

**CQ CQ CQ DE VE3WE**

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65<sup>th</sup> Anniversary

# WAVELENGTH

Official bulletin of  
Scarborough Amateur Radio Club, Inc.  
[www.ve3we.org](http://www.ve3we.org)

PARTICIPATE – LEARN – ENJOY

March 2011

Volume 5 Issue 3

### SARC Nets

President: Ralph Muecke VE3VXY  
Vice-President: Arpad Vadasz VA3VAD

Sunday

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

Secretary: Ray Chow VE3ZXC  
Treasurer: Lambert Philadelphia VE3LYP  
Membership: Antonio Tiongson VE3FDU  
Communications: Bob Chrysler VE3IEL  
Field Day: Asif Ahmed VA3SIF  
Education: Nick Blacklock VE3EBC  
Examiner: Nick Blacklock VE3EBC

Tuesday

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

Thursday

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 Message from your President

With March here and all the rain we are getting will bring April flowers, It should read April showers bring May flowers.

I wanted to start getting the MS Walk ready and I wanted to get as many of our members out this year. I will be hosting the net control this year along with Rudie VE3OUA so I hope this change up will be as good as past years and start to make this a regular event that we can host every year. so get your radios out and batteries charged, SARC is going mobile.

Ralph VE3VXY

## Upcoming Events

Call for volunteers: SARC and Toronto FM Communications Society will have a table at both of these hamfests and would appreciate some help to promote the two organizations. If you are interested, please contact Ralph VE3VXY.

### ***Ham-Ex 2011***

Date: Saturday, March 26, 2011

Time:

Sponsor: Mississauga ARC and Peel ARC

Location: Brampton Fall Fairgrounds, Heart Lake Road and Old School Road, Caledon ON

Admission: \$7

Talk-in: VE3PRC 146.880- (no tone), VE3MIS 145.130- (tone 103.5)

Special event station: VE3XR will operate between 1300 and 1600 UTC on 3.750, 7.260 and 14.265 MHz +/- . QSL to VA3QSL or via bureau.

More information: <http://ham-ex.ca/>

### ***Durham Region Hamfest***

Date: Saturday, April 16, 2011

Time: 0730 for vendor setup, 0900 for general public

Sponsor: North Shore ARC and South Pickering ARC

Location: Pickering Recreation Complex, 1867 Valley Farm Rd, Pickering ON (NEW LOCATION).

Admission: \$6

Talk-in: VE3SPA 147.375+ (tone 103.5)

More information: <http://drhamfest.tripod.com/>

# Long-Delayed Echoes

This account and photo of an antenna-raising bee that took place on Saturday, April 3, 1948 first appeared in Dah Dit Dah, vol. 1 no. 3, May 1948.

Wilson's Folly

by Staff Writer

One day a few months ago Al Wilson had an idea that he would like a little larger and a little higher tower than he had at that time. Time as usual passed on and on Saturday 3<sup>rd</sup> of April in the early hours of the morn a group of the members of the SCARBORO RADIO CLUB met at a farm at Eglinton and Pharmacy aves. On this farm was the monster that was to be transported from there to the property of one Mr. Wilson. Trucks, cars, and busses transported the work party to the area and it looked like the invasion of Canada had begun. Many hands and a Gin pole were put to good use and the fifty foot steel water tower lay on the ground. After lunch the whole CLUB were on hand to help transport the THING to the home of its owner. A tow truck, a trailer, and lots of brawn soon had the tower on its weary way. Down hill and dale, round corners and across railroads and Highways it was a sight to behold. Five cars and a tow truck were the convoy. Several members were detailed to act as M.P.'s and held traffic at all the intersections, while others walked beside the tower to be sure that it did not tip off the trailer.

The next day was bright and clear although it was a trifle chilly and once again the club turned out for the raising of the OGOPOGO in Wilson's back yard. The Gin pole was in evidence again and after a great deal of hard work by all the time had arrived for the party to hold their breaths. Would it go up? Would it go sideways? Would it break in two? Would it? All the boys in their allotted places and the women and kids in a safe place the signal was given and ever so slowly the Tower began to move. Very slowly the Navy boys at the winch on the Gin pole turned away and the Air Force lads at the top of the tower pushed and shoved while the Army and what nots held the base of the tower from slipping. While every one was doing his utmost either heaving or straining someone decided to look up at the tower and there she was in place. "At last," sighed Wilson. After reading the above few lines you might think that the dismantling and the moving and erection of a fifty foot tower is a cinch. Not by a long shot it is. If any of you have ideas of putting one up, before you do see Al Wilson.

Chatting with Al after the tower was up he expressed a desire to thank the entire club for their grand efforts and he hopes that they did not suffer too much discomfort during the weekend.

EDITOR'S REMARKS: The spirit of Ham radio is indeed prevalent in the Scarboro Amateur Radio Club. To see the entire club go to the aid of a fellow member who required help is truly the spirit of the great fraternity that we are part of. To the ladies who gave their time and effort to help Babs in the chores of providing for the hungry and thirsty mob, we take off our hats. From Al and Babs: "our sincere thanks to all."



Here is the identification provided by Vince Graham, VE3AXB of some of the people in the photo. The photo was taken at Al Wilson's, VE3AMB home on Saturday, April 3, 1948.

1. Front and center, moustache, army jacket and kneeling is Al Wilson, VE3AMB.
2. To the right of Al is Bill Harvey and his wife.
3. Directly behind Al is his wife, Babs.
4. Standing to the left of Babs, is Chuck Harvey, VE3ARC and his wife.
5. Third from left, back row, hat on, Wilf Brown, VE3AJO.
6. Standing behind Wilf Brown, cap on, Barney Colleck, VE3DVA.
7. All dressed up, kneeling, front row next to Al Wilson, Jack Turner, VE3NZ.
8. Front Row, hat on, squatting left of Jack, Ken Tripp, VE3DGM.

Rest of characters, faces don't ring a bell. Poor photography. Should have been taken by Greyhound Photo." de Vince Graham, VE3AXB

# The Lost Art of Cable Lacing

By Dan Romanchik, KB6NU

The Make: magazine blog is a wealth of information for amateur radio operators. Recently, they ran a post on what they consider to be on the "lost technology" of cable lacing <<http://blog.makezine.com/archive/2009/07/lost-knowledge-cable-lacing.html>>.

The blog post does a great job of explaining the technique and includes several illustrations. One of them

<[http://cdn.makezine.com/make/blogs/blog.makezine.com/upload/2009/10/lost\\_knowledge\\_cable\\_lacing/cableLacing6b.gif](http://cdn.makezine.com/make/blogs/blog.makezine.com/upload/2009/10/lost_knowledge_cable_lacing/cableLacing6b.gif)> is a drawing from an old ARRL handbook. There are also a link to the Wikipedia page on cable lacing <[http://en.wikipedia.org/wiki/Cable\\_lacing](http://en.wikipedia.org/wiki/Cable_lacing)>.

Nowadays, we mostly use zip ties to bundle cables, but there are disadvantages to using them. For one thing, to apply them properly, you should have a tool that controls how tightly the zip tie holds the wires. This is to prevent crushing the insulation.

Also, I've found that zip ties don't do so well when the cable has only two or three wires. They're just not designed to hold so few wires. I think that cable lacing would do a much better job of keeping a small bundle of wires together, say wires that connect front panel components to a PC board.

Cable lacing certainly looks much cooler than zip ties. This is the perfect technique for those homebrewers that want to make their projects look great as well as work great.

I asked on my blog, "Now, where can I find the 'wax-impregnated cotton or twine'?" and my readers came through. Hamilton said, "Apparently you find wax string here: <http://www.kitkraft.biz/product.php?productid=1496>. I remember using it for something as a kid, but I can't place it." Ron McKenz wrote, "I notice that a number of telco vendor sell waxed lacing cord. Here are a few URLs: <http://www.sourcetelsupply.com/catalog/index.php?cPath=27>, <http://www.tessco.com/yts/resourcecenter/pdfs/clablelacing-FAQ.pdf>, and <http://www.oelsales.com/product.cfm/267/>."

Ned, WB4KBO, said, "I would suggest a large roll of dental tape and a large-diameter curves sewing needle for fabricating harnesses. I was told that this was the material of choice for lacing harnesses when i worked at Heath Company many years ago. Makes sense to me. Buy it at Meijer for an occasional harness, or a dental wholesale supply house if you are going into production. Also great stuff for kite rigging, vine lacing and many other things."

Mike, WA6ARA wrote, "What you want is Mil-T-43435. It is better than a cord, it is a flat weave tape, nylon, and waxed. It is made for cable lacing but is use now in the parachute industry as "super tack". Item T1050 at <http://www.paragear.com> "

So, there you have it. Links to show you how to do it, and a couple more links for where to find the lacing material. I now expect all of our homebrew to look a lot neater.

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When not worrying about how to lace cable instead of using zip ties, Dan, KB6NU, blogs about ham radio at [www.kb6nu.com](http://www.kb6nu.com), teaches ham radio classes, and operates CW on the HF bands. Look for him around 7.030 MHz or e-mail him pictures of your beautifully-laced cables at [cwgeek@kb6nu.com](mailto:cwgeek@kb6nu.com).

# Ham Tech

Vol 1 No 3 by John - WY2J

wy2j at arrl dot net

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.

## ***Tropospheric Scattering- Propagation Over the Horizon***

This month we stretch VHF/UHF and Microwave radio signals around a curved earth to 200 to 400 miles, by means of Tropospheric Scattering. This method of propagation was first discovered in the late 1940's after high power television stations first lit up the airways in the US. The world quickly learned that signals above 50 MHz are not limited to line of sight distances. In the HAM radio world we often refer to this as weak signal work but that also includes other propagation like ducting and sporadic E which will not be discussed here.

This month I will focus on how tropospheric scattering works and overview the primary loss mechanisms of this type of propagation. Next month in the concluding article, equations useful in sizing a station will be introduced.

The troposphere is the region of the earth's atmosphere located up to about 16 km above the surface. The air is not ionized like in the ionosphere but does have a varying index of refraction which causes bending of radio waves. The mechanism is extremely complex depending on density and temperature profiles as well as water vapor content and to a great extent is statistical in nature. While a great deal of theoretical work was done in the 1950's and 60's to describe the loss mechanisms, much of it depends heavily on empirical methods and field measurements. There is nothing wrong with this method because the data is very repeatable and the communication links built exhibit very reliable communication. The wide use of communication satellites since the 1980's has made tropo links largely obsolete for commercial and military use.

We can define the total propagation loss between two isotropic antennas in a tropo link using three graphs and one equation. One graph is not needed if the antenna beam width exceeds 5 degrees, the usual case in HAM applications. Let's look at the two graphs that are most useful.

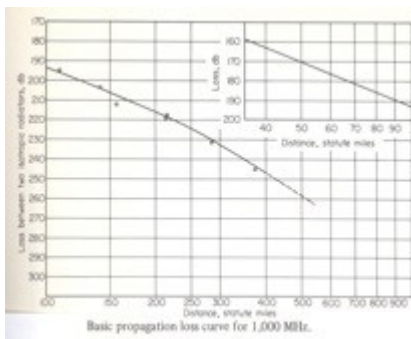


Fig.1: Tropospheric Propagation Loss between isotropic antennas at 1,000 MHz. (1)

This loss in Fig. 1 includes the line of sight loss plus excess scattering loss. It assumes operation at 1.0 GHz with the antenna beams on the horizon. Simple but it is a big loss and there is more to come. One more chart to compensate for elevated antenna beams.



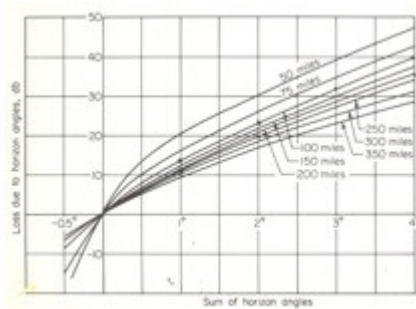


Fig. 2. Loss for elevated horizon angles. (1)

The loss in figure 1 must be corrected for use at other frequencies. The frequency correction allows its use in the range of 100 to 4000 MHz. The correction in dB which is added to the loss from the chart is equation #1.

$$\text{Eq. \# 1 } L_c = 30 \log \left( \frac{f \text{ MHz}}{1000} \right) \text{ dB}$$

As an example the loss at 200 miles and 432 MHz is 216 dB + (-10.9) dB = 205.1 dB

This implies that operation at lower frequencies will yield lower loss and be easier to achieve. But remember this is loss for antenna beams on the horizon; not possible to achieve. Let's use the 50 ft. towers from last month's LOS example, a practical value for modest stations. At 2 meters with horizontal polarization the elevation beam will be 2 degrees above the horizon. At 70 cm it will be at 0.67 degrees and 0.22 degrees at 23 cm. For two stations both with 50 ft. towers the horizon angle loss will be 36 dB, 15 dB and 4 dB respectively for these bands. The total propagation loss from all three components put together is as follows:

1. (2M)  $LT = 216 + (-25.2) + 36 = 226.8 \text{ dB}$
2. (70 CM)  $Lt = 216 + (-10.9) + 15 = 220.1 \text{ dB}$
3. (23CM)  $Lt = 216 + (+3.4) + 4 = 223.4 \text{ dB}$

Our lowest loss is at 70 CM, due to the non linearity of the components with frequency. Next month we will configure a station at 432 MHz, calculate the S/N ratio for various ham modes and see if 200 mile coverage is possible, or something greater. Keep this issue of HAM TECH as you will need the charts and equation.

Reference (1): Communication System Design Chapter 13, Figures 13-19 & 13-21. By: Philip F. Panter c. 1972.

## Tony Fegan Technical Award

Broadway has its Tony Award and so do we: introducing the Tony Fegan Technical Award!

This award is presented to the member (Licensed Amateur), who has expanded his/her own practical and technical knowledge and has demonstrated it to the club. It's named after Tony Fegan VE3QF (SK), who was a long-time member of SARC.

Members may receive this award more than once.

Nominations are open from now until March 28. Please use the nomination form in the members-only area (login required).