



# FEEDBACK

## The Official Newsletter of the Georgian Bay Amateur Radio Club



May 2021

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## President's Message

John VA3KOT

We are well into spring now and with just a month to go until our summer break things are looking very good for our club. Our net attendance has been encouraging recently and our new format of having a first round on VHF followed by a second round on HF is working well. We welcome "friends of GBARC" in both the VHF round and the HF round. Thanks to Echolink we are able to take check-ins from outside the Georgian Bay area - even as far as Soggy Daisy, Tennessee from where Bob, KO4DXQ is now a regular participant in our nets. The HF round brings in other regular friends from outside the region too.

There is also a new morning coffee net held every weekday from 8:00 until 9:00am on our repeaters, so why not grabba java and join in the fun.

Our members have adapted well to videoconferencing for both our regular monthly club meetings and our monthly Tech Talks. We have a free Zoom account which limits our meetings to a strict 40 minutes. Maybe that isn't such a bad idea because it does have the effect of keeping our meetings on schedule and efficient. But please remember: do not check-in to our Zoom sessions early. The timer starts as soon as there are three members in the meeting - even if the meeting host hasn't joined yet!

Our Secretary, Rob VE3RWY, is continuing to convalesce following his recent surgery. Rob has had to step away from his duties at the club for an extended period. I want to thank Marvin VE3VCG for agreeing to step up as Acting-Secretary until Rob is able to rejoin us following a full recovery. On

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#### 2021/ 2022 Executive

President ..... John VA3KOT  
Vice-President..... Tom VA3TVA  
Treasurer..... Bobby VE3PAV  
Secretary..... Rob VE3RWY

[Club Constitution](#)

[By-Laws](#)



behalf of the club, I send Rob our very best wishes for a speedy and comfortable recovery and look forward to hearing him on the air once again.

I would also like to extend my sincere thanks to Bobby VE3PAV who, with the greatest regret, has had to step down as club Treasurer in order to devote more time to dealing with personal matters. Bobby has handed over the club financial records to me and I will perform the role of Treasurer on an interim basis until a successor can be appointed.

The club's financial affairs are not complicated but we are a registered Ontario corporation and records must be kept in accordance with general accounting practices. If you have experience with bookkeeping, small business accounting or are just adept at balancing a cheque book please come forward.

The current pandemic regulations continue to disrupt our activities but we are a happy, healthy club and we have managed to adapt surprisingly well. Several new initiatives have been discussed so it is gratifying to see that our membership remains active. GBARC has a long history so let's all work together to make sure we keep the tradition alive. Remember a healthy club can only stay that way if everybody joins in; what more can you do?

## Special Event Prefixes 2021

[https://apc-cap.ic.gc.ca/pls/apc\\_anon/query\\_spev\\$.startup](https://apc-cap.ic.gc.ca/pls/apc_anon/query_spev$.startup)

Call Sign	Start Date	Name of Event
VC3GM	2021-12-01	120th Anniversary of the Work of Guglielmo Marconi
VC3TY	2021-11-01	220th anniversary of physicist Thomas Young's double-slit experiment
VE2PEACE	2021-11-01	JOUR DU SOUVENIR
VC3X	2021-10-30	CQWW DX Contest
VA3FIRE	2021-10-03	Fire Prevention Week
VE9SKCC	2021-09-01	Straight Key Century Club, Work All Canada
XM3T	2021-08-13	50th anniversary of the adopting Multiculturalism in Canada (1971)
VE3VACCINE	2021-06-15	Distribution of COVID-19 vaccine
XM2Z	2021-05-29	50e anniversaire de l'adoption du multiculturalisme comme au Canada
VC3A	2021-05-28	CQWW WPX CW
VC3EMS	2021-05-16	National EMS Week
VC2AQC	2021-05-15	70th Anniversary of RAQI



# Amateur Radio Through the Decades

<https://www.iaru-r1.org/amateur-radio/amateur-radio-through-the-decades/>

1900 – 1910: Following in the footsteps of Marconi and other pioneers, thousands of young experimenters built simple “spark” transmitters and receivers to send Morse code messages around their neighborhoods — sometimes causing interference to commercial and military communications.

1910 – 1920: To address the interference problem, licensing was introduced in 1912. Amateurs began to organize themselves into clubs, forming the basis for today’s national associations in Australia (1910), Great Britain (1913), and the United States (1914). The World War caused amateur stations to be shut down but led to advances in radio technology that were quickly adopted by amateurs, once allowed back on the air, in their quest to span greater distances.

The Twenties: Vacuum tube (valve) technology replaced spark, reducing interference and increasing range. The remarkable properties of the ionosphere were harnessed by amateurs to achieve global communication using relatively low transmitter power and antennas that could fit in a typical backyard. To retain access to “short wave” spectrum amateurs had to overcome pressure from commercial and government interests; the IARU was created for that exact purpose. Morse code remained the dominant mode used by amateurs despite the growth of AM broadcast listening.

The Thirties: Amateur radio grew during the Depression as an inexpensive and productive pastime. It became possible to contact amateurs in 100 different countries, even though there were fewer countries then. Television and the exploration of VHF spectrum occupied the attention of the cutting-edge technologists while others built their own AM transmitters and voice communication became popular. Propaganda broadcasting impacted the short waves, creating a new challenge to amateur spectrum access.

The Forties: World War Two caused amateur radio to be shut down in most countries. Once again, technology was advanced by wartime need. After the war, surplus radio equipment was plentiful and inexpensive. This allowed amateurs to upgrade their stations and for the first time to explore UHF and microwaves. A new mode, radioteletype (RTTY), began to be heard on the amateur bands as a result of the surplus bonanza.

The Fifties: Television broadcasting posed a challenge for amateurs, requiring new diplomatic and technical skills to address “TVI” (television interference) to their neighbors’ and families’ sets. In spite of this it was a decade of rapid growth. Single sideband (SSB) dramatically increased the efficiency and reduced the necessary bandwidth of voice communication. Mobile operation became popular. Toward the end of the decade a peak in the sunspot cycle gave amateurs the best ionospheric propagation ever experienced, before or since. Amateurs tuned into the first signals from space after the first Sputnik was launched. Heathkits, complete sets of components with step-by-step instructions for assembly, captured a large share of the equipment market.

The Sixties: Amateur radio officially joined the Space Age with the first amateur-built satellites. Amateur two-way communication by reflecting signals off the moon (Earth-moon-Earth, or EME) was achieved, first on 1296 MHz and later on 144 MHz. Back on Earth, SSB became the dominant HF voice mode. Separate HF transmitters and receivers began to disappear from amateur



stations, replaced by transceivers with many circuits shared between the two functions. Good equipment from Japan began appearing in ham shacks throughout the world. Some countries began to issue licenses for VHF and higher frequencies without requiring Morse code ability.

**The Seventies:** Long-duration satellites made satellite communication a permanent feature for space-minded amateurs. Bolstered by a large domestic market, Japanese manufacturers became dominant globally. VHF and UHF repeaters surged in popularity, extending the range of mobile FM equipment. In the mid-70s the “CB boom” became the biggest source of newly licensed radio amateurs as more-serious hobbyists fled the chaos of the Citizens Band. The decade ended with the important World Administrative Radio Conference (WARC-79) where the many years of work by the IARU led to successful defense of existing amateur bands and new allocations at 10, 18, and 24 MHz.

**The Eighties:** Microprocessors became the vehicle for rapid development of the digital dimension of amateur radio. Propelled by the adoption of a standard for digital data communication known as AX.25, “packet radio” became a powerful new tool for message forwarding. Another adaptation of a commercial standard, known in its amateur version as AMTOR, brought error-free data communication to the HF bands. The manned space program entered ham shacks around the world as amateurs were able to communicate directly with an astronaut aboard the Space Shuttle in Earth orbit, the first of many to follow on the International Space Station.

**The Nineties:** Dramatic political events in eastern Europe led to significant changes for radio amateurs there. Globally the Internet represented both a challenge and an opportunity: competition for the time and attention of technologically minded youth on the one hand, an unprecedented medium for information exchange on the other. The digital revolution continued to fuel amateur radio development; few ham shacks were without at least one personal computer integrated into the station. PSK31, a digital mode designed specifically for amateur radio use and not based on a commercial standard, offered weak-signal performance and narrow bandwidth comparable to CW.

**The 2000s:** The introduction of WSJT, a suite of open-source programs designed for weak-signal digital communication by amateur radio, spurred a wave of propagation observation and investigation using techniques adapted from radio astronomy. Digital voice became popular. Software defined radios (SDRs) offered capabilities that were unimaginable just a few years earlier, at prices amateurs could afford. The 2007 World Radiocommunication Conference (WRC-07) made the first-ever low frequency (LF) amateur allocation at 136 kHz.

The next two WRCs, in 2012 and 2015, allocated new amateur bands at 472 kHz and near 5 MHz respectively. WRC-19 adopted a dramatic improvement of the amateur 50 MHz band in Region 1, providing a degree of global harmonization in this intriguing part of the spectrum.

The amateur experimenters of a century ago would be amazed at what amateurs can do today — and there’s more to come!

<https://www.iaru-r2.org/en/>



## Join us for our weekly get together “On the Air”

The club meets each Wednesday evening on VE3OSR 146.940 T97.4 hz at 7:30 pm local time, and on 3.783 Mhz +/- immediately following.

**Net Control Station Volunteers WANTED**

**Send email to** [netmanager@gbarc.ca](mailto:netmanager@gbarc.ca)

## RAC Canadian Portable Operations Challenge Award

### **The RAC Challenge Award: An Overview**

Radio Amateurs of Canada is pleased to present a new Canadian Portable Operations Challenge Award for RAC members.

The objective of the new “RAC Challenge Award” is to recognize and encourage portable operations by RAC members from locations throughout Canada.

The new program will begin on Canada Day, July 1, 2021 and we hope it will become an annual event for RAC members.

Note: the following information is tentative as the new Awards program is still being organized so please stay tuned to this webpage for future updates.

### **Portable Operations**

Portable operations are those in which Amateurs take their equipment, antennas and power supply to a location away from their home station to operate. This includes mobile stations, backpackers, DXpeditions and participation in events such as those described below:

Parks On The Air (POTA), a worldwide program of park activations – <https://parksontheair.com/>

Quebec Parks On The Air (QcPOTA) April 1 to December 31

Field Day: June 26-27

There are several other programs that celebrate portable operations including Summits on the Air (SOTA), Islands on the Air (IOTA) and the International Lighthouses and Lightships Weekend.

### **Features of the “RAC Challenge”**

The new “RAC Challenge” will recognize all portable operations in which RAC members participate and will have similar features as a contest. Amateur Radio contests in VHF, UHF and the Microwave bands all have categories for “Rovers” – who move from grid square to grid square and “Backpackers” – who seek out hilltops from which to operate with highly portable equipment and antennas.



For many satellite operators, making contact with as many grid squares as possible is a mark of success. Some of those operators go on satellite DXpeditions to activate rare grids or operate from the intersections of grids to offer multiple grids with a single contact. In addition to being fun, these activities provide an opportunity for Amateurs to experience what is required to set up and operate under challenging conditions – valuable experience for emergency preparedness.

For more on the RAC Challenge Award, please see

<https://www.rac.ca/rac-canadian-portable-operations-challenge-award/>

## A New, Better Antenna Winder by John VA3KOT

Those of us who like to operate HF field portable need a rapid deployment wire antenna; one that can be put up quickly, taken down quickly, and most importantly one that won't end up as a tangled mess of wire in the backpack. That isn't always easy to achieve when the wire is a long one - for example an end-fed half wave for the 80m band is 132 feet long.



The solution is to use a wire winder. Referring to the photo of two examples of wire winders; the one on the right is the most popular. It has two "horns" around which the wire can be wound in figure-of-eight fashion. To unwind the wire simply place a finger in the big centre hole and pull the wire end. The winder will rock and roll as it effortlessly releases the wire. The tight bends around the two horns can leave kinks in some kinds of antenna wire. The wire I use for field antennas is particularly prone to kinking so I decided to redesign a winder for my own use.

The design I came up with is shown on the left of the picture. It is shaped in the form of a four-armed cross. Wire is wound onto the winder around two of the arms while supporting the winder by one of the other arms. For very long wires one can wind the first half of the wire around two of the arms, then rotate the winder 90 degrees and wind the other half of the wire around the other two arms. It is important NOT to use figure of eight style winding, just a straight coiling around two opposing arms of the cross.

The beauty of the four-armed cross is in the way it releases the wire by spinning as the wire pays out. A finger through the centre hole supports the winder as it releases the wire. And best of all - no kinks in the wire! Four-armed cross winders are not commercially available so you will have to make your own. I make mine from dollar store plastic kitchen cutting boards using a jig saw to cut the shape.



# A Very Unusual Antenna

John Corby VA3KOT

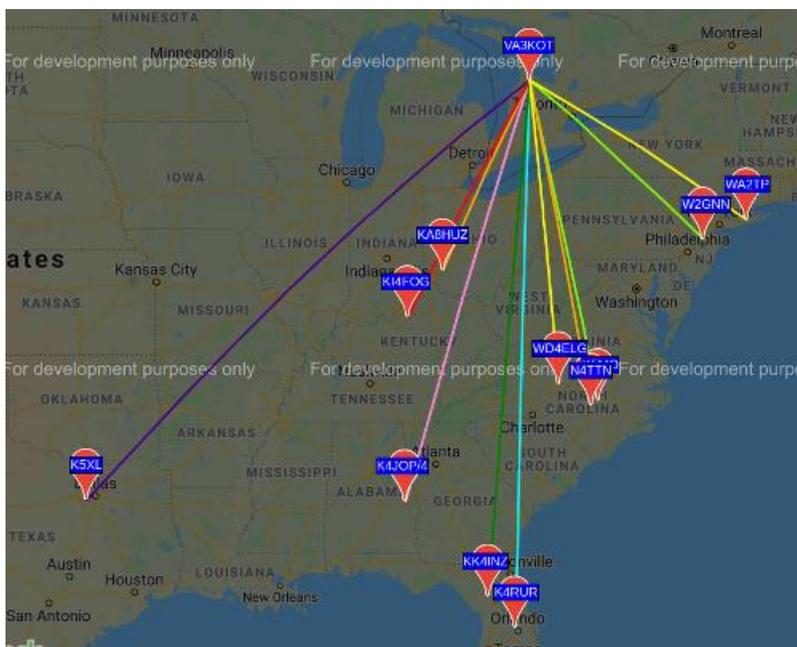
## It's Common Knowledge

You have heard it many times before; an HF wire antenna must be installed as high as possible to be efficient – preferably a half-wavelength above ground. It's common knowledge! “Common knowledge” means everybody believes it to be true – well maybe not everybody, but if the majority believe it to be true then it must be so. The majority often believe something simply because, well, everybody else does. There are a few of us “contrarian thinkers” who disdain common knowledge, preferring to experiment for ourselves to see what works and what doesn't.

Some other common knowledge is that an antenna that isn't 100% efficient is a “compromise antenna”. There is a lot of discussion in online forums about compromise antennas. I prefer the maxim that: “any antenna you put up works better than the antenna you don't put up”. Let's face it, almost every antenna is a compromise antenna. “What's the best antenna?” is a question often raised by people who would prefer to study endless possibilities rather than get on the air.

## On the Contrary

Ham radio has many aspects. Some like to rag chew, others like contesting; I like to experiment. Being a contrarian thinker is a bonus for radio experimenters. So I was naturally drawn to the idea of challenging the common knowledge that a wire antenna should be installed as high as possible. It is fairly well accepted that an antenna erected low to the ground uses ground reflection to propagate a signal straight up in the air. It is called a Near Vertical Incidence Skywave (NVIS) antenna and works really well – under certain conditions – for getting signals out of valleys to destinations within a few hundred kilometres of the source.



## On the Ground

But what happens if the antenna is erected even closer to the ground – or even on the ground? An antenna that is erected about a metre above ground – if it is long enough – is called a Beverage antenna. Beverage antennas are excellent, low noise, receiving antennas. Common knowledge says you cannot transmit into a Beverage antenna. There is that “common knowledge” challenge again!

Semper Fidelis



The US Marines routinely used Beverage antennas for transmitting and receiving during the Vietnam War. They erected very long stretches of “commo wire” – about 4 or 5 wavelengths long, close to the ground. Those antennas were very inefficient and that was just perfect for the Marines! A Beverage antenna will radiate unidirectionally off the far end of the wire if it is terminated in a resistor of around 600 ohms. A resistor? More losses! The intent was to establish communications between a forward base and a command centre close by. If the range was too long the enemy might be able to intercept the signals. A Beverage antenna can be erected by soldiers crawling along the ground, protected from detection. Nowadays we might use VHF but, although they had that option in the 1970s the HF option was still implemented successfully.

Oh, Way Too Lossy!

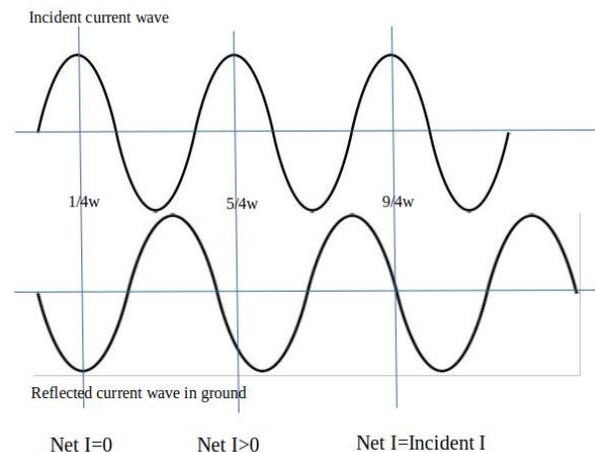
About a decade after the Vietnam War ended, an amateur radio operator in the US started experimenting with the idea of using a long wire laid very close to, or directly on the ground. His name is Mike Toia and his callsign is K3MT. He invented an antenna he called the “K3MT Grasswire Antenna”. Adherents of common knowledge will immediately dismiss the idea. “It is too lossy”, “all your signal will be absorbed by the ground” they will say. Yes that is partially true. A Grasswire is inefficient and it is lossy but it really does work anyway.

In 1988 K3MT visited Bermuda and set up a 204ft wire on the ground and was the subject of nightly pile-ups on 30 metres for several nights. Inspired by his story, I have experimented extensively with my own grasswire antennas with mixed results. My best result was with a 148 feet long antenna laid on the ground. I operated with 5 watts, CW and received a 559 RST report from a station 25km away. On other occasions I have received reports from the Weak Signal Propagation Reporter (WSPR) from hundreds of kilometres away using a grasswire. K3MT’s operation in Bermuda benefited from the “salt water effect” so he was able to enjoy DX contacts.

Here’s How It Works

Laying a long wire – at least one wavelength long – directly on the ground has some very surprising results. First of all, yes it is lossy but it is least lossy for low angle propagation off its far end. I modelled the idea using EZNEC and came up with a 12dB loss for a grasswire. So let’s analyze that for a moment. If my radio puts out 100 watts, the effective radiated power will be just over 6 watts. My 6 watt signal will be radiated at a low angle with a fairly narrow beamwidth. Now compare that with a quarter wave vertical antenna. A vertical radiates equally in every direction so a 100 watt input signal results in an energy density that is spread all around the compass. Assuming unity gain for a vertical we can calculate the effective radiated power for a beamwidth of say 20 degrees is actually about the same as the grasswire!

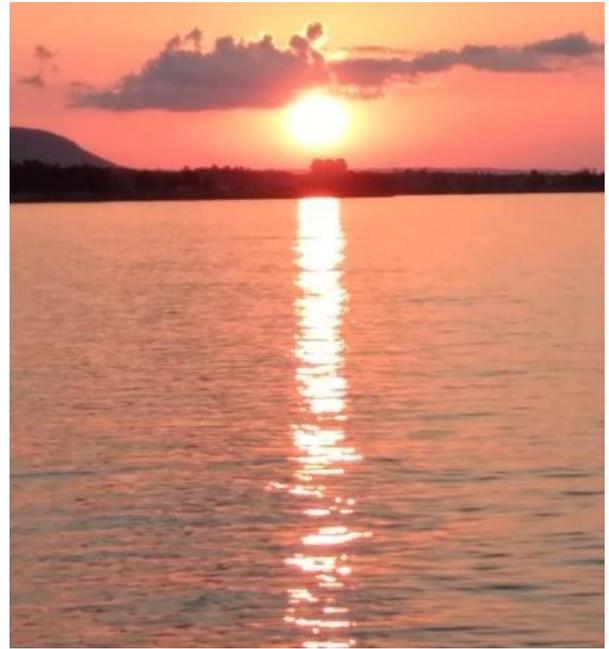
Noise? What Noise?



An efficient vertical antenna needs a lot of radials or it too will be very lossy. So an efficient vertical antenna is not usually the kind of antenna that lends itself to rapid deployment. A grasswire, on the other hand, can be rolled out along a trail, or a field in a couple of minutes. Vertical antennas pick up noise very easily, since most man-made noise is vertically polarized. A grasswire is essentially noise-free.

### A Scotsman's Dazzling Revelation

If you stand at the side of a lake as dusk draws near you will begin to see a reflection of the Sun's rays on the surface of the water. As the Sun begins to set, the reflection will become very strong. The angle of incidence at which this happens is called "Brewster's angle" after the Scottish scientist who first documented the phenomenon. There is a strong parallel with the way in which a grasswire antenna works. An electromagnetic wave encountering the interface between two different media will be totally reflected at Brewster's angle.



### On Reflection

What causes the reflection? When a radio signal is sent along a wire on the ground a reflection in the ground is generated. The reflected wave in the ground travels more slowly than the incident signal so that it absorbs the signal at some points along the wire, but at other points the antenna acts as if the ground isn't even there.



### At Great Length

How long does a grasswire have to be? At least one wavelength is the rule. Even longer wires do not really help because the resistive losses outweigh the advantages. And forget about resonant length considerations; the wire is detuned by the ground and becomes a random wire. It should be matched with a 4:1 or 9:1 balun and a tuner to bring it into resonance at the radio.

Set your preconceived ideas aside and give it a try – it works and that is what you might call "uncommon knowledge".



**Net Control Station Volunteers WANTED**  
**Send email to**  
[netmanager@gbarc.ca](mailto:netmanager@gbarc.ca)

## **Websites of Interest** Copy/Paste the urls below into your browser

### **URL Phishing Campaign Hides Attack Behind Morse Code**

<https://securityintelligence.com/news/url-phishing-morse-code/>

### **The Slot Antenna - Undiscovered Country for Most Hams**

<https://www.youtube.com/watch?v=AnTrILf1eWA>

## **Minutes of Meeting**

### **GEORGIAN BAY AMATEUR RADIO CLUB**

Minutes of the Monthly Club Meeting of the Georgian Bay Amateur Radio Club  
27th April 2021, Meeting convened at 7:00pm EDT on Zoom

#### **Present:**

John Corby VA3KOT, Dave Newcombe VE3WI, Doug McDougall VE3DGY, Tom St Amand VA3TS, Janet Double VA3EAC, Adam Karasinski VE3FP, Phillip De Kat VE3QVC, Jim Reeves VE3JMD, David Rosenfeld VE3BAK, Maureen Nightingale VE3MIO, Tom Van Aalst VA3TVA, Beth Van Aalst

#### **Apologies:**

Rob Walker VE3RWY, Bobby Pavlovic VE3PAV

**Quorum:** Since the required three members of the executive were not present the meeting was inquorate.

#### **Order of Business**

Introduction of new guests and members by President John VA3KOT  
John welcomed Joseph Gamble VE3XGA of Owen Sound to the club

#### **President's Report** – John VA3KOT

John reported the rollout of the new club awards program has begun. Award certificates have been sent to all who have volunteered as net controllers. Other awards will follow.

**A new Past Presidents Committee (PPC)** has been formed to act in an advisory capacity to the present executive. Any current club member who has served as club President at any time in the past and is not a member of the current executive is automatically a member of the PPC. Currently the



membership comprises:

VA3TS Tom (President 1989-1991)

VE3BQM Bernie (President 2001-2002)

VE3IJD Gene (President 2003-2008)

VE3FP Adam (President 2013-2014)

VE3WI Dave (President 2015-2016)

VA3GUF Frank (President 2017-2018)

**Virtual Hamfest:** The virtual hamfest has been cancelled due to lack of participation. Thanks are extended to the members who did post items for sale with proceeds going to the club, and to those who bid on items in the sale. It is hoped that the virtual hamfest can be replaced with a tailgate sale if the club is allowed to meet in person during the summer.

**Secretary's Report** – not available due to our Secretary being away on medical leave.

**Treasurer's Report** – not available

**Special Interest Group (SIG) Report** – Adam VE3FP reported on his participation in the Ontario QSO Party and the RAC Get On The Air event. Adam made 400 contacts during the OQP.

**New Business** – none

Meeting closed at 7:40pm

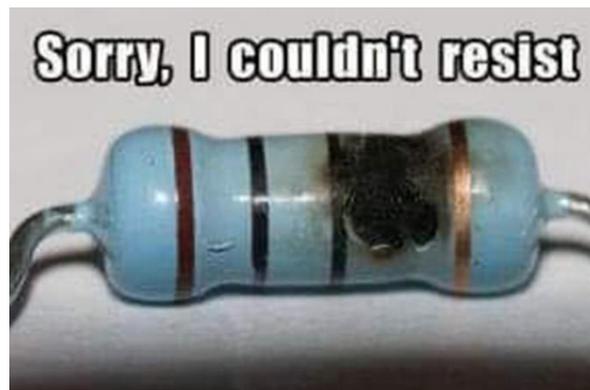
## Monthly 2021 Online Meeting



Our meeting schedules and updates are posted on our website at

<https://gbarc.ca/meetings.php>

Please do not check-in early to Zoom meetings. Our 40-minute timer starts as soon as 3 or more members join the meeting - even if the host hasn't joined yet!



# Meeting Agenda

Call to order at 19:00ET prompt - John VA3KOT  
Introduction of guests and new members - John VA3KOT  
President's report - John VA3KOT  
Treasurer's report - Bobby VE3PAV  
Secretary's report – Marvin VE3VCG (acting)  
SIG (Special Interest Group) reports  
New Business - all members present  
Meeting to be closed promptly by 19:40ET (Zoom time limit)

*For the benefit of those who are unaware, Rob VE3RWY, our club secretary will be indisposed for several months. I have volunteered to step in as acting secretary until he is able to resume his duties. I will do so for the first time at the May club meeting on Tuesday May 25 and look forward to your support. Thanks in advance to all, Marvin VE3VCG*

## The Last Word

A few words of appreciation to those that contribute to this newsletter by submitting news stories or interesting web links or ideas. If you have something then send it to <https://gbarc.ca/mailus.php>, any format, any size, anytime, but if you want it to appear in the current months newsletter, then send it by the 3<sup>rd</sup> Tuesday of the month.



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<https://www.gbarc.ca/lists/?p=subscribe>

**Membership** for details regarding membership in the club go to:

<https://www.gbarc.ca/gbarcmembers.php>

The next newsletter will be in June 2021. The next issue will be in September

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**Our National Voice** <https://www.rac.ca/>

