FEEDBACK

The Official Newsletter of the
Georgian Bay Amateur Radio Club

March 2021

President's Message

John VA3KOT

Warmer weather is almost here. Finally we will be able to get outside and fix antennas that have been damaged by winter weather. And quite a winter it has been too. I have experienced 40 Ontario winters since I came to Canada and this past one certainly ranks as one of the snowiest.

There is a steel roof at the VA3KOT QTH. That's fine and dandy from a home maintenance perspective but for a ham it presents a couple of problems. My biggest problem this past winter has been sintered snow falling onto my coax. Sintered snow? Yes, it's a new term to me too. It means snow crystals that have changed shape so that they compress tightly together, and get heavy. When sintered snow comes crashing off a slippery steel roof, "chunder" as seasick sailors used to shout when suddenly emptying their stomach contents over the side of a ship, "Watch under!"

The other problem with a steel roof is that HF wire antennas must be routed away from it to prevent propagation pattern distortion. On the other hand it would probably make for a darn fine ground plane for a vertical antenna.

My former home and native land across the big wide ocean had much more moderate albeit somewhat wetter weather. Indeed it was a widely held belief that summer was when the rain got warmer. I looked forward to Canada where summers are hot and humid and winters are real winters. Over the (almost) 40 years I have been here I still look forward to summer ... and only summer!

This Month

2021/ 2022 Executive

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

Club Constitution

By-Laws

Summer is the season for getting outside. Last summer I fulfilled a dream and bought a boat. Alright, it was an inflatable kayak, but at least I can get out on the water where the density of nasty biting insects is lower than on the shore. I can also fulfill my passion for operating my radio outdoors. In the great outdoors the noise floor is way lower than in the shack at the home QTH. You can actually hear those weaker stations and work 'em too. I'll be sharing some of my outdoor operating experiences with the club on Tuesday April 13th in my not-too-technical presentation on Zoom.

We may even be able to hold outdoor club meetings again soon. Our Zoom meetings have been a great success but you can't beat an eyeball QSO with all your friends and fellow club members. It may still be a long time before we can participate in supporting community events again but we should take advantage of the better weather by practicing our skills. I would like us to get together to map our regional radio coverage areas using our repeaters and VHF simplex. And also, we should practice our skill in setting up rapid deployment HF NVIS (Near Vertical Incidence Skywave) portable stations.

There should be no RF dead zones in the Grey-Bruce region. If a place is outside repeater range it may be accessible by simplex relay. If VHF doesn't nail it then NVIS will. Some of our members are interested in grid down communications and learning about techniques for communicating using new emerging RF technologies such as LoRa. We should get behind that initiative and support it.

Our activities may be restricted by the pandemic regulations but there is no reason why we can't still take advantage of the warmer weather to get out and get radio-active!

A Tall Story .... How to find the height of a tall building using a radio

John Corby BSc, VA3KOT

I always knew that one day I would find a way to combine my Bachelor's degree in Physics with my passion for radio. So I gave some thought to the idea of how to find the height of a tall building using a radio. I came up with four different ways of doing it ranging from the complex and expensive to the (literally) stupid, cheap and simple. Here are my four methods in decreasing order of complexity:

1. From the ground at the base of the building set up your radio with a multi-element Yagi antenna. It would be best to perform this measurement using a frequency in the 70cm band, or higher, to avoid having to employ a physically large antenna. Point the antenna directly at the eavestrough at the top of the building. You will need some means of keying the radio so that it transmits a very short pulse of RF, a few microseconds will be quite long enough; shorter would be better. You will also need an oscilloscope with an RF detector circuit connected to one of its inputs to measure the reflected radio signal from the eavestrough. The other input of the scope will be connected to an RF sniffer to measure the transmitted pulse. I should add that the oscilloscope must be a very high-speed instrument because the interval between the transmitted and reflected pulses will be vanishingly brief. The rest is simple physics. Knowing the velocity (c) of an electromagnetic wave, and the interval (t) between the transmitted and reflected pulses you can calculate the height (h) of the building using the formula $h=c/t$.

2. My second method is very dangerous and carries a safety warning; please see the note at the end of this article. This method also employs the laws of physics at an elementary level plus a little simple mathematics. You will need your radio and an accurate chronometer, stopwatch or similar. For really accurate measurement you may wish to devise some electronic timing equipment with automatic transducers. We will describe the basic method and let you improve on it as you wish. First, weigh your radio using an accurate scale, then take the radio and stopwatch to the roof of the building. With your finger primed and ready on the stopwatch button, hold the radio over the roof edge. As you release the radio, press the button to start the stopwatch. When you see the radio hit the ground, press the button again to stop the timing. From the time of fall (t), the weight of the radio (m) and the universal gravitational constant (g) you will be able to calculate the height of the building.

3. The third method also involves going up onto the roof of the tall building (not for the faint of heart) but does not involve any expensive equipment, any knowledge or physics or mathematics. You will need only your radio and a long piece of string or paracord. Absolutely any kind of radio may be employed. Your ground preparation, before going up onto the roof is critical. You must accurately tie a knot every twelve inches along your piece of string and attach one end to your radio. Once out on the roof you will then lower the radio to the ground, steadily and carefully, counting the knots as they pass through your hand. When the radio reaches the ground you will instantly know the building's height in feet (N.B. metric measurements may be substituted if desired).

4. My final method is stupidly simple (or possibly simply stupid). It does, however, carry the potential to yield a highly accurate result without any knowledge of physics or mathematics. But first, please read the safety warning below. You will not need any expensive measurement equipment, nor any calculations, only your radio. This final method is also most suitable for those who suffer from vertigo since you will not need to venture out onto the roof of the building. Simply take your radio and knock on the door of the building superintendent. When he answers tell him: “If I give you this fine radio would you please tell me the height of your building”.

Note: Safety Warning! This method should only be done using any Icom radios that have accidentally come into your possession. Most sensible radio amateurs avoid such equipment. On no account should any Yaesu radio equipment be subjected to this treatment.

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.

Antenna Notes

The following suggestions will reduce the difficulty in matching an antenna with a tuner:

1. Never center feed a half-wave multi-band antenna with a high impedance feedline that is close to an odd multiple of a quarter-wave long.

2. Never center feed a full-wave antenna with any feedline close to a multiple of a half-wave long.

3. If a tuner will not tune a multi-band antenna, add or subtract 1/8 wave of feedline (for the band that won't tune) and try again.

4. Never try to load a G5RV or centre fed dipole on a band below the half-wave design frequency. If you want to operate an 80 meter antenna on 160 meters, feed either or both conductors as a longwire against the station ground.

To avoid problems matching or feeding any dipole antenna with high impedance lines, keep the lines around these lengths

[The worst possible line lengths are shown in brackets]:

160 meter dipole: 35-60, 170-195 or 210-235 feet. [Avoid 130, 260 ft]

80 meter dipole: 34-40, 90-102 or 160-172 feet. [Avoid 66, 135, 190 ft]

40 meter dipole: 42-52, 73-83, 112-123 or 145-155 feet. [Avoid 32, 64, 96, 128 ft]

NOTE:

Some trimming or adding of line may be necessary to accommodate higher bands.

WARNING:

To avoid problems, a dipole antenna should be a full half-wave on the lowest band. On 160 meters, an 80 or 40 meter antenna fed the normal way will be extremely reactive with only a few ohms of feedpoint resistance. Trying to load an 80 meter (or higher frequency) antenna on 160 meters can be a disaster for both your signal and the tuner. The best way to operate 160 with an 80 or 40 meter antenna is to load either or both feedline wires (in parallel) as a longwire. The antenna will act like a "T" antenna worked against the station ground

Taking the antenna tuner approach is not a good idea when you are using coaxial cable under high (greater than 3:1) SWR conditions. The tuner may provide the 50 ohm match to your radio, but the mismatch and high SWR still exists between the antenna tuner and the antenna! This translates to high losses in the coaxial cable.

Did you know?

An 80m dipole is also resonant on 20m (harmonic)

A 40m dipole for 7.100 MHz (40m), is a 3/2-wavelength at 21.300 MHz (15m), a 5/2-wavelength dipole at 35.500 MHz, and a 7/2-wavelength at 49.700 MHz (6m).

Typical Tuning Procedure for tube radios

1. Hook everything up (radio to amp, amp to wattmeter, wattmeter to dummy load which is capable of handling the full output of the amp for as long as it take you to perform the tune-up).

2. Set your radio's output to as low of a setting as it will go to, typically one watt or so.

3. Set the amp's " LOAD " control to mid-point and the " TUNE " control to about the same point.

4. Key your radio and " QUICKLY " turn the " TUNE " control back and forth to get a feel for the proper direction to increase power, then " UNKEY " and wait a few seconds for things to cool down.

5. Key up the radio again and watch your " OUTPUT " wattmeter while rotating the " TUNE " control for maximum power out. The " PLATE " meter should indicate proper neutralization of the tubes " IF ", you see a pronounced dip which co-incides with maximum output. If it doesn't, you need to neutralize/balance the load power between the tubes. There is a control " INSIDE " the amp for this purpose if your amp is worth a plug nickle. " BUT " *** BEWARE *** of the " EXTREMELY HIGH VOLTAGES " present inside the amp! " THEY CAN BE DEADLY!!! "

6. After tuning the " TUNE " control for max smoke (highest wattage as seen on an external wattmeter) then unkey and let things cool a moment.

7. Next key the radio again and adjust the " LOAD " control for maximum smoke.

8. Unkey and wait a moment, then go back and re-peak the " TUNE " control again.

9. Finish up by adjusting the " LOAD " again for max smoke while keeping plate current to a safe level.

10. Now you have preliminary settings, and can begin increasing your radio's drive power. Increase to the wattage you expect to be driving the amp with, and repeat the tune procedure.

11. Once tuned into a " DUMMY LOAD ", then switch to your antenna, and re-peak. If your antenna is adjusted properly, you should not need to re-adjust the amp much, if at all. If your antenna is mis-tuned, then you'll have to re-adjust the amp.

12. For frequency excursions within the same band, you should be able to leave the load control alone (pretty much) and simply tweak the " TUNE " control a bit to re-gain power lost by changing frequencies. If you seem to lose a LOT of power, you may have to re-adjust the " LOAD " control accordingly.

13. Always make sure that your " PLATE CURRENT " dips at practically the same tuning point as " MAX SMOKE ". Slightly off a bit is " OK ". Some people advance the " LOAD " control slightly to lessen power a few watts because it supposedly makes the amp sound better. Use signal reports from others to see if this adjustment benefits you or not.

14. If you don't dip the plate, you're going to wind up burning up a set of tubes.I know some of you will do this even if you do dip the plate current.Remember the filaments are supposed to glow bright orange not the plates! :LOL:

Summary of the Community Mesh-Network Project Presentation

Marvin VE3VCG

I have developed a concept for expanding and improving emergency communications during any crisis where normal communications are disrupted. The essential elements for this idea includes the use of both cell phones and amateur radio.

I have borrowed the idea of developing Community Mesh-Net(s) from other projects in two different locations. Each is unique in it's approach to creating a reliable community based Mesh-Network capable of operating without access to the internet or cell network. Each of these projects relies on free software applications which can be downloaded and installed on most modern cell phones.

These applications include Serval Mesh, Bridgfy, Signal Firechat and others. Once installed, and registered to the phone number, when running, the app turns the cell phone into a mesh-net node using on-board WiFi or Bluetooth services.

The key to creating a function mesh-network is both in how the software works and the number of phones in the network. Mesh-networks are self-discovering and self-healing. Once the software is active it will beacon to announce that it is available. Other phones within range will auto-connect.

Messages can be sent across the net and will hop from phone to phone from sender to reciever. The mesh-network software looks for the "best" route through the mesh so as to be as efficient as possible. Most mesh-network applications allow for both private and public messages. Some offer end to end encryption.

When phones are turned off or move out of range, the software adjusts routing through the mesh automatically. Most of the applications I've studied can manage connection for up to 100 nodes. Clearly the one limiting factor in any mesh-network is the number of phones and the distance between them. The average range limit advertised is 100 meters for WiFi and 60 meters for Bluetooth. All work on line-of-sight.

Clearly the range limit of WiFi and Bluetooth is an issue in any area where population density and topography are limiting factors. However this problem can be solved using simple, inexpensive common nodes, installed in key locations so as to be accessable to those in a larger radius. Outstanding examples of solving the range problem can be found by looking at both the Serval Net http://www.servalproject.org/ or Disaster.Radio https://www.disaster.radio/websites .

Another very valuable site to visit is Sudo Mesh, https://sudoroom.org/wiki/Mesh

From a HAM radio perspective mesh-networks have several possible attractions. Such projects involve RF devicies, antenna's power supplies, propagation and all the same issues we HAM's understand and work with as a routine part of our hobby. Those who like to make and tinker will find

much of interest when it comes to planning and building mesh-networking coverage over larger areas.

However, from an emergency communications perspective, mesh-networks just make sense. Having a neighborhood mesh-network would allow you to talk to non-hams around you and perhaps help each other during a crisis when no other means of communication is possible.

For Groups like ARES such networks, if properly done, and with an established interface to particpating HAM's, can offer bidirection emergency communications into every community where a mesh-net is operational.

To see the value of community mesh-nets requires thinking a little outside the traditional role of HAM's during emergencies. It may also be valueble to have a larger discussion which involves those bigger issues few talk about, such as the security of the power grid and the potential for wide are, long duration loss of power.

For those who poo poo such things as being unlikely, my response is simple, COVID-19 and Texas, February 2021.

https://abcnews.go.com/US/wireStory/energy-executive-texas-power-plants-turned-off-crisis-76115042

Both these events were, in fact forewarned, but those warnings were largely ignored. The disaster.rado group and the Serval project both have found practical ways to maintain communications within communities and beyond during emergencies using available technologies and a grassroots effort. I for one think that embracing such ideas is not only practical but basic common sense.

Clearly there will always be a need for HAM's to help with emergency communications in disaster areas. However this traditional role tends to focus on mega disasters, often in distance places. However, if we can do something with our skills as amateurs to develop and nurture communications for our own communities and I think we should.

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

Barrie ARC – DMR Builders Group
https://barriearc.com/builders-group/dmr-stuff

12 PCI Express M.2 Slots on a Raspberry Pi!?
https://youtu.be/Ozwyh_Pfe6g

MAKER Pro
https://maker.pro/

Minutes of Meeting

GEORGIAN BAY AMATEUR RADIO CLUB

Minutes of the Meeting February 23, 2021

Roll Call of Attendees:

VATS Tom, VA3KOT John, VE3BAK David, VE3DGY Doug, VA3EAC Janet, VE3JMD Jim, VE3RQY Greg, VE3PAV Bobby, VE3PQ Paul, VE3WI David, VE3VCG Marvin, VE3BQM Bernie, VE3FP Adam, VE3RWY Rob, VE3RQY Greg

We have a quorum

John gave us a humorous opening referring to Henry Martyn Robert who drafted 'Robert's Rules of Order', a procedure adopted by many organizations for running meetings.

Treasurer's Report (VE3PAV Bobby):

Balance $2488. PO box expenditure has cleared the bank but not RAC insurance yet. Motion to accept by VE3RWY, 2nd by VA3TS Tom. Motion passed.

Secretary's Report (VE3RWY Rob):

Rob read the 'new business' items from last month's minutes. Motion to accept by VE3BAK David, 2nd by Tom VA3TS.

VE3VCG Marvin spoke on his upcoming presentation, Internet Radio Network Project. The project involves bringing communications down to the community level. Presentation will be in two weeks.

VA3KOT John spoke about the power grid and said we could be called upon someday. VE3BAK David spoke about how the reactors supplying our power can divert or bring in additional power.

New Business:

A discussion about the Facebook page and its maintenance was brought up by VA3KOT John on behalf of VA3GUF Frank. Due to Frank's schedule, he is unable to maintain the page. VA3KOT John made a motion to open up a discussion on the page. Motion to accept by VE3RWY, 2nd by VE3BAK David.

VA3TS Tom said we have a web site and a web-based forum. Tom used to look after the Facebook page but found Facebook intrusive, always trying to get you to spend money for advertising or page promotion.

Several members expressed concern over the lack of privacy, the way Facebook uses your data for their benefit, and did not think we should continue the page.

VE3BQM Bernie thinks we should drop the page. Bernie said the page had been deleted in the past but Frank resurrected the page from the deleted bin.

VE3BAK David agreed with Tom, noting he was right on the money and that we should be putting all our efforts into the web page and the forum. Thanks went out to VA3TS Tom for all is great work.

VA3KOT John confirmed that there was no one willing to maintain the page. Bernie is an administrator and is capable of deleting the page.

VE3DGY Doug made a motion to delete the Facebook page, 2nd by VA3TS tom. Motion passed and Bernie to delete. John offered to run our discussion and decision by Frank as a courtesy.

VA3KOT John reminded us of the GBARC net tomorrow night. The Paisley link is still down, until spring at least. John also put out a call for net controller volunteers.

VE3BQM Bernie said if anyone wants to volunteer but does not have HF equipment, they could 'piggyback' with another user who could do the HF portion of the net.

VA3KOT John reminded us of our virtual HAM fest to raise money for the club. If you have anything you would like to donate to the club, post it on the GBARC forum where others can bid on it.

John also gave a quick talk about the Trillium Fund and how in the past, they have made monies available to HAM clubs for items such as trailers and rigs for the field. The Trillium Fund allocates money for projects that are beneficial for the community.

VE3VCG Marvin said the Internet Radio Network Project would be a good candidate for the Trillium Fund. John reminded us of Marvin's upcoming presentation on March 9th.

Meeting closed by VA3KOT John.

Rob Walker VE3RWY Secretary

March 2021 Online Meeting

Topic: Monthly Club Meeting Time: Mar 23, 2021 07:00 PM Eastern Time
https://us05web.zoom.us/j/81170470541?pwd=bld5WG5XQ0NsYmhSOUNaWlZqSmU0Zz09
Meeting ID: 811 7047 0541 Passcode: sAL1Z8

March 2021 Meeting Agenda

1. Call to order at 19:00ET prompt - John VA3KOT
2. Introduction of guests and new members - John VA3KOT
3. President's report - John VA3KOT
4. Treasurer'r report - Bobby VE3PAV
5. Secretary's report - Rob VE3RWY
6. GBARC Draft Budget
7. New Business - all members present
8. Meeting to be closed promptly by 19:40ET (Zoom time limit)

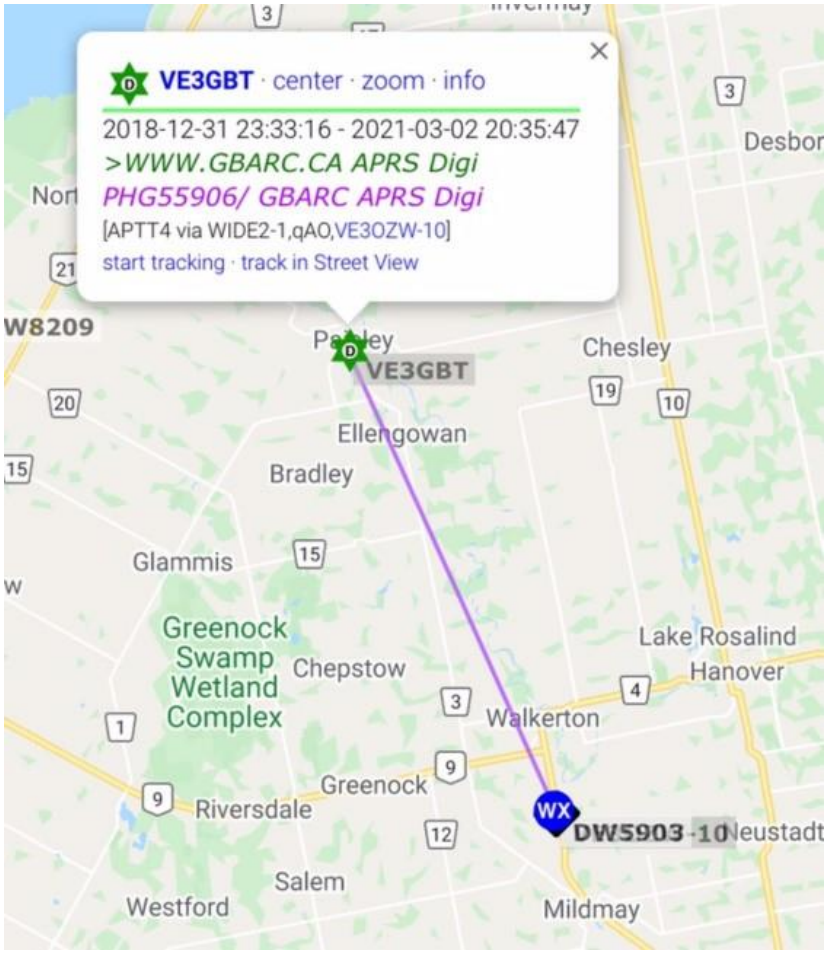
Letters to the Editor

Finally have a proper antenna up for my iGate and now the path for the VE3GBT digipeater.

I also see VA3KMS packets coming in too. Now to give it a week or two to see what my coverage area is.

The antenna isn't up very high, but it is a better antenna than what I had.

Richard VE3OZW



For Sales / Wants

Tom VA3TS (519-371-9805) in Shallow Lake, OnFor Sale: Estate of VA3DST, **VX-150 2 meter handy**, wall and vehicle charger,a new FBA-25a AA battery case. No manual. Buttons show some signs of wear, works ok.Call or email for more detailsPrice: **$25**, this just covers the cost of the new battery holder, the rig is basically free. http://www.rigpix.com/yaesu/vx150_manual.pdf
==========

The very first Georgian Bay Amateur Radio Club Virtual Hamfest Date: 1st June to 30th June 2021 Location: https://www.gbarc.ca/ForumBB/showthread.php?tid=350

Yes folks, it's a virtual hamfest with a difference. You won't make a penny out of it, but it will raise funds for our club. Come on guys and gals, admit it, you have a whole bunch of junque in your shack, in the basement, in the garage, buried in the backyard, stashed away in the storage locker, out in the hangar, down below in the boat, in the RV pass-through, up in the attic and as much again up at the cottage. Your club needs that junque. It will be offered for sale to other club members, members of other clubs, clubs with other members and members with clubs.

The funds raised will be used to buy stuff. Stuff that will benefit all members. For starters, we could pay for a real Zoom account and no longer have to limit our meetings and talks to a measly 40 minutes. Just imagine, our technical presenters could drone on and on and on until they foam at the mouth and fall over backwards (h/t Monty Python). We could buy bulk Powerpole connectors, antenna wire, coax cable and connectors for sale to members at discount prices with immediate collection or delivery. We could buy club test equipment available for loan to members who can't afford, or justify, the expense on their own. We could buy a club station available for members to operate and maybe even a trailer to put it in. Your ideas are welcome.

So please, scour the shack and make a list of all the items you have that could be sold to raise funds for the club. Hang on to those items, take a picture, and post it in the comments below. Folks can then bid on the items. The highest bidder on June 30th collects the goods and sends the money to club Treasurer Bobby VE3PAV. Be generous and let's make this initiative a great success for our club.

==========

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 3rd Tuesday of the month.

Help US Out *Would you like to receive email notifications when this newsletter is posted? Sign up for our mailing list. We only send out a few mailings a month and you can unsubscribe at any time. No ads and no personal information, your email address is never shared with anyone else.* *https://www.gbarc.ca/lists/?p=subscribe*

Membership for details regarding membership in the club go to:
https://www.gbarc.ca/gbarcmembers.php

Check us out on Facebook
https://www.facebook.com/GBARClub

The next newsletter will be in April 2021.

Join the Radio Amateurs of Canada

Our National Voice

https://www.rac.ca/