PCARA Update

Volume 16, Issue 6 Peekskill/Cortlandt Amateur Radio Association Inc. June 2015

Repeat and renew

PCARA will be participating in ARRL Field Day 2015 on the weekend of June 27-28 at Walter Panas High School, 300 Croton Avenue in Cortlandt Manor, NY (pending approval by the Lakeland School District). This year we are going to try and avoid any possible complications and conflicts with baseball teams by setting up in another area, possibly near the tennis courts. Final planning will take place at the June 7th meeting. Please note that we are going to need additional personnel for the overnight hours, because stalwart Joe, WA2MCR has another commitment for the weekend. Joe has been a fixture at Field Day overnights since PCARA began having Field Day activities. Thanks Joe! If you can help cover the overnight shift, please let us know.

At the June 7, 2015 meeting there will be a presentation by PCARA member Warren, K2WD entitled "**DMR – A New Mode for Amateur Digital Radio**". This is a primer on DMR – Digital Mobile Radio, one of several digital voice modes available to amateurs. If you are interested in learning more about digital radio, this is a must-see.

Talking about digital radio, we've gone and done it again! PCARA has ordered and been approved for **another** Yaesu Fusion DR-1X 144/430 MHz Dual Band C4FM Digital Repeater. This unit is for the 146.670 MHz repeater and will join the one for the 449.925 MHz machine. Both units should be here and operational within the next couple of months. The unique thing about these repeaters is that they support simultaneous analog and digital FM operation, allowing members interested in digital operation an opportunity to experiment, while continuing to support current analog communications as well.

The PCARA Foxhunt held on Saturday May 9, 2015 was won by Mike, N2EAB who ferreted out the fox — Karl N2KZ — who was hiding in the James Street Parking Garage in downtown Peekskill. Great work Mike, and for your efforts, you get to play the fox in PCARA's next Foxhunt. The hunt was followed by a get-together at the Westchester Diner for a meal and awards ceremony. Well done Mike! *[Full report on page 10 - Ed.]*

Bob N2CBH and Luigi N2CWV enjoy the fine weather at Bergen ARA's Hamfest, Washington Township, NJ on May 30th.

Be sure to keep an eye on your snail mail for a PCARA Membership Renewal Notice. We depend on your dues to help pay for insurance, postage, and repeater upgrades. Please reply promptly with your check to PCARA, PO Box 146, Crompond, NY 10517. Thank you.

PCARA is helping with parking for the Church of the Holy Spirit 50th Anniversary Golden Jubilee on the evening of Friday June 5, 2015 at 1969 Crompond Road in Cortlandt Manor, NY. If you are interested in helping, please let us know.

Our next regularly scheduled meeting is on June 7, 2015 at 3:00 pm at NewYork-Presbyterian/Hudson Valley Hospital in Cortlandt Manor, NY. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

Contents

Repeat and renew - KB2CQE	1
Adventures in DXing - N2KZ	2
NY QSO Party 2014	5
A novel model - NM9J	6
Fox on the top	10
Hamvention® views	12

Adventures in DXing

- N2KZ

To Be A Fox

It's not easy being a fox. Fox hunters like to hunt. The fox sits and waits to be caught! Alas, someone has to be the fox. It might as well be me! This time... it was!

The first responsibility of foxhood is finding a good den. Since PCARA has been hunting fox for quite a few years now, finding a good, not-previously-used hiding spot is becoming harder and harder. There are only a few choice places within five miles of The Beach Shopping Center where one can be accessed by car and yet not be intrusive to daily life.

Many of the places have become obvious. Parking lots, especially adjacent to schools and parks, are seasoned favorites. When I am hunting fox, I develop mental filters when scanning a map and ponder where the fox might be. It eliminates a lot of territory!

Finding a really good fox den is challenging, requiring long consideration. Several weeks before our Spring 2015 hunt, I thought I had it all figured out. This time, I relied on Google Maps to do all the initial footwork as I auditioned potential den sites via the Internet. Google Map's 'street view' makes all the difference! It is the next best thing to being there!

Is there a fox in Fox Hall Street?

I found a spot that brought considerable delight just north of Routes 35/202 in Yorktown. Again, another parking lot, but this time it was a forested access point to a town park. It had an added plus: A quiet nearby street was actually named Fox Hall Street! This was the choice until just hours before the hunt.

The previous evening and the following morning I prepared all the materials for the hunt. I constructed a cigarette lighter cord for my Yaesu FT-1900 so I could use it in my minivan. (I couldn't use the famous N2KZ-mobile. It was just too obvious!) I had my VLF referenced clock, my backup HT, my mag-mount antenna and even a collapsible mast and a short Yagi should my signal strength to The Beach be too weak. I was all set!

Later in the morning, just before the hunt, I started to re-think the plan. Should I use another public parking lot down Lexington Avenue? We have been down this road, literally, a few times before. There had to be something better! Back to Google maps in search of more inspiration!

Over the winter, my daughter Laura and I had visited The Field Public Library on Nelson Avenue in Peekskill. It seemed like such a natural place for a fox to sit. Lots of big buildings blocked the path from the entrance to the library from seeing The Beach Shopping Center. This could be surmounted! I decided to get higher up!

A multi-layered parking lot was available right across the street from the library. A fast browse of Google Maps showed the roof was not accessible by car. Rats! Ahh! but another parking lot, just a few blocks east, looked very enticing. The Google images added to the idea. The top floor of this parking facility was high in the air and in the clear. Except for a large bluff to the east, you could almost see The Beach Shopping Center from that perch! Bingo!

Multi-story parking garage at James Street and Park Street, Peekskill.

So, away we went. My daughters and I hopped into our mini-van in search of adventure and a good perch. We tried to build in extra time should we need to retreat back to my original spot by the Yorktown park entrance. Traffic was light and our packed minivan arrived with plenty of time to spare. A quick transmission check with Malcolm (who was at the Beach starting point) and the fox was ready to go!

I picked what I thought was a literally out-of-the-way spot on the very, very top of the parking lot about six flights up. The fox waited high atop St. James and Park Streets right across the street from Optimum Cable and very close to where the familiar New York DMV office resides. It was an overcast day, just a bit

The fox minivan arrives at the top of the parking facility in downtown Peekskill, with Sarah and Laura preparing to assist with operations. [N2KZ pic.]

windy and chilly, with the feeling of an impending shower in the air. Traffic on Route 6 could easily be seen in the distance.

The hunt itself was all planned out. There would be ten transmissions between the 3:00 pm start and 4:30 pm when the hunt would close. In retrospect, I should have listened to my daughter Sarah! Ever more sneaky than her father, she wisely suggested that we intermingle with all the other cars one level down from the very top. With foolish bravado, I replied: "If they finally find us way up here, they've earned it!"

Sarah was right! The hunt went on for nearly an hour and I thought we were invincible. These are the thoughts of a fool! In complete frustration, Mike, N2EAB, came up to the top of the parking lot at about 3:55 pm just to get a good reading on where we might be. Surprise! He ran right into us! I should have known better! Mike always finds us! He made a quick retreat and headed for The Westchester Diner near the Welcher Avenue exit off Route 9.

This fox still had a few transmissions left and no one else found us until the very end. Malcolm, NM9J, and Joe, WA2MCR drove up to us moments before the bitter end at 4:28 pm. All considered, this was a perfect hunt. Lovji, N2CKD and Al, K2DMV met us after the hunt along with Ray, W2CH and his wife Marylyn, KC2NKU. It was a difficult hunt, but not insurmountable. Perfect.

The fox is discovered by runners-up Joe WA2MCR (right) and Malcolm NM9J (out of shot), minutes before the end of the event.

All the hunters joined fox and company at the diner to trade stories and smiles. Malcolm officiated the awards ceremony and a hearty early dinner delighted all. Our responsibilities as the fox are now over! Next time, we can rejoin the hunters. Sound the horns and release the beagles, hunt we will!

Each fox hunt is great fun and a guaranteed method to bring smiles into an afternoon. It also serves a serious purpose. The PCARAn participants have now become experienced radio direction finders ready to discover the origin of signals wherever they may be. Some of us have even triangulated a pirate radio broadcaster or two. All I can say is: You have to join us for the next hunt! You don't know what you are missing! The winner of the next challenging hunt could be you!

Goodbye Old Friend

On May 18, 2015, the FCC accepted a letter from Townsquare Media Group requesting the cancellation of the broadcast license for Brewster's WPUT 1510 kHz. According to the FCC's AM Query web site: *"Deleted facilities cannot be reactivated. Interested parties must file an application for construction permit during the appropriate AM application filing window."* In essence, it's over. WPUT is history.

1510 AM in Brewster was originally known as WBRW and prospered during the height of popularity for local radio well into the 1970s. It had a good run: 1963-2015 - a full 52 years. Still, today's silence is deafening. It was simplicity: A 1 kilowatt daytimer with just one antenna stick built into a small yet utilitarian house on less than prime real estate. It still sits at the end of Prospect Hill Road in Brewster directly adjacent to the Metro-North train yard. With low overhead, tight efficiency and strong ties to surrounding communities, WBRW was unstoppable.

This single AM transmitter tower for WPUT, Brewster no longer emits any radio waves. [N2KZ pic.]

Long before the FM radio's age of popularity and the coming of mass media via computers and the Internet, the station had a virtual monopoly on local news, weather and sports. WBRW was the source of information for the entire area. If snow was falling, every kitchen radio was tuned in for miles and miles. Radio was vital and alive. Good times!

The station was sold in 1968 and the callsign changed to WPUT in an attempt to broaden its service area. Big name local radio talent was hired in. It

became an affiliate of the ABC Entertainment Network. 1510 AM remained vital and alive. WPUT changed with the times. Eventually, their news affiliation switched to CNN and the music format switched to adult contemporary.

Their big competition was WVIP in Mt. Kisco. On September 9. 1997, WVIP burned to the ground. Local broadcasters pooled their surplus equipment and got them back on the air. It only lasted a few days. WVIP was off for good.

Just a few months later, on June 7, 1998, WVIP's legendary owner Martin Stone passed away. All hope seemed to evaporate. After years of silent hiatus, 1310 AM became a re-broadcaster of a Caribbean religious radio service. It remains on the air as WRVP with 5 kilowatts during the day and 33 watts at night. No local content. Another neighborhood station bites the dust.

Unfortunately, WPUT had a similar fate. As time went by, FM radio ate away their audience and local programming could not be financially sustained. Brewster's 1510 AM reverted to nationwide syndicated programming and eventually became a simulcaster of WINE 940 in Danbury. During the last few years, the station was barely functioning. Now it is gone.

The signs of its demise are quite apparent. WPUT has now been off the air since November. The grass is not mowed. The house that used to serve as its studio complex has fallen into disrepair. Windows are broken. Large pieces of siding dangle from the roof overhangs and the outside walls look fragile. No one is home. How sad.

The house that served as WPUT's Brewster studio has fallen into disrepair. [N2KZ pic.]

WPUT is now silent. The plate voltage will be forever at zero. Not much more can be said. I grew up in local radio. Now it is nearly obsolete. It isn't easy watching something you love wither away. Where have all the voices and music gone? Remember the good times. It sure was fun.

With both WPUT and WVIP off the air, there is little local radio to speak of serving Northern Westchester County. WLNA 1420 Peekskill simulcasts a satellite-delivered traditional country format 24 hours a day with 1260 WBNR Beacon. WFAS 1230 White Plains has a local morning show but doesn't really serve Northern Westchester. Only WHUD 100.7 FM Peekskill and WXPK 107.1 FM Briarcliff Manor recognize our part of the county with WHUD serving as the only source for local news and a live local morning show.

It has always amazed me how state lines divide radio coverage. Ridgefield and Danbury, Connecticut are only a few miles away from me, yet you will never ever hear Northern Westchester news, sports or advertisements on any of their 5 FM and 3 AM outlets. I am so close to WAXB 850 Ridgefield that I can almost hear their harmonic on 1700!

So, where do you go for local news? Newspapers still exist along with their Internet sites. Independent journalists now publish through news services like your local Patch (i.e. http://patch.com/new-york/peekskill) and nearly everyone references Facebook 'Moms' sites like https://www.facebook.com/PeekCortmoms. Nothing beats the immediacy of radio, but what is 'radio,' Dad? If you are a subscriber, Cablevision also offers up their 'News 12' channels to view. Times have really changed!

New to Peekskill

A new radio signal has popped up recently in the Peekskill area on 95.9 FM - callsign W240CR. It is a translator repeater station of WOSR across the river in Middletown which carries the NPR programming of WAMC in Albany, New York. W240CR is a ten watt booster station, just one of many, many transmitters operated as part of the vast WAMC network. Take a look at their coverage map: http://wamc.org/coverage-map .

FCC 60dbμ service contour for new FM translator station W240CR ❶.

Speaking of local radio, if you like jazz you'll like Hudson Valley Public Radio's JazzFM. HVPR is also assembling quite a bevy of stations around our area for you to enjoy. See all the details at http://www.hvpr.net/ .

Our friends at WPWL Pawling Public Radio have

WPWL 103.7 PAWLING PUBLIC RADIO just presented a proposal for a 150 foot tower in the Town of Dover as part of their construction permit plans for a new FM transmitter on 103.7 approved last year by the FCC. They currently operate a Part 15 low power station on 101.7 MHz. They are an amazing group of community broadcasters! See and hear them at: http://www.pawlingpublicradio.org/ .

You Need Goats

Are you familiar with Alexanderson generators? Do you know what Alexander Graham Bell's greatest invention was? What is the difference between a rheostat and a potentiometer? These questions would have answers if you tuned into The Old Goats Net on the PCARA repeater (146.67 MHz, -600 offset, 156.7 PL) every Thursday night at 8:00 pm.

It's not just a bunch of guys talking about ham radio! We have great discussions including just about everything! Hams check in from near and far. A regular participant reaches us from Island Park on Long Island. Recently, we heard from a powerful station down in the Philadelphia area: Bill, K2GFY. Using a Kenwood TM-V71A transceiver at 50 watts to a Diamond X500 antenna up on a tower, his signal was simply amazing.

After the net, I was channel surfing on my over-the-air TV set. I saw some interesting things going on, so I re-scanned to see just what was coming in. Just a few minutes later, I logged a solid locked DTV signal from WHRO Channel 15 way down in Norfolk, Virginia. Similar tropospheric receptions occurred for a couple of hours all down the Atlantic seaboard. Great fun!

That's it for this month! Enjoy ARRL Field Day on the weekend of June 27th and 28th. PCARA will be stationed at Walter Panas High School — all welcome!

73 and dit dit from Karl N2KZ 'The Old Goat'.

NY QSO Party 2014

PCARA President Greg KB2CQE recently received a pleasant surprise from one of the entrants in the 2014 New York QSO Party.

Just as a reminder, the 2014 New York QSO Party, sponsored by the Rochester DX Association, took place on Saturday October 14. PCARA's entry was conducted from the bright surroundings of Joe, WA2MCR's sun room. The club station W2NYW made 463 QSOs for 548 points. There were 100 multipliers for a final score of 54,800. For further details, see *PCARA Update*, November 2014.

Individuals and organizations can sponsor plaques for winning entries in the NY QSO Party. In 2014, PCARA sponsored *two* plaques — the "New York Multi-One" plaque which was carried over from 2013, plus the "Non-New York Phone Low Power" plaque.

Results for each QSO party are published in late February. For the 2014 event, PCARA's score was adjusted to 53,900 which ranked third out of five entries in the "Multi-op Multi-single" class and second out of five entries from Westchester. Full results are available via the Rochester DX Association web site, http://www.rdxa.com/index.php .

Gayle N2TWI accepts the "New York Multi-One" plaque presented to W2CCC at the recent awards banquet.

The "New York Multi-One" plaque was awarded to the Cold Brook Contest Club, W2CCC, for a score of 66248. Club President Chris Shalvoy, K2CS sent an appreciative e-mail to PCARA's President Greg, KB2CQE sincerely thanking PCARA for sponsoring the award. The Cold Brook Contest Club operates from Cold Brook, NY in Herkimer County. See: http://www.qrz.com/db/w2ccc .

The "Non-New York Phone Low Power" plaque was awarded to Greg, VA3GKO in Ontario, Canada. VA3GKO scored 8950 points in the Single Operator class.

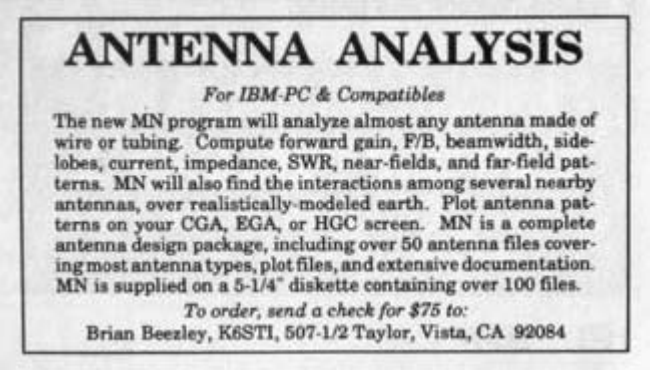
This year, the New York QSO Party is scheduled for Saturday October 17, 2015 from 10:00 a.m. to 10:00 p.m. local time. - NM9J

A novel model

Long ago and far away

In the late 1980s, while I was living in the Chicago suburbs, I came across a monthly column by Ian White, G3SEK in the UK magazine *Wireless World*. The article mentioned some recently-introduced antenna modeling software for the IBM PC, by Brian Beezley K6STI.

At the time, antenna modeling was new to me — and Brian Beezley's MN software, based on MININEC, was available for $75.00, so I ordered a copy by mail.



ANTENNA ANALYSIS

For IBM-PC & Compatibles

The new MN program will analyze almost any antenna made of wire or tubing. Compute forward gain, F/B, beamwidth, sidelobes, current, impedance, SWR, near-fields, and far-field patterns. MN will also find the interactions among several nearby antennas, over realistically-modeled earth. Plot antenna patterns on your CGA, EGA, or HGC screen. MN is a complete antenna design package, including over 50 antenna files covering most antenna types, plot files, and extensive documentation. MN is supplied on a 5-1/4" diskette containing over 100 files.

To order, send a check for $75 to:

Brian Beezley, K6STI, 507-1/2 Taylor, Vista, CA 92084

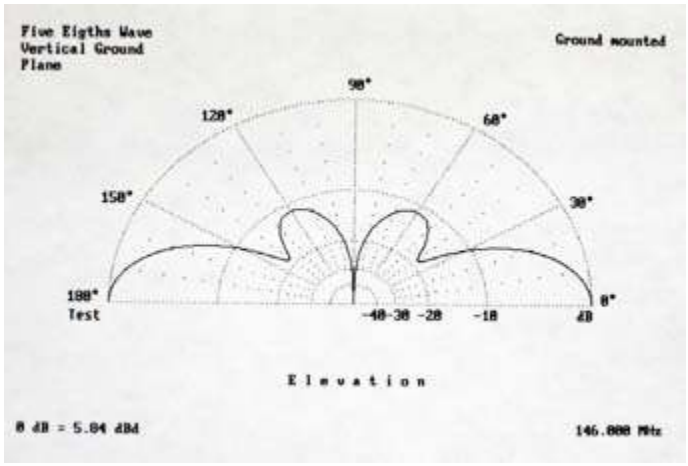
Advertisement from January 1989 QST for K6STI's "MN" antenna analysis software.

Bear in mind that this was the eighties! My latest computer was an Epson Equity 286 desktop. There was no Internet connection... software was delivered on 5¼" floppy disks, or if you were very up-to-date on a 3½" disk. Most software for the IBM-PC and compatibles ran on Microsoft's MS-DOS and was character based. Graphical output was unusual.

MN version 2 arrived on a 5¼" floppy disk. Version 3 was on a 3½" diskette.

Nevertheless, the MN 2.00 software by K6STI gave an insight into what was possible when clever programming was combined with personal computer hardware.

Antenna geometry was first defined in a text file, which could be modified with the included TED editor. The antenna analysis program MN would then calculate the azimuth and elevation patterns. An optional math coprocessor was recommended for speedy computation in this part of the procedure. Finally, the antenna pattern could be visualized on-screen using a separate PLOT program, or printed out on an Epson dot matrix printer.



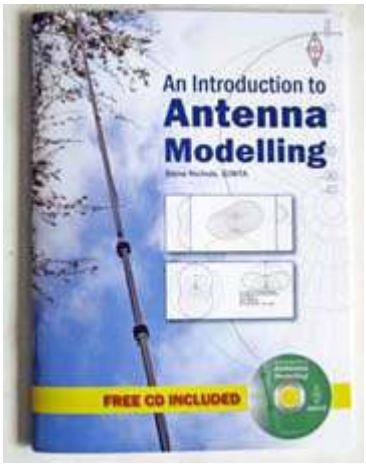
MN software's PLOT program shows the elevation pattern of a 5/8λ vertical ground plane antenna on 146 MHz.

Long gap

Since those early days, I have dabbled with antenna modeling software a few times, but I was put off by the awkwardness of free programs and by the price of the pay-for versions. Then a couple of months ago, the ARRL sent me a "birthday present" in the form of a voucher for the ARRL Store. One of the new items listed on ARRL's site was the book "An Introduction to Antenna Modelling" by Steve Nichols, G0KYA, published by the RSGB. The book was only $19.95, including a software CD-ROM. (ARRL item number is 1900).

A new hope

A few days later, the book-plus-CD arrived and I was suitably impressed. The book is only 74 pages long and concentrates on the free modeling software "MMANA-GAL".



"An Introduction to Antenna Modelling" by Steve Nichols G0KYA.

MMANA-GAL was originally written by Japanese radio amateur Macoto Mori, JE3HHT and is partly named after his initials (**MM An**tenna **A**nalyzer. JE3HHT is also known for the RTTY software MMTTY.) The "GAL" part of the name refers to **Al**ex Schewelew DL1PBD and Igor **G**ontcharenko DL2KQ who made substantial structure changes to the original MMANA code, plus subsequent improvements. At the time of writing, the current version is MMANA-GAL v 3.0.0.31. The program plus sample antenna files can be downloaded as a 2.6 megabyte zip file 'mmanabasic.zip' from the following page on VE5KC's

"MM Hamsoft" web site: http://hamsoft.ca/pages/mmana-gal.php .

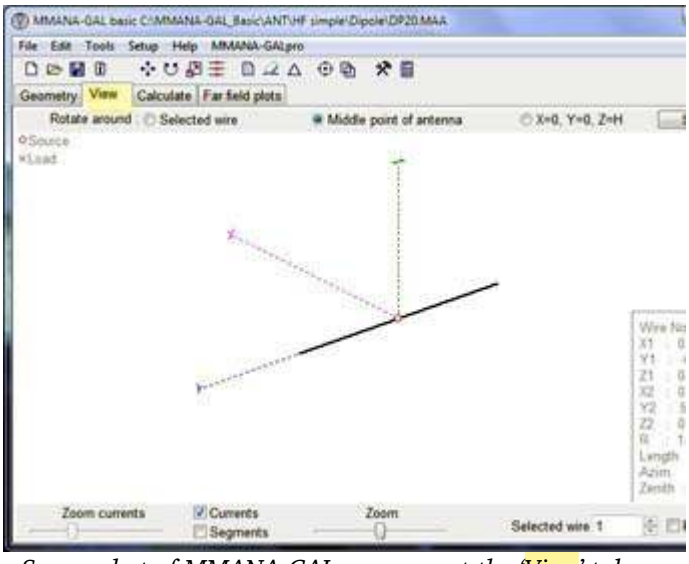
The CD-ROM included with G0KYA's book has a copy of the same 'mmanabasic.zip' file, plus additional example antenna files that are referred to in the text. I installed the software from the CD-ROM onto my Windows 7 notebook computer, copied the .maa files from the CD-ROM's "Other Examples" folder then settled down with Steve Nichols' book at chapter 2, "Getting Started with MMANA-GAL".

Getting started

The basic procedure for modeling an antenna has not changed since the days of Brian Beezley's MN program, but it is a lot easier nowadays using Windows' graphical interface. Instead of using three separate programs for data entry, calculation and plotting, all functions are now incorporated into a single Windows program with multiple tabs.

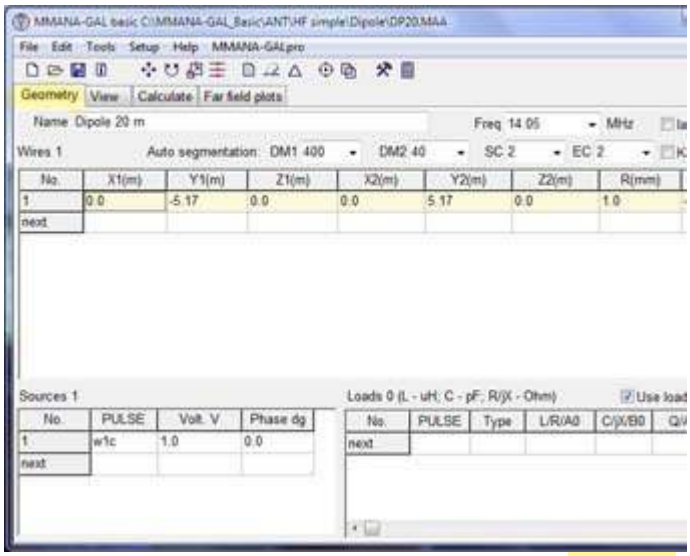
The first thing needed is a description of the physical antenna in terms of wires suspended in 3-dimensional space. Defining the X, Y and Z coordinates of the ends of each wire can be tricky, especially as the program works in the metric system with all wire lengths measured in meters (or wavelengths) rather than feet and inches.

But don't despair! There is a library of existing antenna structures in the form of ".maa" files that can be loaded from disk, explored in the MMANA-GAL software then modified if necessary. This is the approach taken by G0KYA in chapter 2 of his book. The reader is instructed to open file "DP20.maa" which is a simple dipole cut for the 20 meter band. With plenty of screen shots, the reader is shown how to view the antenna in three dimensions, using the **View** tab, and see where the feeder is connected.



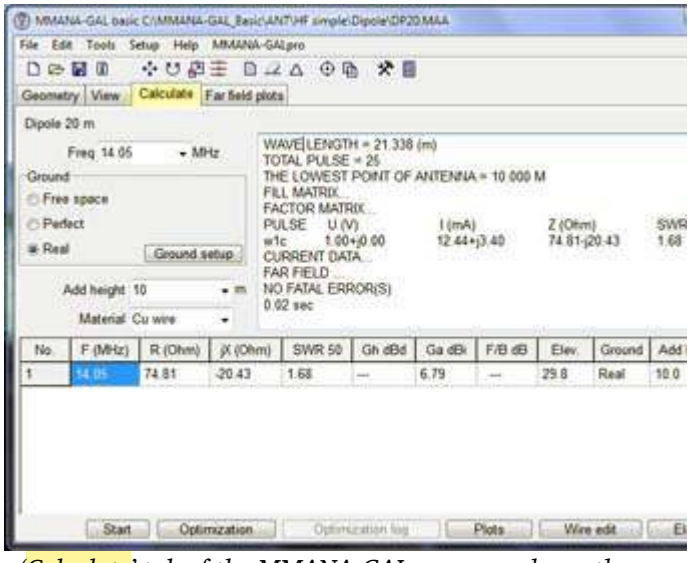
Screen shot of MMANA-GAL program at the 'View' tab (yellow tint) shows a horizontal dipole antenna for 20 meters suspended in 3D space.

The **Geometry** tab shows how wire sections are defined using X, Y and Z coordinates for the ends of each straight wire and how the source (RF feeder connection) is defined at the middle of the dipole.



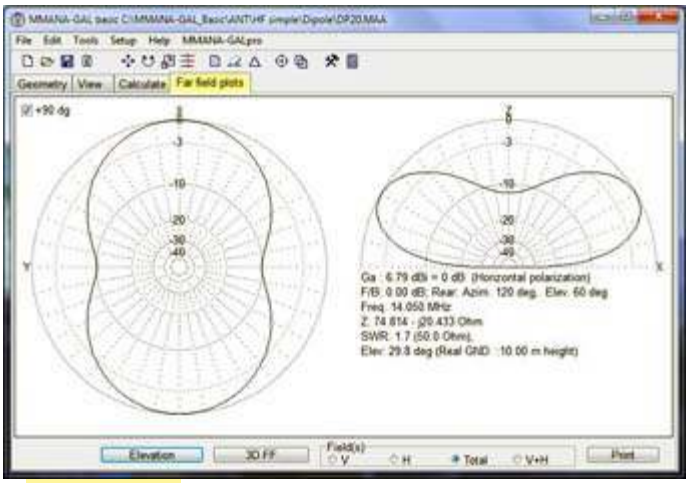
Screen-shot of the MMANA-GAL program at the 'Geometry' tab, showing x, y, z co-ordinates of a 20 meter dipole, with lengths expressed in meters. The "Sources" table shows the antenna is fed at the center of wire #1 (w1c).

The hard work for the computer begins after we are led to the **Calculate** tab. After checking that the frequency is correct (14.05 MHz), that the antenna is being modeled with "Cu wire" (copper wire) over "Real" ground and that the height is 10 meters, we click the "Start" button. A few seconds later, the calculated result reveals the antenna impedance (resistive component 74.81 ohm), the expected SWR using 50 ohm feeder (VSWR 1.68:1), plus the maximum gain over an isotropic antenna (6.79 dBi).



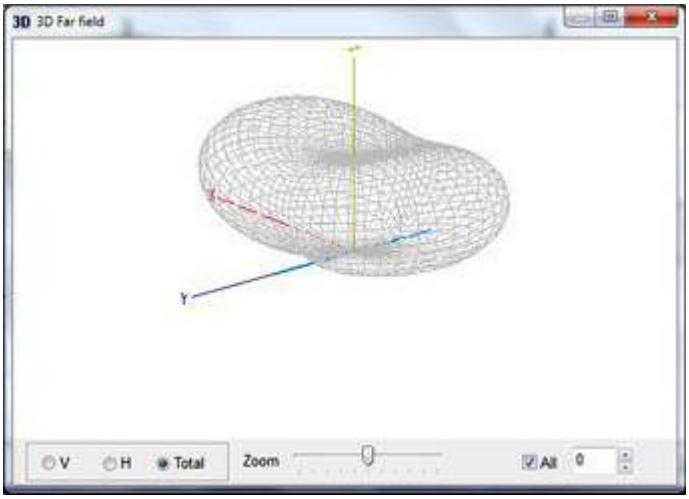
'Calculate' tab of the MMANA-GAL program shows the results for a 20 meter dipole after the 'Start' button has been pressed. SWR for 50 ohm feeder is 1.68:1.

During the calculation period, the wire is divided into a number of segments and the program calculates the current in each segment. By adding the influence of all these currents together, it is possible to calculate the RF field at any point around the antenna. As radio amateurs, we like to express these results as a polar diagram for the antenna — this can be visualized using the **Far field plots** tab. The azimuth plot appears on the left side while the elevation plot is shown on the right.



'Far field plots' tab of the MMANA-GAL program shows the azimuth and elevation radiation patterns for a 20 meter dipole, 10 meters above real ground.

Best of all, the polar diagram can also be visualized as a 3D plot that can be rotated in three dimensions to get a feel for the overall antenna pattern. If you ever wanted to examine the 'squashed-donut' pattern of a half-wave dipole above ground, then this is one way to experience it up-close. Just press the **3D FF** (3D far field) button at the bottom of the "Far field plots" tab. The 3D image appears along with a representation of the antenna for orientation purposes.



3D Far Field pattern of a 20 meter dipole — as visualized by MMANA-GAL — can be rotated in three dimensions. (The antenna wire is aligned with the Y-axis.)

[Note — the "3D FF" plot occasionally caused an "Access violation" error on my notebook PC. This problem seems to be triggered after running the Plots→Resonance function described next.]

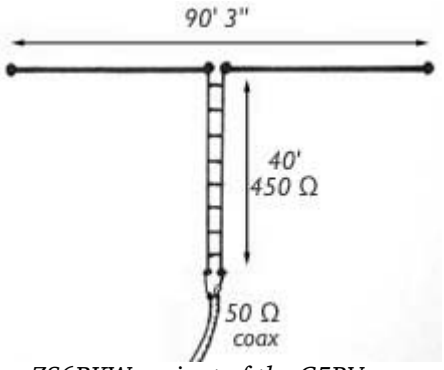
I really appreciated G0KYA's "Getting started" approach to MMANA-GAL. Being led by the hand through a new piece of software with real examples and being able to compare your own results with the author's screen shots helps to build confidence. Throughout the process, G0KYA provides helpful hints and cautions against situations to avoid.

Plot an SWR graph

After you have defined an antenna and calculated its properties at a specified frequency, one of the helpful things that MMANA-GAL can do is find the point of resonance and plot the SWR curve within the band of interest. This is fine for a single-band antenna, but the built-in SWR plot is not really adequate for a *multiband* antenna which should have more than one resonance when plotted over a wide frequency range.

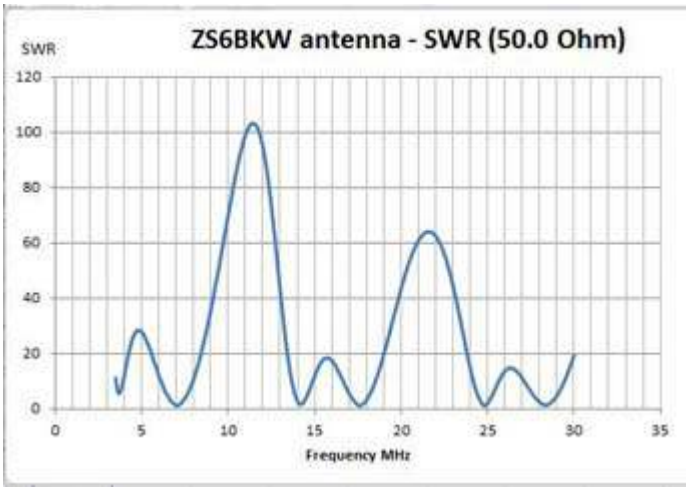
In a subsequent chapter on "Advanced MMANA-GAL Usage", G0KYA explains how to make the program save *raw data* in a comma-separated-variable (.csv) file. The .csv file can then be processed by a separate piece of software that *you* supply to produce professional-looking graphs. Suggestions include Microsoft Excel and the OpenOffice 'Calc' spreadsheet program. There is a copy of Apache Open Office included on the CD-ROM, along with lots of other free software.

A favorite multi-band wire antenna is the 102 foot long G5RV dipole fed with 34 feet of open wire transmission line. However, this design only has a reasonably low SWR on a couple of bands. An article in the *PCARA Update* for July 2009 described the ZS6BKW variation of this antenna, where the dipole and twin wire feeder length are optimized for low SWR on additional amateur bands.



ZS6BKW variant of the G5RV antenna as described in PCARA Update for July 2009.

A sample antenna file included on the book's CD-ROM describes a ZS6BKW antenna with 93½ foot top section and 41 feet of vertical ribbon cable. Generation of a .csv file for this antenna, covering a frequency range of 3.5 - 30 MHz at 50 kHz intervals required around ten minutes of calculation time on my Intel Core™ i5 notebook. I was then able to open the .csv file in Microsoft Excel and produced an XY scatter graph showing SWR versus frequency.



Graph produced by Microsoft Excel from a .csv file generated by MMANA-GAL for a ZS6BKW antenna. Note low SWR on the 3.5, 7, 14, 18, 24.9 and 28 MHz bands.

MMANA-GAL predicts that this antenna will have a good SWR on 40, 20, 12 and 10 meters and a reasonable SWR (requiring a simple tuner) on 80 meters and 17 meters. However the SWR on 30 meters and 15 meters is unacceptably high for an antenna fed with 50 ohm coaxial cable. According to the exported .csv data, the best SWR for the ZS6BKW antenna within each of the HF amateur bands is as follows:

Frequency	**SWR** (50 ohms)
3.70 MHz	5.6:1
7.05 MHz	1.1:1
10.10 MHz	73.3:1
14.20 MHz	1.1:1
18.10 MHz	4.1:1
21.10 MHz	61.7:1
24.90 MHz	1.3:1
28.35 MHz	1.3:1

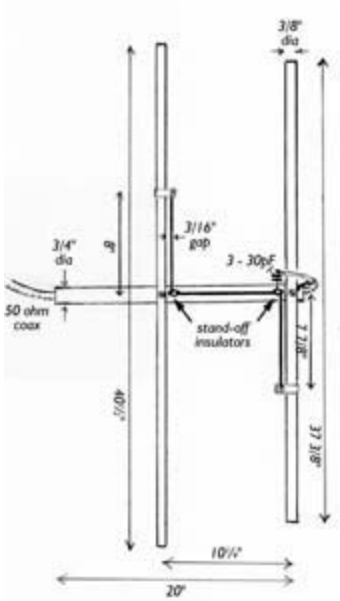
These calculated results are in-line with the findings of G3UKV and with my own experiences using a home-brew ZS6BKW dipole as reported in *PCARA Update* for July 2009.

Loads of fun

There are many more capabilities in the free MMANA-GAL antenna software, including the ability to model loading coils and frequency traps. Steve Nichols leads you through these operations with more examples to try yourself. Another capability that I liked was the way "Far field plot" allows comparison of different antennas on the same graph.

Antennas galore

A large number of sample *.maa* antenna files are provided with the MMANA-GAL software, including just about every type of antenna that I'm familiar with. I even found the HB9CV two-element flat-top beam that I've used on PCARA foxhunts, which was tucked away in the ANT/Phased folder. Working through these different antennas builds up familiarity with their strengths and weaknesses. In particular, it shows that simple multiband antennas are generally best when they only cover two or three amateur bands at a time. Even if you have a low SWR, it's not much help if all your RF power is shooting up at a high angle and merely warming the clouds. So — if you want to cover the *entire* HF spectrum from 3-30 MHz, two or more separate antennas are recommended.



HB9CV antenna from Sept 2005 PCARA Update

Proceed with caution

One piece of advice that I remember from the early days of antenna modeling is the need to keep a realistic sense of the possible at all times. If the performance of an antenna seems unbelievably good or surprisingly bad, then you have probably made a mistake with the wire dimensions or you have pushed the software too far against its limitations.

There was an interesting article by *ELNEC* author Roy Lewallen, W7EL in the February 1991 edition of *QST* describing limits of the modeling software available at the time. The title was "MININEC: The Other Edge of the Sword." (ARRL members can retrieve archived *QST* articles from the ARRL web site, http://www.arrl.org/arrl-periodicals-archive-search. Details of W7EL's current software are available at http://www.eznec.com/)

Some of those early limitations have been overcome with today's more capable hardware and software. But there are still cautions about the use of MMANA-GAL. G0KYA spells out these limitations in chapter six of the book and points out that the pay-for versions of MMANA-GAL — and other antenna modeling software — have additional capabilities that you might find worthwhile.

Give it a try

Before you spend any money on pay-for software, give the **free** version a try. You might find that antenna modeling is a worthwhile aspect of our hobby. In particular, the book by Steve Nichols, G0KYA combined with the free MMANA-GAL software on the accompanying CD-ROM provides a low-cost introduction to a fascinating subject.

- NM9J

Fox on the top

Saturday May 9 was the date for PCARA's 2015 Foxhunt, with the fox played this year by Karl, N2KZ.

As winner of the 2014 hunt, Karl had been giving hints that he would be extra *stealthy* this time around. The weather was partly cloudy as hunters assembled on the west side of the Beach Shopping Center Car Park in Peekskill.

Entrants who checked in at the Beach included previous hunters Mike N2EAB, Malcolm NM9J – accompanied by Joe WA2MCR and Lovji N2CKD – accompanied by Henry KB2VJP. New hunters on this occasion were Al K2DMV and David KD2EVI.

Lovji N2CKD and David KD2EVI compare their directional antennas at the Beach Shopping Center.

An interested motorcyclist drove past our vehicles several times then asked what we were doing with the antennas — we explained "Foxhunt!"

At 3:00 p.m. the first signal from Karl's transmitter appeared on 146.565 MHz simplex. As the directional antennas swung around, it was evident that the source was almost due west, bringing back memories of a previous hunt when Mike N2EAB and Greg KB2CQE were hidden at Depew Park and of the occasion when Karl was hidden on the Goat Trail.

Fast off the mark

As soon as the first transmission ended, Mike N2EAB set off toward the west and took his next bearing from the top of Elm Street. The direction shown was due south so Mike headed toward Franklin Street and found the signal from the subsequent transmission was taking him toward the river. Mike also observed that changing antenna polarization from horizontal to vertical was sometimes producing a stronger signal in a different direction.

Mike N2EAB with tape-measure Yagi and attenuators, prepares to take his first bearing on the Fox.

From the road between Peekskill station and Peekskill Yacht Club, Mike found the signal had swung around and was now stronger to the north. Heading back toward the new park at Peekskill Landing and preparing his antenna for the next transmission, Mike was interrupted by two elderly couples who shouted "Don't shoot!" As Mike paused to explain what was going on, he missed most of the next transmission, then was further delayed as a train passed the crossing at the Metro-North railroad tracks.

After the barriers were raised, Mike proceeded uphill to the center of Peekskill. He noticed that the signal was getting stronger, then faded at the top of the hill. The third harmonic signal was also noted. Intending to take a bearing from the multi-story parking garage, Mike drove to the top floor where he made a significant discovery at 3:55 p.m.

On the trail

Meanwhile your editor, accompanied by Joe KB2CQE, had set off from the Beach Shopping Center along Route 202 in order to avoid delay at the traffic signal on Route 6. As the time for the second transmission approached, we turned off Crompond Road into the higher ground of "Villa at the Woods". The signal on two meters was strong, with a direction just north of west, passing across the center of Peekskill toward Peekskill Landing Park.

For the next transmission, NM9J and WA2MCR headed down Wells Street into the car park behind Peekskill High School. This location stands high above the town center at 250 ft above seal level with a view across the Hudson River toward Dunderberg Mountain. The signal on 146.565 Mhz was extremely strong,

making it difficult to get a good bearing even with maximum attenuation of 32 dB. The third harmonic on 439.695 MHz was audible, suggesting the fox should be close enough to be visible.

Direction finding with the UHF HB9CV antenna did not give a useful direction and inspection of the nearby vehicles failed to show any transmit antennas or presence of the fox. Best guess from direction of the two meter signal was either due north or due south.

Acting on a hunch that perhaps the fox had returned to Depew Park for a second visit, the next bearing was taken from the Park entrance and indicated a direction just west of north. The fox was describing a fine view of clouds and mountains, while talking about elephants.

Hoping to get a cross bearing, we headed back along South Broad Street then continued to the end of North Broad Street, which is around 250 feet above sea level. From this point the signal was very strong on 2 meters *and* on the 439 MHz third harmonic. The direction was now west of south.

This was a strange situation — if the harmonic signal was audible on 439 MHz, then the Fox should be within visible range. But there were no vehicles nearby that looked remotely fox-like. We spent the next couple of transmissions inspecting the side streets between Broad Street and Division. We even returned to the High School Parking Lot, and to the end of N. Broad Street where mysteriously the 439 MHz harmonic had now disappeared.

As the time for the last transmission approached, Joe WA2MCR suggested a final guess in the multi-story James Street parking garage which is opposite the DMV in Park Street. We drove into the structure just as N2CKD was asking the fox a question. Right at the top, above Level 5 we discovered Karl, N2KZ plus daughters Sarah and Laura occupying a Toyota Sienna minivan with dual-band mag-mount antenna on the side of the vehicle for horizontal polarization.

The fox, played by Karl N2KZ with daughters Sarah and Laura, was located on top of the multi-story parking garage in central Peekskill.

The fox was transmitting with a dual-band mag-mount antenna on the west side of the N2KZ minivan. Peekskill High School is visible, due south (top right of photo).

Close behind

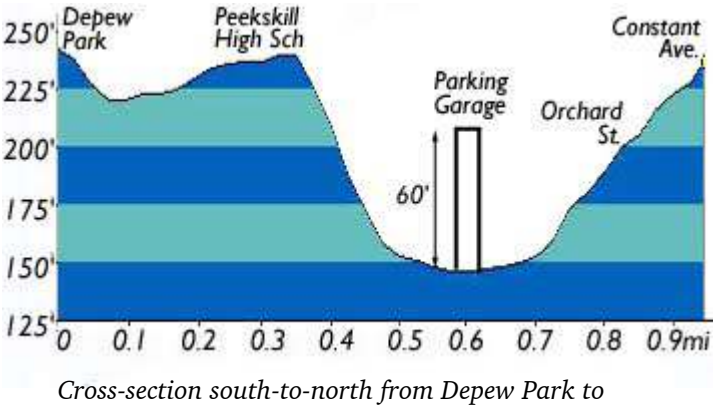
Lovji N2CKD and Henry KB2VJP also had a good time searching for the fox. Their first bearing from the Beach Shopping Center suggested downtown Peekskill. The next stop was on North Division Street, less than half a mile from where the fox was subsequently found. They drove on to St. Mary's Convent for a high spot and found the direction of the fox transmission was still toward downtown Peekskill. Subsequent stops were at Welcher Avenue, Peekskill Brewery on S. Water Street where the signal was strong, then Annsville Circle where the bearing pointed back to Peekskill again. Lovji reported that his home-built offset attenuator worked well, but he suffered a connector failure on the Moxon antenna for 440 MHz.

Map shows significant locations during the 2015 foxhunt, which started at the Beach Shopping Center and led the hunters around central Peekskill.

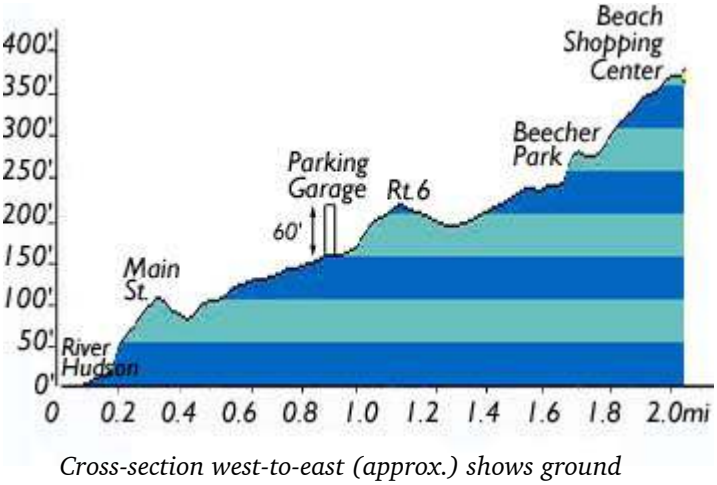
Location low-down

Karl had been running just 5 watts from a Yaesu mobile radio. His transmit location at the top of the James Street parking structure provided a direct line-

of-sight path to most of downtown Peekskill. Height of the multi-story structure is estimated at 60 feet above the street, for a total of 210 feet above sea level. Karl's mag-mount dual-band antenna was mounted horizontally on the side of the minivan facing west — this should have produced maximum radiation to north and south with a null to the east. Peekskill's downtown lies in a dip between surrounding hills, so that once outside the city center, the hunters were also experiencing strong reflections from nearby high spots such as Bear Mountain, Blue Mountain and Manitou mountain.



Cross-section south-to-north from Depew Park to Constant Avenue shows downtown Peekskill lying between higher ground to north and south. (Vertical scale is exaggerated.)



Cross-section west-to-east (approx.) shows ground rising from the River Hudson, through downtown Peekskill then upward toward Beach Shopping Center.

After the fox

As the event ended at 4:30 p.m. Karl announced that hunters should head toward the Westchester Diner on Albany Post Road, Route 9A. Most participants gathered there along with Ray W2CH and Marylyn KC2NKU who had driven over from White Plains to join the *après-chase* activities. There was much comparing of notes, discussion of strategy and thoughts about future improvements.

Certificates were presented to this year's winner N2EAB and to runner-up NM9J. A good time was had by all at the friendly diner and we can look forward to another competition next time with Mike N2EAB as

Mike N2EAB is presented with first place certificate in the Foxhunt by Sarah (far left), Laura and Karl N2KZ (right).

fox. Let's hope he chooses somewhere with a less commanding view that is visible by mere mortals down at street level. - NM9J

Hamvention® views

Several members attended this year's Dayton Hamvention, which took place May 15-17 in Dayton, Ohio. Greg, KB2CQE e-mailed a couple of pictures taken in the car park at Hara Arena.

These pictures taken by KB2CQE at the Dayton Hamvention show an Ohio vehicle with more antennas than you could shake a Hamstick at.

Peekskill / Cortlandt Amateur Radio Association

Mail: PCARA, PO Box 146, Crompond, NY 10517
E-Mail: mail 'at' pcara.org
Web site: http://www.pcara.org
***PCARA Update* Editor:** Malcolm Pritchard, NM9J
E-mail: NM9J 'at' arrl.net
Newsletter contributions are always very welcome!
Archive: http://home.lanline.com/~pcara/newslett.htm

PCARA Information

PCARA is a **Non-Profit Community Service Organization**. PCARA meetings take place the first Sunday of each month* at 3:00 p.m. in Dining Room B of NewYork-Presbyterian/Hudson Valley Hospital, Rt. 202, Cortlandt Manor, NY 10567. Drive round behind the main hospital building and enter from the rear (look for the oxygen tanks). Talk-in is available on the 146.67 repeater. *Apart from holidays and July/August break.

PCARA Repeaters

W2NYW: 146.67 MHz -0.6, PL 156.7Hz
KB2CQE: 449.925MHz -5.0, PL 179.9Hz
N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar

Fri June 5: Church of Holy Spirit 50th Anniversary.
Sun June 7: PCARA Meeting, NewYork-Presbyterian / Hudson Valley Hospital, 3:00 p.m. **Presentation:** "DMR — A new mode for amateur digital radio" by Warren, K2WD.
Sat-Sun June 27-28: PCARA Field Day. Walter Panas High School, Cortlandt Manor. (Subject to approval).

Hamfests

Sun Jun 7: LIMARC Hamfest, Briarcliffe College, 1055 Stewart Avenue, Bethpage, NY. 9:00 a.m.
Sat Jun 20: Newington ARL Hamfest, St. Mary School, 652 Willard Avenue, Newington, CT. 8:00 a.m.
Sat Jun 20: Raritan Valley Radio Club, Piscataway High School, 110 Behmer Road, Piscataway NJ. 8:00 a.m.
Sun Jul 12: Sussex Co ARC Hamfest, Sussex County Showgrounds, 37 Plains Road, Augusta NJ. 8:00 a.m.

VE Test Sessions

Jun 6, 13, 20, 27: Westchester ARC Radio Barn, 4 Ledgewood Pl, Armonk NY. 12. M. Rapp, (914) 907-6482.
Jun 7: Yonkers PAL Ham Radio Club, 127 N Broadway, Yonkers NY. 2:00 p.m. Pre-reg. M. Rapp (914) 907-6482.
Jun 7: Yonkers ARC, Yonkers PD, Grassy Sprain Rd, Yonkers. 8:30 a.m. Pre-reg. John Costa (914) 969-6548.
Jun 11: WECA, Westchester Co Fire Trg Cen, 4 Dana Rd., Valhalla, NY. 7:00 pm. S. Rothman, 914 831-3258.
Jun 27: PEARL Field Day Site, Veterans Memorial Park, Gypsy Trail Rd, Carmel NY. Paul Glatz (845) 661-7991.

Peekskill / Cortlandt Amateur Radio Association Inc.
PO Box 146
Crompond, NY 10517