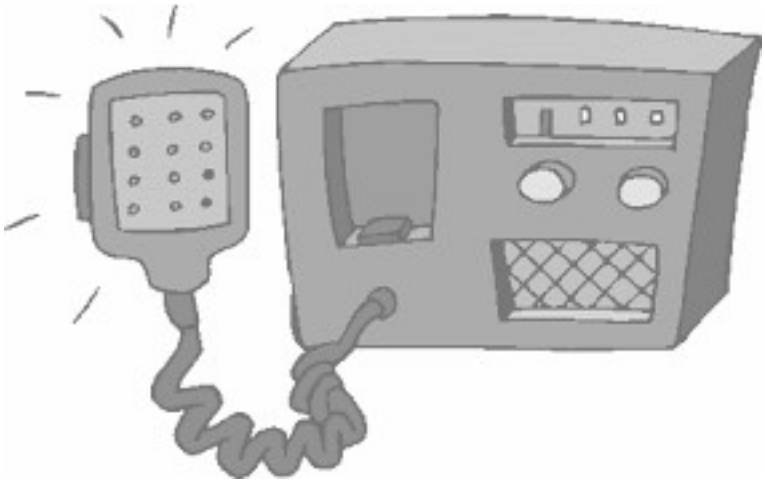
Bonus
20 point bonus for completing all 14 Canadian Provinces/Call Areas regardless of band or mode

Awards
Winners will be published in our club newsletter, Submitted to RAC for the TCA, receive an award certificate as well as copious accolades and congratulations.

Submit Logs
Send to webmaster at gbarc.ca

Website: https://www.gbarc.ca/challenge.php

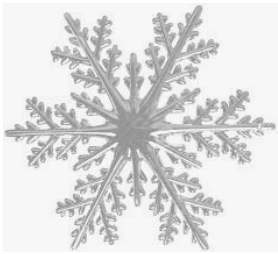
Acknowledgements
GBARC thanks Adam VE3FP and Tom VA3TS for the original idea and fleshing out the details to this friendly challenge. Let's thank them by getting the whole club behind it and make it a fun event for all.



Keep Your Rig in the Freezer?

Strange But True

By Sparky Coyle



Sounds like a ridiculous idea doesn't it? But why do so many hams do it anyway? Of course, I don't mean the freezer in your kitchen, or the one in the garage, basement or wherever else you store the meat from your hunting trip last fall. You really wouldn't want to get bits of food in your radio would you? No, we all keep another freezer out on the driveway and that's where we keep the radios we paid hundreds, maybe thousands of dollars for. Well actually, if the XYL asks we got it from the bargain bin at a hamfest.

Winters in Ontario can get pretty darn cold. The mercury can routinely reach down into the minus teens on the Celsius scale. It can drop even lower. Temperatures into the minus twenties are quite common; even below minus thirty isn't unheard of. And we aren't talking about Ontario's lovely beaches on the southern shore of Hudson's Bay here. You know, the terminus for the Polar Bear Express. Wide, uncrowded pebbly beaches where hungry white furry bears can set up their BBQs for a tasty al fresco meal of fresh caught seal meat. No, we are talking Hogtown, that ugly blemish way down south on the shore of Lake Ontario. I'm not making it up; I looked up the official temperature records for the city.

But just for reference, **the recommended temperature setting for a domestic food freezer is -18degC** or below. And that's the kind of temperature your mobile rig is going to experience sitting on your driveway overnight in January and February every year. So what is the first thing you do when you have fired up your engine, cleaned the ice and snow off your windshield and driven off into the freezing morning? Your radio probably came on automatically; you did connect it directly to the battery, as recommended, didn't you? So you grab the mic and throw out your callsign hoping for someone with whom to rag chew on your drive to work.

Fifty watts ought to do it. You could probably hit the repeater on low power but you don't want to risk losing the signal when you drive through that RF hole on the way to work so you leave the rig on full power. The tiny circuits inside the rig are slowly beginning to warm as they recover from twelve hours of sitting in the cold and dark. The outside air is minus 20degC and after a whole night of cooling, that's the temperature of the radio's internal circuitry too. The car heater is blasting out hot air and you are feeling comfortable, but all those tiny transistors are still emerging from the deep freeze. It's a phenomenon known as thermal inertia.

Here is what happens when a radio gets very cold. Everything contracts. Metal casings get ever so slightly smaller. Screws loosen. Circuit board traces contract too. But the miniature copper traces connecting components are extremely fragile. If they contract too much they could potentially separate from the circuit board. When the power transistors in the rig's RF amplifier blast out those 50 watts they get hot quick. Now we're in trouble. Hot finals and freezing cold circuit boards - what could possibly go wrong?

The engine has now reached running temperature, the vehicle's cooling system thermostat has opened and the passenger compartment heater is blasting out hot air, making the driver and passengers nice and cosy despite the horrible conditions outside. The snow your winter boots brought into the vehicle has melted into pools of water in the mat beneath your feet. The heater fan is blowing the air inside the vehicle around and picking up moisture. The radio is only slowly beginning to warm. Mobile

rigs have a lot of metal inside that acts as a heat sink for the big final RF amplifier stage MOSFET transistors.

Now warm moist air inside the vehicle is coming into contact with the still cold metal case and heatsink of the radio. Moisture from the air condenses on the cooler metal and begins to drip onto the circuitry:

"Copied most of that but you've got a bit of bacon frying on your signal".
"Roger that" you reply "damn Icom engineering; should've kept the Yaesu".

It wouldn't have happened fifty years ago, of course. Well maybe there weren't as many repeaters around back then. But, more importantly, radios were built using discrete components. You could count the number of semiconductors on your fingers and toes (but keep your socks on in winter). The CPU in my new computer has one hundred and sixty million transistors. The controller in a mobile radio probably only has a few million, but even so that's a lot of fingers and toes to count.

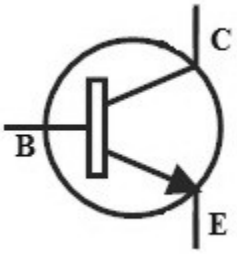
In the old days, connections between components were made with wire not wafer thin, tiny copper traces bonded to a plastic board. Resistors were nice big things printed with coloured rings so you could read their value. Capacitors (or condensers as they were formerly known) even had their value printed on their side in a font big enough to read without a magnifying glass.

Anyway, long story short, **when the temperature dropped to brass monkey territory** everything in the radio contracted just the same. Only it didn't make the slightest difference to the circuit. Sure, water condensed inside the old boat anchors the same way it condenses inside modern rigs. But while tiny water droplets can bridge several connections inside a modern rig, they drop harmlessly through clusters of giant resistors and capacitors inside the good’n’old-uns they used to build.

Enjoy the winter folks!

No Smoking!

A challenge for electronics enthusiasts from the QRP Amateur Radio Club International (QRPARCI)



QRP enthusiasts have developed a great reputation for doing more with less. Whether that is trying to break a record for mile per watt in a QSO, or designing a transceiver with fewest components, the design skills of our colleagues is indisputable. QRPARCI is presenting our community with the an opportunity to show off these QRP design skills with the FDIM2022 2N2222 POWER CHALLENGE! (FDIM: Four Days in May).

The challenge is simple

Design and demonstrate a crystal-controlled 40M PA to make the highest sustained power for a period of one minute using only two 2N2222 transistors. This event will take place at 8:00 PM Friday, May 20 during FDIM, and the winner recognized at the QRPARCI Banquet on Saturday, May 21, 2022. This will be the final year for the 2N2222 Power Challenge, so plan to take part in this historic event!

Rules, Rules, Rules

The rules for the competition are simple, but we have to list every nit-picky detail to test your endurance anyway:

The design is to utilize two, 2N2222 or 2N2222A transistors as the only active circuit elements. There are no limits on the number of diodes, inductors, resistors, capacitors, or transformers, but no other transistors, tubes, or ICs may be used.

The PA must be crystal controlled within the 40M amateur band. Builders are encouraged to use their own crystals, though there will be 7030 kHz HC-49 crystals available at the competition. No external frequency source may be used.

The circuit must fit inside a 12” x 12” x 12” volume. During the power test, the judges will cover the circuit with a blast shield to protect judges and contestants from flying bits!

All circuit components are to be visible for inspection. A schematic of the circuit is to be provided with each entry The options for PA cooling are fairly open, but there are restrictions for safety’s sake: No cooling media may be used that are flammable or could emit harmful vapours when heated. The entire cooling system must be contained within the 12”x12”x12” volume.

Harmonics? Bleh!

There is no requirement for harmonic purity of the output signal, but consider that these designs might be published in QRP Quarterly, so don't get stupid. A 40M harmonic filter will be included as part of the test equipment to prevent harmonic current from affecting power measurement. A zero-to-24v variable power supply, dummy load and power meter will be supplied by the judges.

The competition will have two rounds of trials to demonstrate power output of each circuit, with the best performance of each circuit being its final score. During each test, the builder will connect his circuit, set the power supply voltage and then announce to the judges when to begin measurement. During a period of one minute in which the builder may not touch the circuit or power supply, the lowest measured power during the test will be the score for that trial.

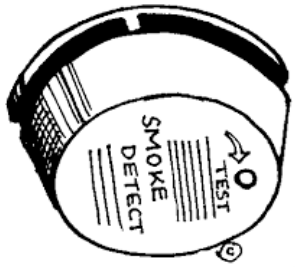
Failure of the circuit in that one minute test period results in a score of ZERO for that round! The winner is the circuit generating the highest minimum power score during either of his two

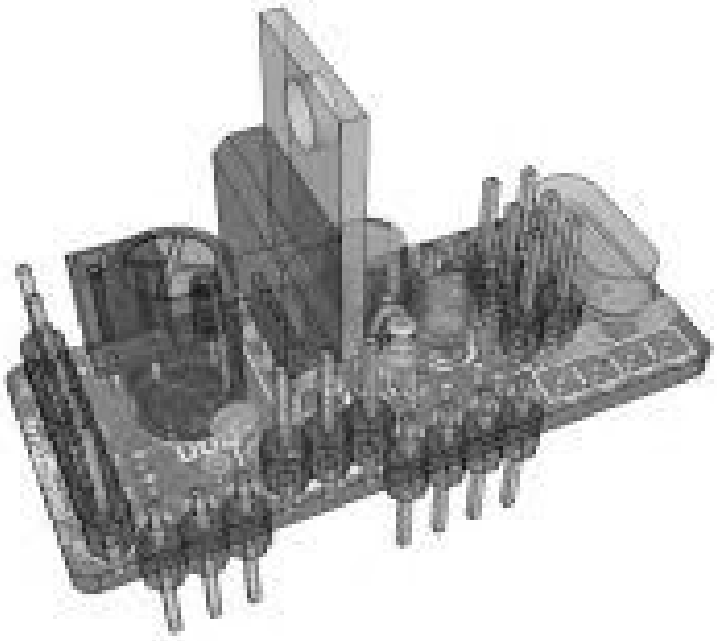
rounds. If the circuit fails during the first test period, the builder will have five minutes in which to repair it before the second round trials. A solder station, simple hand tools and a supply of 2N2222As will be available.

No Smoking Please!

If your entry sets off the smoke detector in the Holiday Inn, you will be disqualified and may be subjected to rude laughter and finger pointing during the rest of FDIM!

The winner of the FDIM2020 2N2222A POWER CHALLENGE! will be recognized at the QRPARCI Banquet Saturday May 21, 2022, and famed 2N2222 traveling trophy awarded!





On the Bench

GBARC Technical Specialist Ben Choneth

This is the third part of a series of articles on the nanoVNA. These articles are intended to give brief hints on using the instrument. More comprehensive guides are available online.

This month we'll take a look at using the nanoVNA to test the effectiveness of Common Mode Current chokes.

Part 3. Testing the Efficiency of Common Mode Current Chokes

There must be hundreds of references online to using a simple "scrabble wound" choke at the feedpoint of a dipole (and other antennas) to block CMC – Common Mode Current from travelling down a coax braid and causing RFI in the shack. But how does a Scrabble Wound choke perform against other types of choke? Let's do some measurements and find out.

The competitors are:

- Scrabble wound (17ft of RG-58 coax loosely coiled with a diameter of about 8 inches
- Air-core choke: 17ft of RG-58 coax neatly wound on a plastic tube about 2 inches in diameter
- Ferrite core choke: FT240-43 toroid with 14 turns of RG-58 coax

My nanoVNA-H was carefully calibrated over the range of 3.5 to 30MHz (as described in Part 2). [Format] was set to "Logmag" and [Channel] was set to "CH1 through".

Each choke in turn was placed on the bench with the coax braid at each end connected to ports 1 and 2 on the VNA through a 51 ohm resistor.

The CMC attenuation was then recorded at 3.5, 7, 14 and 30 MHz for each choke. The table below shows the results.

	3.5 MHz	7 MHz	14 MHz	30 MHz
Scrabble Wound	-9 dB	-18 dB	-16 dB	-7 dB
Air Core	-12 dB	-19 dB	-55 dB	-16 dB
Ferrite Toroid Core	-37 dB	-34 dB	-27 dB	-20 dB

If a baseline of 20dB CMC attenuation is set, it can be seen that the Scrabble Wound choke is ineffective across the entire amateur bands. The Air Core choke wins on the 20m band (its parallel inductance and inter-turn capacitance may have created resonance on that band). The most consistent choke is the one with the toroidal ferrite core which meets or exceeds the threshold across the whole HF spectrum.

These tests may be unscientific. Perhaps more turns on the Scrabble Wound choke might have improved its attenuation on 20m and 40m enough to reach 20dB. Reader comments are invited.

Nuggets of Wisdom

GBARC correspondent Johnny Wiseman

What did Ontario Lt Governor John Graves Simcoe do for Ham Radio?

John Graves Simcoe was the first Lieutenant Governor General of what was then called Upper Canada (now Ontario) from 1791 to 1796. Among his many achievements was the founding of the City of Toronto (that was an achievement? Seriously?).

Back in those days the city was called York and was named after the cathedral city with the same name in Simcoe's native England. Indeed the name New York could have been chosen, but by then the British owned city at the mouth of the Hudson River had already been called New York for over a hundred years.

A Typical English Snob

Simcoe was an aristocrat who attempted to create a native aristocracy in British North America (which became Canada much later in 1867) as a defense against American democracy. Fortunately he was not entirely successful. But one of Simcoe's most laudable achievements was the surveying of Upper Canada. The dense forest that covered most of the province (including modern downtown Toronto) was cleared and the land divided up into 200 acre lots.

You Gotta Be Kidding?

It could be argued that this monumental task led to two great side benefits:

1. It enabled the calculation of the speed of electromagnetic radiation from which all antenna measurements are derived.
2. It laid the foundation for the non-WARC amateur radio bands

Advanced Scientific Equipment - Not Required

What advanced scientific tools made these achievements possible? There were no computers available in the 18th Century; not even pocket calculators. The abacus had been available since ancient times and indeed may have been used by Simcoe's team of engineers and surveyors. By the way, it is still possible to order an abacus today on Amazon.

But no, the apparatus used to determine the speed of light (and other electromagnetic radiation, notably radio waves) was surprisingly rudimentary. In essence it comprised a horse, a sturdy cart and a heavy length of chain.

Each 200 acre parcel of land was laboriously measured by laying out a length of chain along the ground. A 200 acre lot was typically 20 by 100 chains. The chain was a standard invented in 1620 by English clergyman and mathematician Edmund Gunter. It is still in use today, especially by US forest firefighters. A physical example of the kind of chain used by Simcoe is preserved at a museum in Ohio.

Amazing Coincidence ... or?

Gunter's chain was 66 feet long which by coincidence is one full wavelength on the amateur radio 20-metre band. Since the non-WARC bands (10m, 20m, 40m 80m and 160m) are harmonically related, 66 feet defines the wavelength of all these bands. Since we know the frequency range of the non-WARC bands we can calculate the speed of light (or radio waves) by multiplying the frequency by the wavelength.

If you wish to measure a dipole for the 80-metre band, which would be nominally 132 feet long, by traditional methods you would attach your chain at the centre point and stretch it out in either direction to mark the ends. Of course, you would also need a large supply of hay to feed your horse so you might choose to use a tape measure instead.

Dead and Buried in a Little Bit of Ontario - in England!

A short but interesting note to conclude this fanciful story. John Graves Simcoe suffered from poor health, the typically aristocratic ailment of gout was one of his downfalls. He died at the age of 54 and was buried in a small plot of land owned by the Province of Ontario - in England!

The site is Wolford Chapel in the English county of Devon which was acquired by the Ontario Heritage Foundation in 1982.

Ontario Winlink Live System Report 15 Dec 2021

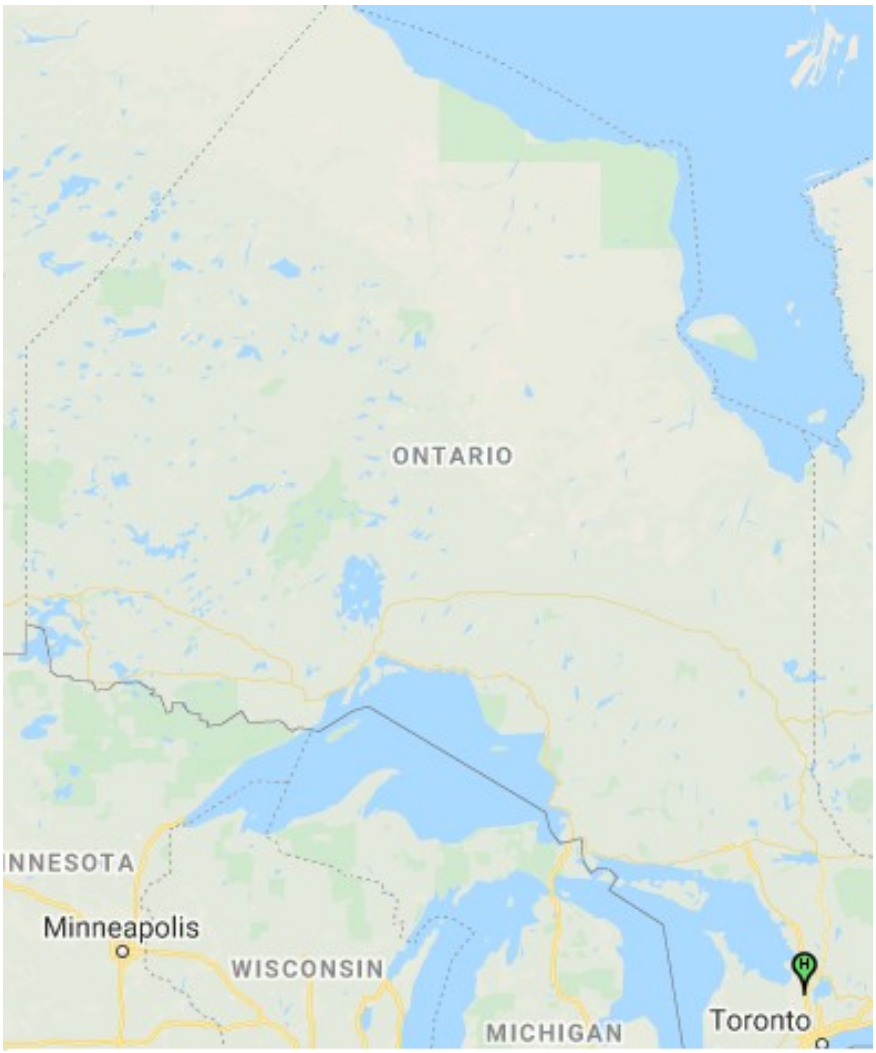
Only one RMS in Ontario is currently operational as of today 15 Dec 2021.

The operational site belongs to Ian Snow VA3QT in Barrie. Ian very kindly gave a presentation on the status of Winlink and the strategy for Auxcomm in Canada to GBARC in our TechTalk evening on Tuesday 14th December.

According to Ian there are plans to install 10 trimode RMS sites throughout Canada so that every Canadian is within 600-700km of an RMS.

It sounds ambitious based on today's status but we wish him well in his endeavour.

Ian is a member of the Winlink development group.



The 73 Page

Submission Guidelines

If you have an idea for an article you would like to see published in the newsletter, send me an email. One of my talented alter ego staff writers may be able to write it up for you. Even better, write it up yourself and send it to me. Here are the guidelines for article submissions from readers:

- You don't have to be a talented writer. If you have an idea just write it up to the best of your ability. Newsletter staff (ok, it's just me really) can tighten up the composition and correct the grammar. You will still get the credit.

- For heaven's sake, please use a spell checker! We all make typing errors and that is why word processors have spell checkers. Don't use fancy formatting. The format of your article will be changed to match the format of the newsletter anyway so why waste effort?

- Plain text files are preferred but you can send articles written in MS-Word, LibreOffice Open Document format, or even just write your article in the body of an email.

- Do not embed images in the document. Send them as separate files. If you have a graphics editor and you know how to use it, please scale your images down to no more than 600 pixels wide. Even cellphone cameras take remarkably high definition images that result in huge files.

The REAL cost of Ham Radio

Used starter rig/antennas	$800
ARRL Membership	49
Local club membership	20
Club hat/vest/memorabilia	150
House repairs from damage for antenna access hole	1800
New chair for shack	169
Amplifier	2500
Electrician bill for 220v to shack	1600
Electrician bill from amp blowing kitchen breaker	1100
New computer for logging/digi modes	1600
Money for XYL for HER HOBBY	10000
New tower and antennas	3700
New homeowners insurance because towers not allowed	3100
Legal fees from HOA	8000
HOA fines for antennas	5000
More money for XYL hobby	19500
New rural home to get away from HOA	475,000
Money for SOTA rig/antennas	2300
Medical exp. For injuries getting to SOTA site	8500
New 4x4 SUV for getting to SOTA sites	47500
New side by side for getting to last 100 feet at SOTA site	16250
New RV for POTA	31500
New rigs/antennas for POTA RV	3200
Divorce	75000
1 bedroom apartment deposit/rent	2400
Used starter rig/antennas	800
TOTAL	$ 721,538

You have been warned! Kelly K7SU