



PCARA Update



Volume 10, Issue 12 Peekskill / Cortlandt Amateur Radio Association Inc. December 2009

Over the river and through the woods

Now the announcement that you all have been patiently waiting for! The PCARA Holiday Dinner will take place on Sunday December 13, 2009 at *At the Reef* on Annsville Circle. As was the case last year, we will start the festivities at 5:00 PM. The price is \$19.95 per person, which includes the choice of 1 of 5 entrées, salad, cake, and tea or coffee. [Any additional charges incurred by consumption of ethanol are the responsibility of consumer of said beverages.] **All are welcome!**



PCARA's holiday meal on **Sunday December 13** is just over the river – in this case over the Annsville Creek. "At the Reef" restaurant is located on Route 9 at Annsville Circle. For directions and details see: <http://www.at-the-reef.com>

At the January 3, 2010 meeting at Hudson Valley Hospital Center, another annual tradition will take place. The PCARA Bring and Buy Auction will offer an opportunity to buy and/or sell some real treasures. Just bring along any items that you no longer need around the shack and find out if anyone would be interested in buying them. Also bring some cash so you can pick up all those items you didn't know you

needed or just can't do without. You never know what you might drag home at the end of the day!

The Official Field Day 2009 results were published in the December 2009 Edition of *QST*. PCARA had a total of 2,746 points, a respectable score considering the limited number of participants. Congratulations and thanks to those who took part! Well done!

It's hard to believe that Peekskill/Cortlandt Amateur Radio association has "officially" been around (as in PCARA, Inc.) for 10 years. In recognition of, and celebration for more than a decade of community service, a special event station will be held in late Spring/early Summer 2010. If you have any ideas or suggestions for a venue, we'd love to hear from you.

To each of you, your families and loved ones, I wish a very Happy and Healthy Holiday Season, and a most Joyous and Blessed New Year!

- 73 de Greg, KB2CQE

PCARA Officers

President:

Greg Appleyard, KB2CQE, kb2cq at arrl.net

Vice President:

Joe Calabrese, WA2MCR; wa2mcr at arrl.net

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 neighborly news and technical topics.

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Adventures In DXing

– N2KZ

Lift Me Up

Are you an amateur radio operator? If you are, most likely you have had this dream: There you are, sitting in your shack operating with typical wire antennas or maybe a small beam. You close your eyes and wonder: 'What would it be like if I had a 70 foot tower and a great big all-band beam antenna sitting on the top?' My good friend, Bill, WB2ZKX, doesn't have to dream. Now he knows!

Bill was originally licensed back in the 1960s and is a dyed-in-the-wool ham. He has been very active in various radio clubs, worked on all sorts of gear and served as a broadcast engineer for decades. Life sometimes brings change and Bill had more and more free time on his hands. The vision of a nice directional antenna crossed his mind many more times than once. It was time to take action!

Through the grapevine, Bill became acquainted with Ray, W2RE and Lee, WW2DX doing business as Hudson Valley Towers, Incorporated. In simplest terms, they are master tower installers. Meeting Ray and Lee is like going to Yankee Stadium and shaking hands with Alex Rodriguez and Derek Jeter. Ray and Lee love amateur radio, are seasoned expert contesters and run their business with great enthusiasm and confidence. They travel all over the Northeast and beyond making amateur radio dreams come true.



L to R: Ray W2RE, Bill WB2ZKX and Lee WW2DX.

It was very interesting to see them work, but it was even more interesting hearing their experiences and war stories. If we all knew about all the things Ray and Lee have experienced, we could join the major leagues, too. Their chat about huge installations in Pennsylvania, New Brunswick and New England could

fill a book with riveting tales. It's amazing how these installations came to be and what they are capable of. Take a look at www.hudsonvalleytowers.com and read all about their many adventures!

My buddy Bill was offered a beautiful antenna recently taken out of service by Ray and Lee. It is a huge Mosley Pro-67-C originally owned by legendary amateur Herb, K2GBH, member of the Poughkeepsie Amateur Radio Club. It features seven long elements on a three inch wide boom covering 40 through 10 meters including the WARC bands. The Pro-67-C weighs in at 133 pounds and has four driven elements. It now spins in the sky sitting on an impressive Hy-Gain TailTwister rotor. The longest element is over 43 feet long and the beam itself is 24 feet long back to front. This is one major antenna!

Day one of the installation was patient and methodical. Ray and Lee arrived at Bill's QTH early in the morning and they knew exactly what to do. Bill had already done due diligence by spending the previous couple of weeks preparing and running cables and completely refurbishing the Mosley beam. It was a beautiful sight to see this big array perched up on pine wood stands, about five feet off the ground, waiting to be lifted up. The weather was an annoying cold and rainy drizzle but there was little to no wind.

Ray worked on mounting the rotor and a large bearing that would aid the rotation of



Mosley Pro-67-C is lifted up Bill's tower. This giant antenna covers all seven amateur bands from 40 to 10 meters.

this behemoth. In the meantime, I worked with another broadcast engineer ham and old friend Rich, K2WR, measuring out wire for rebuilding Bill's antennas for 80 and 160 meters. We broke for a tasty lunch (thanks, Bill!) and then the real show began. Bill worked with Ray and Lee and made a couple of attempts to raise the beam to the rotor mast high above the tower. Of course, the minute they started to proceed, rain began to pour out of the sky. Nature was giving us a subtle hint!

By mutual agreement, work would continue the following Wednesday afternoon. The Mosley beam was repositioned onto its wooden stands waiting for the big day. The weather proved much better on Wednesday and great times were had by all. Bill's first contact was with a station in Hawaii! His SWR looked great for all bands. Finally, Bill's dream had come true!



Mosley antenna is mounted on the tower by Ray W2RE. [Photos by N2KZ]

Raising the antenna is only the beginning. We expect amazing things to be worked from the WB2ZKX shack! This is truly a world-class installation worthy of admiration by the most demanding hams. Consider the potential of living at a QTH already almost 1000 feet up. Add a 70 foot tower and a huge antenna with up to 10 dB of gain. Pow! I'll touch base with Bill regularly on our weekly Old Goat's Net and let you know how he does. Congratulations, Bill! Use it well and often!

Really Big

If you have ever traveled to Dayton, or any other points west, via I-80, I'm sure you have wondered about a stunning amateur radio station just east of the Pennsylvania / Ohio border. You really can't miss it sitting majestically on the south side of this busy interstate highway.

You'll see very tall towers, piled high with Yagis, miles and miles away. When you finally pass right by,

you'll also get a look at the multi-tower vertical arrays in place for 80 and 160 meters. Contesters love and envy this remarkable place on earth.

I had passed this facility time and time again and could never identify just who owned this monument to amateur radio. Hudson Valley Towers' Ray and Lee knew right away what I was talking about. The king of this roost is Tim, K3LR, based in West Middlesex, Pennsylvania. Tim is a well-known contesteer, renowned for gathering impressive teams of hams to participate as 'multi-multi' entries often with huge final scores. With multiple operators on multiple bands, using multiple antennas on multiple towers, very little stops K3LR from perching at the very top of every contest list. Thanks to Lee and Ray for revealing the identity of the K3LR



Part of the K3LR Multi-Multi contest station in West Middlesex, PA.

kingdom. Gather your envy and visit www.k3lr.com for lots of pictures and equipment details. Wow.

Back To Reality

Back at the home QTH, I continue on a much smaller scale. I managed to move my 30 meter dipole into a new room. My little 5 watt Oak Hills Research OHR-100A kit transceiver is once again back and active on the air. I have always found 30 meters to be a remarkable place for CW operators like myself. It is a WARC band, so



Oak Hills Research OHR-100A CW kit transceiver is available in 80, 40, 30, 20, and 15 Meter versions.

contesters avoid it. It is limited to 200 watts PEP, so no one can blow holes in the ionosphere in this neighborhood. It is a wonderful mix of the properties of the two most popular amateur HF bands: 20 and 40 meters. 30 meters is good in the daytime and good at night and its ability to carry your signal far is appreciated daily. Try it on for size and tell me what you think. You are bound to really like it! With only five watts, I can usually work nearly everyone I hear. You'd love to see what I have recorded in my log book. Even I don't believe it! Great fun!

Straight Key Night

Standby for the night of all nights for the amateur telegrapher: ARRL's popular Straight Key Night event will once again hit the air New Year's Eve at 7:00 pm Eastern and continue to 7:00 pm Eastern New Year's Day. Listen to the music of wireless telegraphy on the first night of 2010 as amateurs nationwide and beyond take out their manual hand keys and send slow and accurate Morse Code. Many hams add to the experience operating with vintage tube gear going back to the beginning of the hobby. Even if you don't actively send code, listen in to a pleasant reminder of how amateur radio sounded decades ago. Full details regarding Straight Key Night are posted at: <http://www.arrl.org/contests/rules/2009/skn.html>.

Start the New Year right by joining your fellow PCARA members on The Old Goat's Net. Look for us on the PCARA two-meter repeater at 146.67 MHz with a minus 600 offset and a 156.7 PL. We're on the air every Thursday evening (except Christmas and New Year's Eve!) at 8 pm. All licensed amateurs are encouraged to participate and we welcome all the shortwave listeners who may be tuning in.



Have a very Happy New Year
— de N2KZ 'The Old Goat' dit dit.

Many happy receiver returns

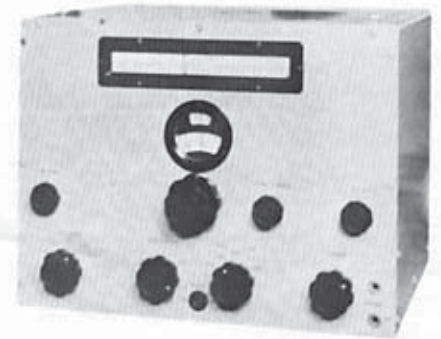
Down in my basement are reminders of earlier moments in amateur radio. When I spotted one of the older items recently, I suddenly remembered that it was having a significant birthday... 40 years old.

Cast your mind back to 1969. Man had walked on the moon, Woodstock attracted rock and roll fans, and the Boeing 747 made its debut. As for my own memories of that significant year, I had just left college and was getting ready to enter the workforce. I had a summer to dedicate to amateur radio and my project

was a home-brew receiver.

I was influenced by publications from the Radio Society of Great Britain. In those days, home-construction was still popular and lots of people used home-built transmitters with commercial receivers. The RSGB pointed out that commercial equipment will always be a compromise because it has to satisfy the needs of as many people as possible. If you want equipment that exactly meets *your own* needs, then the best approach was to build it yourself – or so said the RSGB.

At the time I was interested in SSB operation on the HF bands, from 160 meters to 10 meters. I was also interested in the latest development of using SSB on the VHF bands, where I had home-built transverters for 2 meters and the UK 4 meter band (70 MHz). My receiving set up at the time was distinctly old-school – I had a pair of World War II vintage receivers – the Royal Navy CR100 and the USAAF BC-348. They were used with outboard converters for HF and VHF coverage. The latest technology of VHF Field Effect Transistors meant that highly sensitive VHF converters could be built and these were allowing much-improved long distance reception.



Marconi CR100 LF/MF/HF receiver

What I needed was a receiver that covered all these interesting bands, along with good CW and SSB reception. Vacuum tubes were old-hat – I wanted something that was 100% solid-state. The receiver shown in the pictures was the result of much reading, planning and constructing.



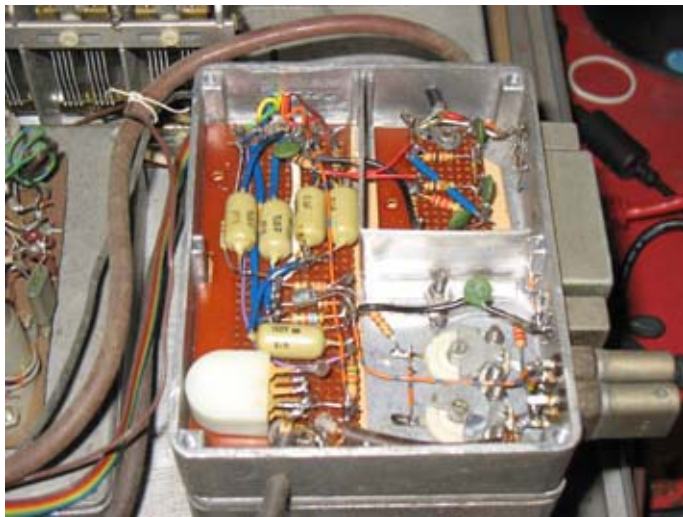
BC-348 HF receiver

Looking back at my Mark I all-solid state receiver, it's interesting to see what it included – and what it did not. The frequency conversion was roughly based on the G2DAF vacuum tube receiver, with crystal controlled HF converter, a tunable first IF of 5.0-5.5 MHz and a second IF of 455 kHz. The best part of the receiver turned out to be the 455 kHz IF strip, based on a design in *Radio Communication* by Peter Skirrow, then G3UJP [“Miniature High Performance Tunable I.F., *Radio Communication* October 1968 pp 660-666 and November 1968, pp 747-749]. Peter, G3UJP had paid a lot of attention to excellent AGC characteristics and



Articles from RSGB Radio Communication magazine for 1968 describe G3UJP's Miniature High Performance Tunable IF.

Because I wanted to cover the entire 28-30 MHz band and the 144-146 MHz (UK) 2 meter band, I made the tunable IF switchable to cover both 5.0 - 5.5 MHz and 4.0 - 6.0 MHz. Without this, I would have



In the fixed IF stage, selectivity is provided by a Kokusai 455 kHz mechanical filter for SSB (protruding right), a two-crystal filter for CW at right, and transfilters for AM.

needed a lot of extra crystals for the front end converters.

Tuning of the first IF was accomplished with an Eddystone 898 dial mechanism attached to a three-gang variable capacitor. The "898" slow-motion gear drive was one of the best tuning dials available at the

used variable diode attenuators on each of the 455 kHz amplifier stages. There was also a variable AGC delay with a "hang" circuit. This was advanced stuff in the late 1960s! Excellent selectivity was assured with a Kokusai 455 kHz mechanical filter, perhaps the most expensive component in the entire receiver.



Front panel view of G3VNO all band receiver.

time. The same mechanism was also used in Eddystone's own short wave receivers. The slide rule mechanism was calibrated 0-500 on the horizontal dial, with a rotary dial marked in 100 divisions to give a more accurate indication for frequency logging. The only problem with the Eddystone dial was that it needed a giant cutout in the front panel (8½ x 3¼ inches approx). I had to cut and drill all the metalwork with only simple shack equipment, so you can see this was a major undertaking. I spent a lot of time smoothing out my rough holes in the aluminum panels with flat and circular files.

Another point about the metalwork you may see in the photos is the large number of diecast boxes. These were a favorite of constructors in the 1960s – they were made of soft aluminum alloy that was very easy to drill. When the lid was screwed down, they were electrically screened and very rigid – just the thing for free-running VFOs and VHF converters.

The tuning dial, front and rear panel were all labeled using "Letraset" rub down transfer letters – I was very fond of "Futura Bold" at the time. The process of rubbing with a ballpoint pen was awkward, it took a long time, and you had to cover the letters with clear varnish to protect them from being scratched off. Thank goodness for modern solutions like the Brother Label Maker and Desktop Publishing software.

The weak point of this receiver turned out to be the front end converter for the HF bands. It had separate crystal oscillators for each band, designed to produce a 5 – 5.5 MHz first IF. For instance, the crystal for the 40 meter band was on 12.5 MHz. Subtracting 7.0 – 7.5 MHz from 12.5 MHz produces a backward-tuning IF of 5.5 – 5.0 MHz. I had a lot of problems obtaining the right crystals – you will see a mixture of HC/6U and FT-243 types. Performance of the front end left a lot to be desired – image rejection was not good, and it tended to overload.

There were built-in converters for 70 MHz and 144 MHz – using dual gate MOSFETs for RF amplifier

and mixer. I remember the RCA MOSFETs arrived with conducting collars around the four leads to prevent static build-up. Best not to leave the collar in place after you installed the MOSFET, otherwise it would short out your 12 volt supply!



Rear view of the all-band receiver with the cover removed. Eddystone 898 slide-rule drive mechanism is visible at top. Two meter converter is above the diecast boxes, top left.

The MOSFET collar also reminds me about the power supply in my Mark I receiver. It was designed to run off either 12 volts DC or 240 volts AC (UK supply voltage). I wanted a regulated supply, so I used a design from the 1969 ARRL Handbook with a transformer, bridge rectifier, Zener diode and a single pass transistor. This worked fine until the output voltage was accidentally shorted out — then the pass transistor would be destroyed. Replacing it meant that the entire receiver had to be disassembled... I think that's why I preferred to run from an external supply.

no digital display, no LEDs, no digital signal processing, no up-conversion to a high first IF. Still, the receiver did work and I had built it all myself. I have to confess that a few months later, I replaced it with a Sommerkamp FR DX 500 receiver, which did much the same thing using tube technology. The great advantage was that it worked really well, from 160 to 2 meters, it did not overload and it could be made to “transceive” with the matching FL DX 500 transmitter. By the way, “Sommerkamp” was a pseudo-German cover name for Yaesu.

Just for old times sake, I pulled my old receiver out of the basement, cleaned off most of the dirt and grime, then took the photographs you see here. Next, I applied 12 volts DC and switched on. The panel lamps lit up once again and I spun the smooth, silky tuning knob of the Eddystone 898 dial. There was some audio coming out of the “headphone” jack and the BFO seemed to be working. I could even hear some CW signals on 40 meters from ARRL Sweepstakes, but they did not seem to be following the tuning knob. I think some of the quartz crystals have grown too old to oscillate, and some of the other circuitry in the tunable IF needs a lot of attention. I decided to put the set away for now and just remember the happier times when it was first built and operating.



Forty years later, the dial still lights with a warm glow.

- G3VNO, NM9J

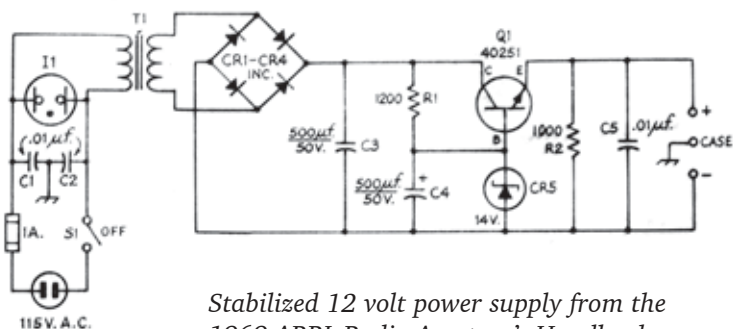
Field Day results

Full results from Field Day 2009 appeared in December's *QST* and on the ARRL members-only web pages. See http://www.arrl.org/members-only/contests/scores.html?con_id=176. PCARA's results were in line with the provisional score reported in the July newsletter. Here are the results compared with previous years:

Peekskill/Cortlandt ARA, W2NYW

	2001	2002	2003	2004	2005	2007	2008	2009
QSOs:	450	718	733	968	853	1019	1109	694
Power:			2 (<150W)					
Participants:	16	15	11	12	10	14	10	10
Ttl score:	1,540	2,096	2,328	2,996	2,798	2,906	3,460	2,746

At the end of the contest, there was a feeling that



Stabilized 12 volt power supply from the 1969 ARRL Radio Amateur's Handbook.

These days if you need a 12 volt supply, you would use an integrated circuit regulator with overcurrent protection – but there was no such thing in 1969. There were quite a few other conveniences missing from my Mk I receiver. No frequency synthesis,



Flashback to Field Day 2009. Karl N2KZ operates 6 meter CW with Laura and Sarah plus multiple Muppets.

our limited numbers, slow setup, low antennas and quiet sunspots had affected performance. The reduced number of contacts was a direct consequence.

Publication of the complete results allows a comparison of our score with neighboring groups in both the ENY section and Hudson Division — and our results do not look quite so bad.

In Field Day 2009, PCARA was...

- **Third** out of 5 entries in Category 2A, ENY section.
- **Eleventh** out of 25 entries in the entire ENY section.
- **Sixth** out of 12 in Category 2A, Hudson Division.
- **32nd** out of 94 in the entire Hudson Division.
- **157th** out of 441 in category 2A nationwide.
- **638th** out of 2612 entries total.

Here's how PCARA fared compared with some of our friends and neighbors in the East New York section:

#	Call	Points	Cat	QSOs	Club
1	KC2T	7938	3A	2368	Albany
2	N2SF	7686	4A	1970	WECA
3	K2QS	4436	3A	1076	QSY Society
4	K2DLL	3760	4A	1159	Saratoga Co
5	W2YRC	3660	2A	787	Yonkers
6	WD2K	3640	4A	951	Rip Van Winkle
7	W2EGB	3636	2A	1229	East Greenbush
8	N2TY	3492	3A	931	Troy
9	K2AE	3270	5A	599	Schenectady
10	W2HO	3222	4A	802	Orange County
11	W2NYW	2746	2A	694	PCARA
12	K2PUT	2348	2A	435	PEARL

Compared with 2008, we had fewer contacts — down from 1109 QSOs to 694 — and our score fell from

3460 to 2746. Neighboring clubs also suffered reductions, so our position did not drop too much. Our neighbors in the table all had many more participants (PEARL had 42!), and most ENY entries were in a higher category than PCARA's 2A. So even though our score was down, PCARA is not yet out.



Dusk casts long shadows over the woods at PCARA's Field Day site. The triband beam and multiband dipole were not quite as high as in previous years.

ARRL reports an all time record in 2009 for the number of Field Day entries (2,642) and for the number of participants (37,592). Perhaps if we had 0.1% of that figure helping at PCARA Field Day 2010, plus a few more sunspots, we could push our score back up next time.

— NM9J

Holiday meal

Just a reminder that PCARA's 2009 holiday meal will be held as in previous years at the "At the Reef" restaurant, located at Annsville Circle in Cortlandt Manor. The date and start time have been adjusted to **5:00 p.m. on Sunday December 13th** to ensure that as many members as possible will be able to attend.



The menu will be similar to past years, with the restaurant's popular chicken and fish entrées amongst the choices available.

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

(IRLP node: **4214**)

N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar

Sun Dec 13: PCARA Holiday Meal, "At the Reef" Restaurant, Annsville Circle and Rt 9, Cortlandt Manor. 5:00 p.m.

Sun Jan 3 2010: PCARA Annual Bring and Buy Auction, Hudson Valley Hospital Center, 3:00 p.m.

Hamfests

Sun Jan 10: Ham Radio University 2010, Levittown Hall, Briarcliffe College, 1055 Stewart Ave, Bethpage, NY. 7:30 a.m.

VE Test Sessions

Dec 6: Yonkers ARC, Yonkers PD, 1st Precinct, E Grassy Sprn Rd, 8:30 a.m. Contact D. Calabrese, (914) 667-0587.

Dec 10: WECA, Westchester Cnty Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. Contact Stanley Rothman (914) 831-3258.

Dec 21: Columbia Univ VE Team, 2960 Broadway, 115 Havemeyer Hall, New York NY. 6:30 p.m. Contact Alan Crosswell, (212) 854-3754.



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