



PCARA Update



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Time for treasure

The PCARA Holiday Dinner held on December 2nd at the recently renovated Table 9 Restaurant on Annsville Circle was an enjoyable success despite some initial confusion over the available menu options. The reservation had been booked a month ahead of time, but the new management required an additional phone call to confirm the reservation and secure the "group menu rate". I apologize to those present for any confusion or inconvenience this may have caused. Alternate arrangements *will* be made for next year's event.

It's January, and you all know what that means! Of course, the 6th Annual PCARA Bring and Buy Auction!



On January 6th, as in the 5 years past, bring any of your "no longer wanted treasures" with you for sale and perhaps go home with a few new treasures of your own! Our Auctioneer-In-Chief Malcolm, NM9J will be sure to raise the bidding to new heights of excitement for all.

This is a great opportunity to clean out your shack for the start of the New Year!

While the rest of us were busy making Holiday plans, there were three valiant souls who spent their time in the cold weather, making some badly needed repairs and improvements to the 146.670 MHz and 449.925 MHz repeaters. Bob, N2CBH, Malcolm, NM9J, and Rich, WZ2P spent many hours at the site repairing antennas and erecting new ones. The 2m machine has a like-new Stationmaster antenna, while the 70cm unit has a newly repaired Diamond model. The improved performance of both repeaters was immediately apparent. Thanks to the efforts of these members, the rest of us can continue to enjoy the dependable operation of the repeaters through the coming Winter months. On behalf of the PCARA membership, **Thank You!** [More details on page 5 - Ed.]

Our next regularly scheduled meeting will be Sunday January 6, 2013 at 3:00 pm at Hudson Valley



Friends and family gather for the PCARA Holiday Dinner at Table 9 Restaurant in Cortlandt on Sunday December 2.

Hospital Center in Cortlandt Manor, NY. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

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Net night

Peekskill/Cortlandt Amateur Radio Association holds a weekly net on the 146.67 MHz W2NYW repeater on Thursdays at 8:00 p.m. Join net control Karl, N2KZ for news and neighborly information.

Adventures in DXing

– N2KZ

How Low?

Good friend and fellow PCARAn Ray, W2CH, recently built a new QRP power meter and SWR bridge kit sold by the 4 State QRP group. This club is based in the Ozark Mountain region where Missouri, Arkansas, Kansas and Oklahoma meet. Dubbed the 'QRPometer,' the kit has become quite popular with QRP enthusiasts. Ray kindly loaned me his meter for this review.

Ray and I have a lot in common but we differ in power! I usually operate QRP CW using miniature transceivers running between 100 milliwatts and 5 watts. Ray uses some of the finest QRO equipment available like his beautiful new Kenwood TS-2000 at 100 watts. It only seemed appropriate that a dyed-in-the-wool QRPer should test drive his new meter.



QRPometer kit with parts laid out ready for construction [Photo - W2CH]

According to Ray, the meter kit took a casual four hours to assemble. The project was easy to complete and involved no tricky steps like winding toroids or handling surface mount components. The result is a 3½ by 5 inch sandwich of two boards with a 9 volt battery squeezed in-between featuring a large display and two toggle switches. One switch turns the unit on or off and the other switches between metering power and SWR. In 'Power' mode, your transmitter will be politely switched away from your antenna to a built-in resistive dummy load – quite a clever idea.

I can see how this kit could find a lot of utility. It does read relative power of QRP devices fairly well. Honestly, I don't have any other power measuring device, outside of a trusty Radio Shack power and SWR bridge, to compare it to. In my trials, the QRPometer showed my two Small Wonder Labs SW+ series transceivers emit just over one watt and my



QRPometer main board showing mounting space for the 9 volt battery.

beloved Tuna Tin II QRP transmitter cruising along at precisely 200 milliwatts. The meter also showed that both my 20 and 40 meter homebrew dipole antennas have an SWR of about 1.4 to 1.

Any good reviewer has to nit-pick. There are a few things that need to be refined with this kit. Most notably, the QRPometer really needs a sealed metal case to provide good RF isolation when metering. As delivered, the completed kit exposes the main board's solder pads to the world. Swiping the board against anything metal, while the unit is 'on,' would make for a very sad day. The 9 volt battery is fairly difficult to replace. You have to separate the two PC boards (four screws) and remove the nuts from the two toggle switches to swap it out.



Marylyn KC2NKU shows the finished QRPometer.

The display requires slight modification when mounted. You have to remove a solder blob from one set of connection pads and create another blob between another pair of pads. When you are about to measure SWR, and you are not transmitting yet, the meter produces confusing random numbers on its display until you actually go 'key down.' The kit comes with on-board RCA connectors for attaching your antenna and rig. Since RCAs are 'old school,' (also seen frequently used on Heathkit gear,) the kit is now supplied with RCA to BNC adapters free of charge. Now everybody is happy!

When all is said and done, the QRPometer is a simple and fun project that you will probably enjoy for a long time. Like many kits sold to the amateur radio community, it does require your personal touches and slight modifications to reach a perfect spot in your eyes. The kit is in high demand and may require a wait

before delivery. Full details can be found at: <http://www.4sqr.com/QRPometer.php> .

Granny Box Mystery...Solved!

Are over-the-air ATSC digital-to-analog converter boxes now failing with age? Maybe...maybe not!

At work, I oversee over a dozen granny boxes used to receive and convert local over-the-air digital TV channels for viewing on our in-house analog cable TV system. Reception of three channels was problematic, often locking up and freezing at will. The models we use are the most inexpensive available marketed under the brand names 'Micro Gem' and 'Access HD' sold for around \$29.95. I tried swapping converters, testing converters for input sensitivity and analyzing the output of the wall-wart power supplies grasping for any clue. What was making decoding these specific channels so unreliable?



Some of the "granny-box" Digital TV tuners with analog outputs as investigated by Karl.

I discovered that these converters run fairly hot, especially when perched upon other pieces of gear in equipment racks. One tiny electrolytic capacitor, directly adjacent to the bright metal tuner module, sometimes dries out and limits the sensitivity of the converters. I have replaced a few of those under-rated caps, with good results, but this fix did not cure my endless lock-ups. A listing in The Worldwide TV-FM DX Association's bulletin, VHF-UHF Digest, showed a new WCBS translator on the air on RF Channel 22 from Plainview, Long Island. I could easily see this signal, so I changed antennas and switched to Channel 22 instead of 33. The results were immediately fruitful: WCBS became stable as a rock. Still, the mystery continued!

My troublesome channels are all in the New York City market: WNBC (RF channel 28,) WCBS (RF channel 33,) and WWOR (RF channel 38.) All three broadcast from the iconic Empire State Build-



Empire State Building TV and FM antennas between 1150 ft and 1470 ft agl.

ing and all three broadcast two virtual channels per transmitter. After some pondering and research, I decided to take a look at these transmissions with a spectrum analyzer. All three signals had a distinct and horrifying signature. A competent digital TV signal should have a nice square wave-form with an obvious pilot carrier on the leading edge. My troublemakers looked like black diamond ski slopes! Obviously, these would be pretty challenging for my granny boxes, too!

What is the common thread? WNBC, WCBS and WWOR share a master antenna mounted high atop the Empire State Building. A friend described the design as "a bunch of panel antennas strung together with Heliac jumpers."

Since I don't have access or design knowledge of this installation, it's very hard for me to comment. One thing for sure, the result is a mess! I can only wonder why no one has corrected such an anomaly. (WNYW, New York's Fox affiliate, on RF Channel 44, looks crispy and nice using their own antenna also mounted on ESB.)

This is an interesting case. Thinking out loud, I know that ATSC DTV transmitters have sample loops that monitor various aspects of their broadcast signals. The transmitters themselves are most likely producing competent waveforms but, in this case, the antenna system is wildly altering the linearity of the signal equalization presented to the public. Digital TV trans-



Scan of UHF digital TV transmission from WCBS-DT on channel 33. Screenshot from Tektronix 2710 spectrum analyzer.



Scan of three adjacent UHF digital TV channels transmitted from Long Island. Left to right, WLIW-DT, Garden City, NY on channel 21; WCBS' digital fill-in translator on channel 22 from Plainview, and WFTY-DT, Telefutera, Smithtown, NY on channel 23. Note the flat spectral response in each case.

mitters pre-distort themselves to insure output signals are tight and square. Obviously, nothing compensates for severe antenna problems. It would take an enormous amount of EQ to correct these bumps! You would think that a glaring problem like this would cause warning flags due to excessive reflected power and lowered efficiency. Maybe not?

Although I have cured my WCBS reception by reverting to receiving another transmitter, I have no recourse for WNBC and WWOR. The closest alternative NBC broadcaster is WVIT Hartford which also uses Channel 33. WWOR is a MyTV affiliate. It features local content, most notably New York sports coverage that cannot be replicated by another station. I guess I will just have to live with the signals available. My granny boxes are not malfunctioning! I just can't resolve rollercoaster digital TV! Is anyone watching?

PCARA TuneIn

Your Smartphone may be smarter than you think! Download the latest version of the popular application TuneIn (version 3.3) and you will enjoy a pleasant surprise! If you touch the tab 'Local Stations,' you will see a new station listed right between the FM and AM radio station entries: It's the PCARA 2 meter repeater!



"TuneIn" application showing Local Stations available in Katonah, NY on an iPhone 4.

cents, you can upgrade to TuneIn Radio Pro adding recording capabilities and additional feeds such as

Thanks to the audio feed provided by Rich, WZ2P, you can now hear us talk anywhere you go!

I also noticed that TuneIn now provides audio from the Fox News Talk Channel, Radio Disney, ESPN Radio and CNN audio. It also serves as the equivalent of the world's best short-wave radio. You can hear crystal clear feeds of stations all over America and the rest of the world in real time. Many, many podcasts can also be accessed on demand. How handy! The basic TuneIn app is absolutely free. For a one-time fee of 99

college bowl football coverage. Over 70,000 radio stations and two million on-demand programs at no cost? It's quite a deal!



Get Cozi

Another new place to tune in is the new television service from NBC Universal. Cozi TV launched on Thursday, December 20th at 5:23 pm, entirely unannounced, on WNBC-DT virtual channel 4.2. You'll also find it on many local cable systems. It replaces the local NBC New York Nonstop channel, although some local newscasts remain from the old format. Cozi is yet another retro-TV solution to provide material to fill a digital virtual channel inexpensively. Similar services preceded it like WPIX-DT's 11.2 Antenna TV and WSAH Bridgeport's Retro TV. Cozi viewers will see reprises of classics like Ozzie and Harriet, Bionic Woman, Lassie, Marcus Welby and You Bet Your Life. It actually could be a pleasant alternative to today's rugged network offerings!

Sad News

I am sad to report two hams that have recently become silent keys.

Gerry Fleming, WA2GF, was well known as a clever, crafty and entertaining figure in the world of Westchester ham radio.

Gerry worked as a CAD artist and headed his own company Recording-to-Go. He especially enjoyed capturing school and other community events and then authoring the results to CD or DVD. Gerry majored in mathematics in college and continued his education after graduation. Westchester BOCES was just one place Gerry taught CAD and similar subjects. Gerry had a great sense of humor and brought me buckets of smiles and laughs. He had a wonderful mind and really liked a good cigar. It's hard to believe he is gone.



Flashback to Field Day in June 2011, Seated left is Gerry WA2GF, with Bob N2CBH standing and Jim N2KLC right.

Roy Ouellette, KB1UOA, was a warm and wonderful friend. Roy and I worked together in Stamford,

Connecticut for several years even though Roy's permanent home was in Portland, Maine. Roy would commute down from Maine every week to work his four days and then happily head home. Roy earned his Technician ticket a couple of years ago and loved to use his HT. A family man and a dedicated worker, Roy had the soul of a saint. A seasoned engineer with decades of experience, Roy was a television chief engineer for years and years and also managed tower sites up in Maine. He loved his daughters and wife more than life itself.

Straight Key Night

A quick reminder not to miss the annual homage to the good old days of amateur radio, specifically Morse Code CW. ARRL Straight Key Night runs from 7



pm New Year's Eve until 7 pm New Year's Day. Look for lots of slow CW and the sound of many, many vintage rigs on the air everywhere. It's a great time to try out

using code. Everyone will be sending slowly! Even if you can't copy a word of CW, tune in to hear how the bands sounded 50 or more years ago. It's a great way to start the New Year! For CW operators, it's like going to church! Enjoy!

Have a healthy and happy new year! Enjoy our hobby and everyone around you! All the best

– de N2KZ 'The Old Goat.'



Repeater revival

Back in July 2012, repeater equipment for two meters and 440 was relocated from PCARA's then primary site at Putnam Valley. The two meter repeater equipment at PCARA's back-up site was then brought back into operation. (See *PCARA Update* for September 2012.) Although the antenna at the back-up site was approximately 300 feet lower and had less gain, the standby equipment gave good service for several months, including all through Hurricane Sandy.

During November, matters took a turn for the worse. Sensitivity of the two meter receiver was reduced, and a nasty buzz could be heard behind weak signals. As a result, effective range of the repeater was significantly less.

At first, Bob N2CBH suspected the power supply in the repeater, so on November 25, we removed the cabinet containing transmitter, receiver, controller and 120 volt power supply, substituting equipment previously used at Putnam Valley. The controller is now the

older model from the previous site, without the variable courtesy tone, temperature sensor and battery back-up clock.

Changing out the repeater equipment did not achieve the improvement that Bob was hoping for, so on December 2, the day of the Holiday Dinner, Bob, Rich WZ2P and NM9J tried to track down the source of noise at the site. Use of a notch filter to remove local interference was not helping. The conclusion was that the noise source could be inside the building, and the Sinclair antenna with its two folded dipoles close to the roof was part of the problem.

The dual band Diamond X500 antenna used for the 449.925 KB2CQE repeater was pressed into temporary service for two meters. This antenna had been plagued with 'crackles' and suffered bent radials two snowy winters ago — so Bob brought it down to the roof for investigation. Removing the fiberglass shroud showed that the copper wire element with coils, capacitors and plastic foam spacers was in much better condition than expected. However, the outer conductor of the N-connector at the base had parted



Bob N2CBH checks the Sinclair stacked dipole antenna on Nov 25.



Bob N2CBH and Rich WZ2P re-install the repaired Diamond antenna on December 2.

company with the outer shield and radials. Bob took the antenna parts away, silver-soldered the broken connection and straightened the twisted radials. When the antenna was reinstalled, all crackles had disappeared.

Performance on two meters seemed to be considerably better on the repaired Diamond. In order to feed both the 2 meter and 440 repeater to the same antenna, a Larsen duplexer was pressed into service. By then, it was late afternoon, so with the Holiday Dinner approaching, work finished for the day.



Larsen duplexer.

Although performance was much improved, Bob was still not satisfied as the two meter coverage seemed to have dead spots compared with the previous Sinclair dipoles. The Diamond X500 has a narrower pattern than the Sinclair and bends significantly in the wind.

On December 15, Bob, Rich and NM9J arrived at the site to continue improvements. Bob planned to



Bob and Rich begin installation of the Super Stationmaster antenna on Dec 15.

split the 2 meter and 440 antennas by reinstating the RFS Super Stationmaster antenna previously installed at Putnam Valley. The RFS 220-2N is a single band antenna designed for repeater use, with a rugged fiberglass shroud containing half-wave coaxial sections. Length is 19 feet and gain is 5.3 dBd.

At the repeater site, the antenna was initially installed at roof level, but noise was again problematic. Raising the Stationmaster height to the level of the Diamond on a length of alloy tubing produced a significant improvement. Ray, W2CH was now a good

signal from White Plains and Geoff, WA2RAS could once again be heard from faraway Long Island.

During this antenna raising and testing, several items of hardware rolled off the roof. One test went ahead with nylon ties temporarily holding the antenna mounting bracket in place high above the ground. Replacement of the lost hardware required a trip to Home Depot by Bob.

The final step was to remove the Sinclair SRL21OC2 dual dipole antenna from beneath the Diamond and replace it with another length of alloy tubing. This allowed the Sinclair antenna to be taken away for testing and possible reuse later on.

At the time of writing, the 2 meter and 449.925 MHz repeaters seem to be working well. There is still an occasional buzzy-hum behind weak signals on 2 meters, but the problem is much less pronounced than before. Please try out the new repeater arrangements on both 146.67 and 449.925 MHz, and let us know how coverage compares in your area.

- NM9J



New arrangement with Diamond X500 for 449.925 on left and Super Stationmaster for 146.67 on right.

Wi-Fi upgrade

Back in 2008, we reported how Cablevision was competing with Verizon by activating its free Wi-Fi service, Optimum WiFi, in parts of Westchester and Dutchess Counties plus Long Island and Connecticut. (*PCARA Update*, November 2008, p 5.) Cablevision wireless access points began appearing around the Peekskill/Cortlandt area, dotted along the main roads, around shopping plazas and train stations. BelAir 100S wireless nodes were hung on cable strands between utility poles, with two external antennas for the 2.4 GHz and 5.5 GHz bands. Maximum initial network speed was 1.5 Mbps symmetrical.

In May 2009, Cablevision announced that it had completed a speed increase for Optimum WiFi to 3 Mbps max downstream, with expanded coverage in parts of New Jersey. Upstream speed was still limited to 1.5 Mbps maximum.

In June 2011, Cablevision released another statement about Optimum WiFi. The service could now deliver up to 15 Mbps downstream and up to 4

Mbps upstream, matching the downstream performance of Cablevision's wired Internet service for domestic customers. Cablevision has also arranged partnerships with Time Warner, Comcast and other cable companies to extend WiFi coverage beyond Cablevision's tri-state area.

In the last few months, Cablevision has been replacing its BelAir 100S wireless nodes. In late December, the work reached our own area of Peekskill/Cortlandt. The new access points strung high in the air between utility poles are Cisco Aironet 1552C units.

This model has several advantages over the BelAir 100S, including dual-band radios compliant with IEEE



Cisco Aironet 1552C wireless access point.

802.11 a/n (5 GHz) and 802.11 b/g/n (2.4 GHz), with the 802.11n specification allowing wireless speeds up to 300 Mbps. The old BelAir units only supported 802.11-g with a top speed of 54 Mbps. The 1552C has an F-connector for power-over-cable with a built-in DOCSIS 3.0 cable modem capable of 300 Mbps downstream and 100 Mbps upstream for backhaul.

The three bulges underneath the unit are actually a radome, housing three built-in dual-band dipole antennas. Two are used for transmit/receive and the third is for receive only. According to Cisco, the antennas each have a peak gain of about 2 dBi at 2.4 GHz and 4 dBi at 5 GHz.

This all suggests that Cablevision has provided a lot of headroom for future improvements in its Optimum WiFi service and for growth in the number of users. At the moment, the fastest WiFi speed reported from the new Cisco hardware is 20Mbps downstream and 5 Mbps upstream. Cablevision claims that its "free" WiFi service (free to existing customers) already



Cisco 1552C access point at Toddville Plaza on Route 202.

exceeds the speed of 3G and 4G cellular data services, providing a low cost alternative for owners of WiFi-equipped notebook computers, tablets and smartphones.

A quick test with a notebook PC near one of the new units showed the wireless connection process was



Close-up view of a Cisco 1552C at Toddville Plaza.

the same as before — choose the correct SSID for Optimum WiFi, sign in with your Optimum UserID and password, then off you go, browsing the Internet.

On a slightly jarring note, Cablevision also announced in December 2012 that the price of its high speed Internet service would increase by \$5 per month during 2013, the first price increase in a decade.

- NM9J

Auction reminder

Just a reminder that the PCARA annual Bring and Buy Auction is scheduled for Sunday January 6, 3:00 pm at Hudson Valley Hospital Center. Dust off those treasured items from your basement or closet and bring them along for sale – with a small contribution to club funds.



Kevin N2KZE looks on as Malcolm NM9J auctions radio equipment at the fifth annual PCARA Bring and Buy event in January 2012. [Photo W2CH].

Peekskill / Cortlandt Amateur Radio Association

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Newsletter contributions are always very welcome!

Archive: <http://home.computer.net/~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 the Hudson Valley Hospital Center, Route 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.

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

Sun Jan 6: PCARA Annual Bring and Buy Auction, Hudson Valley Hospital Center. 3:00 p.m.

Hamfests

Sun Jan 6: New York City/Long Island Section Convention (Ham Radio University 2013), Briarcliffe College, Bethpage, NY.

VE Test Sessions

Jan 5: Yonkers PAL Ham Radio Club, 127 N Broadway, Yonkers NY. 2:00 pm. Contact: M Rapp, 914 907-6482.

Jan 6: Yonkers ARC, Yonkers PD, Grassy Sprain Rd, Yonkers. 8:30 am Contact D Calabrese, 914 667-0587.

Jan 10: WECA, Westchester Co Fire Trg Cen, 4 Dana Rd., Valhalla, NY. 7:00 p.m. S. Rothman, 914 831-3258.

Jan 18: Orange County ARC, Munger Cottage, 395 Hudson St., Cornwall, NY. 6:00 pm. Contact Thomas Ray, 845 391-3620.

Jan 28: Columbia Univ VE Team ARC, 2960 Broadway, Columbia University, 115 Havemeyer Hall, New York NY. 6:30 pm. Contact Alan Crosswell, 212 854-3754.



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