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WAVELENGTH

Official bulletin of
Scarborough Amateur Radio Club, Inc.
www.ve3we.org

PARTICIPATE – LEARN – ENJOY

January 2011

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President: Ralph Muecke VE3VXY
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Examiner: Nick Blacklock VE3EBC

Archives: Gord Hogarth VE3CNA
Audrey Little VA3YD
Elmer: Rod Long VE3SOY
Nick Blacklock VE3EBC

Sunday

Tuesday

Thursday

SARC Nets

28.730 Mhz
CW 10:00 AM
SSB 10:30 AM
147.060 MHz (VE3RPT)
7:30 PM
Alternate frequency
146.520 MHz simplex
28.730 MHz
SSB 7:00 PM

Everyone is invited to check in on CW before the nets start.

These are open nets. All licensed hams are welcome. Come and join us.

We also want to emphasize that 28.730 MHz is our calling frequency. Please monitor and/or call your friends. 7:00 PM is a good time.

A word from your new President

Well I hope this will be good year for all of us and I would like to say I hope I will do an excellent job as Bernadine did in the past. I would like to say that I'm ready to take this club and move ahead with it in some new directions and that I will have a good team to help us in doing so.

I just wanted to say that the first start in Radio was when I was around 10. I talked my mom & dad into buying me a walkie-talkie and I dismantled it or tore it apart and built it into an old AM car radio that I gutted. I made my own face plate out of wood and gave it a meter, a mike jack, and a new mounting bracket to mount on the bike. Now the bike which was my pride back then was one that had a banana seat and high handle bars, to give you an idea. I mounted a nine foot whip antenna from the rear wheel and ran the coax that came from an old car radio antenna to the new radio I mounted on the handle bars and man that thing worked great. I could ramble on more but I think I will say thank you to everybody.

Thanks Ralph VE3VXY

Long-Delayed Echoes

by Gord Hogarth, VE3CNA - <http://onradiohistory.ve3we.org/>

Happy 65th Birthday to all members, past and present of Scarborough Amateur Radio Club, Incorporated.

Yes, 2011 is here and this is the 65th Anniversary of our founding and continuous existence as a general interest Amateur Radio Club, always located in Scarborough, Ontario, Canada. What changes, great and small we have seen.

SARC has gone through three minor name changes over that time and, in order from the beginning, here are our names:

Beginning in April, 1946 the name was: "The Scarboro Amateur Radio Club". At that time Scarborough was spelled as "Scarboro" and the founding meeting was held on Scarboro Crescent.



Photo by Gord Hogarth, VE3CNA, December, 2010

From my memory, and the memory of Audrey, VA3YD, sometime in the 1960's a motion was passed at a club executive meeting to change the name to "Scarborough Amateur Radio Club". The motion may have been made by Gerry Robertson, VE3GNI (sk) and for the purpose of conforming to the spelling of the town of Scarborough as it was then known.

In July, 1977 the Club became incorporated under Ontario Law and the legal name became: "Scarborough Amateur Radio Club, Incorporated".

Each name change was minor but reflected the changing times and needs of the Club and its members.

This month's long, look back is a copy of a page from "XTAL" of July, 1948, where SARC is mentioned.

C A R O A CLUB ACTIVITIES

Several clubs have written in lately to say that they have written letters to CAROA in the past, but that no mention has been made of their activities in this column. Since this column started, shortly after the reorganization of the CAROA executive, every club that has written in (and some from whom we have not heard directly) has been faithfully entered in the news. We must admit the news has had to be condensed due to limitations of space in XTAL. Several clubs have already applied for affiliation in CAROA, but as yet they have not received their certificates. If your club is one of those who have sent letters to CAROA in the past and have not had your letters answered, we urge you to write us once more and give us a chance to make amends. We are continually digging out "skeletons from the closet." Let us hope that you are not keeping that skeleton buried and have drawn hasty conclusions from what has gone before. Write us—again and again, if necessary until you receive an answer. Those clubs who have liked what they have read in this column can do us a favour by urging other clubs to go behind CAROA and help give us the boost that we need to give us and the amateurs of Canada full and complete representation. The coming election, if the membership votes for it, will no doubt be the topic of many discussions at club meetings. We urge those clubs who will be discussing this important matter to give it full consideration. The years ahead for amateur radio are going to be no easy ones. The next international conference may well ring the death knell for more of our frequencies. Remember we once possessed the frequencies from 1750 to 2050 Kc. Your hope of retaining what we now possess lies in a strong national association. We need your help to make CAROA really strong. Clubs can help greatly by getting behind us and informing us of their activities. Let's fill in the empty spots in the Club Directory for a start!

The Winnipeg Amateur Radio Club held their regular monthly meeting in the club-rooms in the Free Press Building May 8. Visitors to the meeting were Ve8AZA, Toronto, Ont., and Ve4AB. A letter was read from the Acting O.C., R.C.M.P., J. E. Bird, in which he expressed the force's appreciation for the work done by Winnipeg amateurs during the Emerson floods, and especially to Alex Parmley, 4AD, and Don Taylor, 4QV. Guest speaker was Harold Rasmussen of the Research Department, Dominion Government, who gave an illustrated talk on mechanical measurements by electrical means. 4AD and 4QV described flood relief and showed pictures taken during the crisis.

The 1948 executive of the Truro Amateur Radio Club is: President, T. W. Mills, 1NZ,

and secretary-treasurer, G. R. Rector, 1KN. The club has nine members, seven of whom are members of CAROA. The T.A.R.C. was organized in March, 1947, and their address is 222 Robie St., Truro, N.S.

We have heard of another club, the Stratford Amateur Radio Club. Their address is Box 219, St. Marys, Ontario. No further details are available, but we will try to have some news by next issue.

An excellent example of international co-operation is the local club for the twin cities of Sault Ste. Marie, Mich., and Sault Ste. Marie, Ont. The amateurs of both cities, under the direction of W8MEV, instructor at the Michigan Mining and Technology School, got together and formed a club last fall called the Twin Saults Radio Club. Membership consists of 8 Ve3's, 10 W8's and several SWL associate members. Meetings are held at the various members' homes. Secretary is Max Fisher, Ve3AFR, and the president is Herb Sandstrom, W8MEV. This is a unique club and the gang are to be complimented on a fine job of international good-will. What say, Niagara Falls, Fort Francis, Prescott, etc.?

The West Side Radio Club is moving their field-day site from Thistleton to King, Ont. Let us hope that this change does not bring them bad luck, so that they lose the cup this year.

The Nanaimo Amateur Radio Association has recently been formed in Nanaimo, B.C. Present membership is 21 and the meetings usually have 35 in attendance. The club is open to both sexes and several yf's and xyl's are among the members. The secretary-treasurer is H. Prescott, P.O. Box 187, Nanaimo, B.C.

The London Amateur Radio Club held their regular monthly meeting May 13. The picnic, which this club is organizing in conjunction with the Ontario Phone Club, was slated for sometime in July. Speakers of the evening were Dwight Fields and Gordon Godwin of Forest, who discussed and demonstrated high frequency equipment, especially for two meters. Final plans were laid for field day.

The Scarboro Amateur Radio Club is ready for field-day and are raring to go. Code classes under the direction of J. W. Harvey still continue, and two more students are ready for graduation. A separate class is held for the beginners in the club rooms on Tuesday evenings, so that the senior class can progress faster. The club has received some very heart-warming letters from Britain, thanking them for parcels which they have sent recently. Keep up the good work, boys!

While not exactly Canadian club news, mention must be made of a recent letter received

Concluded on next page

Ham Tech

Vol 1 No 1

Originally published in the South Jersey Radio Association newsletter *Harmonics*. Thanks to SJRA editor Ted W2TAG. Visit <http://www.k2aa.org/> for more information about SJRA.

by John Fogleboch, WY2J wy2j@arrl.net 609-471-1843 (cell)

Line of Sight (LOS) Propagation

I am starting a monthly column in the SJRA *Harmonics* newsletter, which for the next seven issues will focus on propagation. You may wonder why. The simple answer is that no technical factor has as much impact on achieving the performance you expect from your station as propagation. Antennas are next in line in impact and will be the subject starting in the spring of 2011. By a year from now you should have the background, the tools including simple equations, charts and computer software and some experience in using them to evaluate your station and trade off your next big investment. Should it be a kilowatt amplifier, a new antenna or a new tower? You will know what each of these will do for you in terms of making QSOs.

VHF/UHF line of sight propagation is relatively simple to understand and calculate as long as you can keep the effects of the earth and its obstructions out of the signal path. Even with antennas near the earth this propagation is rather predictable as long as you don't try to stretch the distance between antennas to the point where the signal is sitting on the horizon. Examples of LOS propagation are short range simplex, ground based repeater and earth to amateur repeater satellite. Of the three the ground repeater is the most widely used. Note also that I am only referring to VHF and higher frequencies for LOS propagation. Below 50 MHz the antennas are electrically too close to the earth to meet the criteria of LOS.

So what limits the range of LOS propagation? For the simplex and ground repeater case the limit is the antenna heights and the earth curvature. For the earth satellite case the satellite must be in view of both stations and the limits are satellite transmitter power, antenna gains, ground receiver sensitivity and signal bandwidth. Let's look at the first two cases.

There is a geometric horizon which is sometimes incorrectly referred to as the optical horizon and a radio horizon. They would all be the same if the earth had no atmosphere like the moon, but it does. Most of us have watched a sun set where we can see the horizon. The sun grows in diameter and changes colour due to the effect of the atmosphere. You actually see the sun finally disappear well after it has fallen below the geometric horizon. The atmosphere bends the light and radio signals over the horizon. This is not insignificant since the distance to the horizon grows by about 33 percent for radio signals. To avoid having to draw curved lines when plotting LOS signal paths, convention has for decades been to increase the size of the earth by 33 percent. This is the basis of the 4/3 earth model. In addition if this model is used and height is measured in feet and distance to the horizon in miles, the calculation of the horizon distance is very simple.

$$D = \sqrt{2 \times h}$$

Where h = antenna height in feet and D = radio horizon in miles.

For example If $h = 50$ ft then $D = 10$ mi. Two hams with 50 foot antennas could each see out to the horizon and could be up to $2(10) = 20$ miles apart. If one ham is mobile and his antenna is only 5 feet high his distance to the horizon is only 3.2 miles so they can only work each other at a distance of $10 + 3.2 = 13.2$ miles. But wait a minute, they are both putting signals right on the ground so there is going

to be lots of interaction with the ground and significant fading. Your useful range will be a little less in each case. Even with relatively high antennas, simplex LOS just doesn't get too far.

Let's switch to the BEARS UHF repeater (444.2MHz) in Bensalem, PA. This repeater antenna is 550 ft. high and the horizon point is slightly over 33 miles. Add to this the 10 miles for your base station antenna and you could reach the repeater at a distance of almost 43 miles, 36 miles while mobile. Two base stations could be up to 86 miles apart if the two stations and the repeater are on a common straight line path. I use the KK3L 2 meter repeater located on a 3000 ft. mountain in Berkley Springs, WVA while on the PA turnpike just west of the twin Blue Mountain tunnels. I have no trouble working other mobiles 125 to 150 miles away calling into this machine. This KK3L machine is linked to the W3WGX mountain top repeater in Seven Springs, PA. With the two I have coverage from where I lose the BEARS linked network at Blue Mountain all the way to Pittsburgh. Repeaters and height makes 2 meters our most popular band and most of it is LOS. Next month we add to our equations to determine the impact of transmitter power, antenna gain and receiver sensitivity in fighting the signal attenuation of LOS propagation.

Do you have questions or comments? Call or E-mail me at the address listed at the beginning of this HAM TECH column.

Fractal Antennas: Hype or Hope?

By Dan Romanchik, KB6NU

QRZ.Com currently has a very interesting item on fractal antennas (<http://forums.qrz.com/showthread.php?t=277623>). While the idea of applying fractals to the design and construction of antennas has been around for quite some time, very few hams have actually built them, and there are currently no companies building commercial fractal antennas for the ham radio market. The question, of course, is why?

Those that are hyping fractal antennas—most notably W1YW, CEO of Fractal Antenna Systems—claim several advantages. These advantages purportedly include wider bandwidth and smaller size when compared to traditional antennas, such as verticals and dipoles. Those that are trying to debunk these claims contend that this is all just hogwash, and that there's no real scientific basis for these claims.

One thing that's confounding this debate is that there have been very few articles published on the topic. For commercial reasons, W1YW has made his articles unavailable. He says that he will be publishing something real soon now, but there is nothing definite at this point.

There is at least one article on the Internet that describes the construction of a fractal antenna for amateur radio use. "FYI: FQY: Another look at the Fractal Quad Yagi" (<http://www.scribd.com/doc/18788401/FYIFQY>) was published in the October 1999 issue of 73 magazine. It describes the construction of a two-element, 10m antenna. Like most 73 articles, it's not incredibly technical, though, and doesn't really contribute to the technical debate, except to demonstrate that physically small antennas can be made using fractal design.

The PDF contains several photos of the antenna. It's a crazy contraption that looks relatively difficult to build. So difficult, in fact, that it makes me wonder if it's even worth it to try building one. After all, 10m antennas are not really all that big or all that difficult to build to begin with.

Even more interesting than the antennas are the personalities on both sides of the debate. The QRZ.Com discussion quickly devolved into a flame war, with neither side scoring a knockout.

Personally, I think the brouhaha is much ado about nothing. It seems to me that it's been demonstrated that you can build antennas using fractal design techniques. They are physically smaller than traditional antenna designs, but you really don't get something for nothing. Overall, they don't have as much gain as yagis or quads, and they're more complex to build.

My opinion on this is that if W1YW can build antennas that radiate a signal and can sell those antennas to someone, then more power to him. In the end, his company will live and die by how well, his antennas work and how much they cost when compared to antennas from other companies.

As for me, I think I'll stick with the more traditional HF antennas. If I need to make my antennas smaller, I'll use loading coils or designs such as the Moxon. I may not be on the bleeding edge of technology, but I'll certainly avoid a lot of headache trying to figure out who's right.

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When not avoiding flame wars on QRZ.Com, Dan, KB6NU, operates CW on the HF bands, writes and publishes license exam study guides, and teaches ham radio classes. You can find his ham radio blog at www.kb6nu.com.