



PCARA Update



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Bidding wars and things to come

We had a very well attended and successful 2016 PCARA Bring and Buy Auction at the January meeting.



It was really great to see so many old friends and make a few new ones too! Donations to the club approached \$100.00, thanks to the generosity of our members who were able to sell some of their gently used gear. The bidding wars for a couple of items were some of the most

spirited we've ever seen. Thanks to everyone who brought and bought!



PCARA's auctioneer pushes products at the 2016 Bring and Buy Auction. [Pic by Al, K2DMV.]

Looking ahead we have a couple of things coming up. The first local hamfest of the season is the Orange County Amateur Radio Club Spring Hamfest on Sunday April 24, 2016. The 'fest will be at its usual location at the Town of Wallkill Community Center, 2 Wes Warren Drive, Middletown, NY. For more details please visit the OCARC web site at <http://www.ocarc-ny.org/>.

The weekend of May 14 -15, 2016 is *CQ Magazine* Foxhunt Weekend. PCARA will be holding our Foxhunt

on Saturday May 14, 2016. For this event, the role of the Fox will be played by our very own Mike, N2EAB. Start getting those Yagis and attenuators ready! Details to follow soon.

Our next regularly scheduled meeting will be on February 7, 2016 at 3:00 pm at New York Presbyterian/Hudson Valley Hospital in Cortlandt Manor, NY. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

PCARA Officers

President:

Greg Appleyard, KB2CQE; kb2cq@arrl.net

Vice President:

Joe Calabrese, WA2MCR; wa2mcr@arrl.net

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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

75 Years on FM

Happy birthday to Columbia University's WKCR! What an amazing history it has. It began as a radio club in 1936 when Major Edwin Armstrong was a professor at the Ivy League school. Armstrong served as mentor to the club donating technical equipment to establish a club station on AM in 1941. Along with radio dramas and comedy shows, WKCR rebroadcast the programming of Major Armstrong's legendary FM W2XMN



Armstrong Tower at Alpine, NJ.

transmitting from the candelabra tower in Alpine, New Jersey. In 1956, WKCR switched to FM itself on 89.9 MHz broadcasting with ten watts from the top of Philosophy Hall on Columbia's Morning-side Heights campus. Eventually, WKCR moved to Ferris Booth Hall enjoying professional formal studios that would serve them for decades. The station has always been known as a center for everything not heard elsewhere on radio. Intellectual lectures were combined with political discussions and music of every flavor and color. Columbia University sports coverage was always in the forefront. The summer of 1968 was an important one for Columbia. The student body discovered that Columbia was home of a think tank supporting the unpopular Vietnam War. Pro-

tests were organized on campus including the occupation and seizure of Hamilton Hall housing the college's administrative offices. At the same time, another group was angered by a proposed construction project of a new gymnasium. WKCR became part of both stories by covering all the events with authority

and professionalism like no other source for news.

Jazz, classical and new music was embraced in the 1970s giving WKCR new identity that continues to today. Enthusi-

asts now herald WKCR as the definitive center for preserving the history and heritage of jazz music. Tune in today and you

will hear amazing archival performances unheard anywhere else. Jazz authority Phil Schaap frequently shares his encyclopedic knowledge of every artist and recording session imaginable. His recall of detail creates fascinating listening.



The first official broadcast of Columbia University Radio Club was on February 24, 1941.



WKCR jazz disc jockey Phil Schaap.

In 1983, WKCR became the first FM station to broadcast from The World Trade Center. Less than 20 years later, WKCR's transmitting facilities became victim when the towers fell. Broadcasts were moved on campus to Carman Hall until new transmitter facilities emerged at 4 Times Square in 2003.

This is only the beginning! Columbia University's School of Journalism continues to be one of the finest in the world and WKCR reflects that fact. The station is always individual and inspiring. WKCR's loyal audience will be around for a long time. Happy birthday 'The Original FM' and many, many more! Good listening!

Come Inside!

The **Old Goats Net** first went on the air in October 2007. Without a substantial home-based 2-meter antenna, I hosted the net from the driver's seat of the legendary N2KZ mobile — a 2004 Toyota Corolla usually parked in my driveway. My original transceiver was a handheld Icom IC-T7H providing 4 watts of power into a variety of mobile antennas mounted on my trunk. This sufficed for several years of signature static.

A couple of years ago, I upgraded to a Yaesu FT-1900R transceiver producing up to 55 solid watts of power. I could hear the sighs of relief all the way over on my side of the county! A simple and single band rig, it has served me well over the months. The FT-1900R is a beautifully designed and effective unit. I would highly recommend it!

Thursday nights in the summer can be very pleasant. The world looks beautiful from my driveway. You can listen to the crickets and peeper frogs, see the fireflies and admire the majestic passing deer herds. Stunning sunsets create a beautiful backdrop. Temperatures in the 70s, 80s and 90s are comfortable and refreshing.

Winter nights are another story. Running out to the car in the snow and sitting in polar temperatures for an hour or more takes dedication and stamina. Brr! You'll find me running the engine a few times and watching the breath come out of my mouth in the pitch darkness. My overhead lights sometimes time out, so a backup flashlight is necessary. This is a wacky way to run a net!



Karl has conducted the net from his vehicle in all weathers.

A new year brings a new beginning. I purchased a 4 element Yagi and a new piece of low-loss coaxial cable to match. The Old Goats Net now originates from one of our upstairs bedrooms with all the comforts of indoor living. It is warm and the lights don't go off. The neighbors will no longer wonder why I am out sitting in the car every Thursday night. This is all good.

The Yagi I chose is an Arrow Antennas 146-4S. It is nicely made but it is really designed for indoor, attic or light-duty use. The four elements are held in place by very small gauge 4-40 stainless steel screws. The square boom is made of heavy gauge aluminum and the mount hardware is heavy-duty and impressive. It is nicely designed and built, but I wonder how the lightweight elements would hold up when flying high up on a tower in punishing winds. The antenna certainly is pleasant to look at.



Arrow 146-4S four-element Yagi for 2 meters.

In practice, the Yagi's pattern has a pretty tight nose and respectable gain. I use the antenna in an upstairs bedroom with a 25-foot piece of low-loss coax at 5 watts input. I can hit the PCARA repeater with full quieting at 15 miles away. Malcolm, NM9J, can hear me on simplex at his home 13 miles away from me when I operate at 5 watts. At 55 watts, Malcolm can hear me with ease and authority. Nice results!

The length of coaxial cable was an adventure in itself. I ordered a 25-foot length of LMR400-like low-loss cable expecting a non-memorable experience. I was kind of amazed when I saw the type of connector they used. Maybe I am very old school, but a PL-259 connector should look like a PL-259 connector — even if they come from Radio Shack. This one was a new one for me!

DX Engineering's idea of a PL-259 connector is certainly interesting. It is a really lightweight connector. I had to quiz them regarding what this was all about. Here is their answer from Tom, KB8UUZ, at DX Engineering:



DX Engineering's DXE-PL259CS8U connector for RG-8U size cables.

"The DX Engineering PL-259 connectors are a new design that we developed (and even Patented – US Patent D745849) to have a high quality connector not seen in the amateur community before.

"The connectors are not aluminum. They are Silver Plated Brass. I've attached a photo showing the connector that we did a cut-away

and it shows that the base material is Brass (this includes the shell as well). They may appear to be aluminum due to the look of the Silver Plating, or the over all 'feel' as compared to older PL-259s used in the past. But I can assure you, they are Brass.



Normal and cut-away view of DX Engineering's new PL-259 connector showing the silver-plated brass construction.

"These new connectors were designed especially for high quality double shielded coaxial cable such as the DX Engineering 400MAX and LMR-400 types using a foil shield in addition to the normal stranded shield. That foil shield in the coaxial cable is aluminum, thus it cannot be soldered and should be crimped. The center pin of the coaxial cable is stranded copper, so that part can be soldered to the center pin on the PL-259.

"Additionally, most PL-259 crimped center pins aren't large enough and don't have enough contact area, which affects reliability. DX Engineering solved this issue with the custom-designed connectors that were introduced last year on DX Engineering DX Series Coaxial Cable Assemblies. The PL-259s have soldered center pins that are full length and full diameter, so they connect properly, even with worn SO-239s."

OK. All I can say is: "Let's see how it goes." The antenna and cable have been working out very well with results beyond my expectations. I reserve a full review since I won't be mounting either the antenna or cable outside, at least in the near future. As an attic solution, it certainly would be just fine.

Want to hear how all this new gear sounds for yourself? Please join us on The Old Goats Net, Thurs-

day nights at 8:00 pm on the PCARA 2 meter repeater: 146.67 MHz — minus 600 kHz offset and use a 156.7 Hz PL. We would be glad to have you join in. A good time is guaranteed for all.

Now You Hear Them...

The announcement came out of nowhere:

"The WSHU Public Radio Group has announced that as of Monday, Jan. 25, it will no longer broadcast on WSTC (1400 AM, Stamford) and WNLK (1350 AM, Norwalk). These two AM stations are currently up for sale."

They held to their word. Monday morning, without any fanfare, both transmitters went off the air and all that remained was static and silence.

WSHU General Manager George Lombardi commented in the official press release: "We operate in highly competitive markets, and unfortunately, on average, only about 900 listeners tune in to the combined AM stations. We haven't been able to grow listenership—or listener support—at the rate we had hoped." George continued: "We have a responsibility to our supporters to make smart business decisions, and we have found that it is not financially viable to operate these stations at this time."

The next couple of days proved interesting. In the daytime, the only result of the stations' silence was improved reception of WRIV 1390 in Riverhead, NY with their nostalgic pop music format. I work just a couple of blocks from the WSTC tower on the south side of Stamford, so reception of WRIV was nearly impossible previously. At night, both 1350 and 1400 kHz were filled with a combination of multiple stations reminiscent of what you expect to hear on C.B. Channel 19.



WSTC's broadcast tower in the Shippan section of Stamford, CT.

Wednesday afternoon, January 27th, I got into my car to grab some lunch and sure enough, both stations

were back on the air with a non-stop very random blend of familiar pop music from the 50s , 60s and 70s. It really sounded like an iTunes library playing on random shuffle. How often do you hear Sam the Sham and the Pharaohs “Wooly Bully” segue into the main theme of “Jesus Christ Superstar?” One moment really made me laugh. A very goofy song about the Smurfs was abruptly cancelled, quickly moving on to Anne Murray’s “Snowbird.” I guess the person minding the computer couldn’t stand The Smurfs either!

WSTC and WNLK continue to broadcast endless music. The only announcement comes just before the top of the hour when a female voice announces their call-signs as a legal ID. The WSHU group has mentioned that they are looking for a buyer for both stations. The online newspaper *CTPost* reports that WSHU has hired New Canaan broadcast broker Robert Chaisson to recruit prospective purchasers.

George Lombardi was quoted in *CTPost* with more revealing details: “If ... we don’t sell it quickly, we’ll probably turn it back on. The only reason we turned them off was the pending pledge drive and just feeling if they’re on the market and for sale, we in good conscious couldn’t go and ask someone to make a donation in support.” Where this is going, nobody seems to know...yet!

Still, it is disheartening to see where AM radio has progressed. I grew up on AM radio. I began my career in AM radio and I still listen to AM radio. Watching its deterioration is quite sad. Just a few years ago, both WSTC and WNLK were independent local radio stations serving their communities with all sorts of locally produced programming. They were integral to most everything that occurred in Stamford and Norwalk. Now they are on life support. How sad.

I really missed their presence during the two days of silence. I wonder what the future will bring?

Antenna Improvisation

Speaking of AM radio, what do you do when you have rented a car and realize that your radio is nearly mute? This might not be all that big a problem for some. If you are a broadcast engineer, this is like being a portrait artist without paint! Troubleshooting did not take much skill. The car had no radio antenna!

I called over to the car rental office and asked if they just happened to have a replacement they could screw onto the roof mount. All I got was shrugs. The agent offered to have me swap cars. I didn’t think it was worth the time and effort. Being an amateur radio operator and a seasoned engineer, some improvisation



This is how Karl’s rental vehicle *should* have looked with the correct antenna mast on the roof.

was needed. I certainly didn’t want to purchase a replacement antenna. I needed to find something out there that could serve as a temporary signal catcher.

Step one was to find an appropriate screw that would fit the roof mount. A couple of minutes of scrounging in a random hardware drawer came up with a half-inch long metric screw that fit perfectly. Now I needed a quick antenna element! Quiz: What

piece of metal has a right-angle bend and is about 6 to 8 inches long? Well, it was a little on the short side, but a PC computer card slot filler fit the bill nicely. A stubby antenna is better than no antenna and it proved quite effective.



Karl’s temporary replacement for the vehicle’s antenna mast.

I drilled a hole for the screw in the little bend angle of the metal and screwed it onto the car. Bingo! I had a working antenna! I will bet you that you won’t find this design anywhere else! It was fun and effective. You have to love a nice fix!

Until next month, 73 and dit dit de N2KZ ‘The Old Goat’



An unexpected project

- N2HTT (From Mike's blog site: <http://n2htt.net/>)

Now that the holidays have passed and time has started to free up a bit, I've found my way back to the bench and started to resume experiments on a space-charge tube regenerative receiver. And while I actually have some interesting progress to report on that front, I've been sidetracked into completing a completely unrelated project by yet another random sequence of events.

This one started, as they often do, with an eBay purchase. I probably shouldn't be telling you this, but I will sometimes bid on a lot of several crystals, if there are at least a few I can identify as being on useful ham frequencies. If the average price per crystal is attractive I'll go for it.

Out of band FT-243's are also useful because the holders can be filled with modern HC49/U or similar crystals. I sometimes find crystals at frequencies just



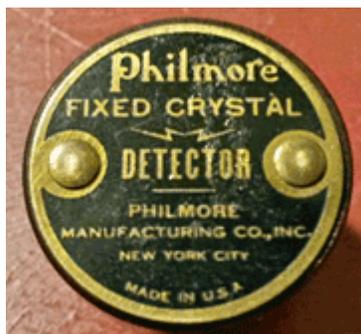
Out-of-band FT-243 crystals from World War II can be ground or etched to a higher frequency — or used to hold a smaller quartz crystal.

below the ham bands. These can (in theory, I have never actually attempted it) be ground down to raise their frequencies a few hundred hertz, to values that fall in-band.

Of course, I get a lot of fairly useless stuff as well. There may be a few interesting holders, or items that might have antique interest, but for the most part the rest is of no use and collects in a bin on a shelf in the basement.

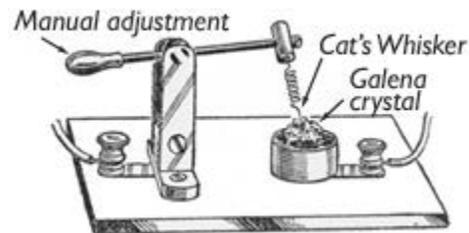
This particular lot contained a curious item: a sealed detector crystal for a crystal receiver set.

These holders contained a hunk of galena and a cat's whisker (short, stiff, wire probe) sitting on a "hot spot" on the galena, potted in a plastic holder to permanently secure the detecting action needed in a crystal set. This was a modern convenience com-



Mysterious "Philmore fixed crystal detector" discovered by Mike, N2HTT.

pared to the tricky business of finding a "hot spot" that would detect. The really cool thing about these crystal receivers is that they produce audio with no additional input power. All the energy necessary to produce the audio is captured by the wire antenna.



Manual "cat's whisker" detector required adjustment of the wire probe to find a sensitive spot on the galena (lead sulfide) crystal.

It was a curious artifact, and I put it on a shelf on my operating desk, as a radio good luck talisman; but every time I spied that crystal detector sitting on the desk, I wondered to myself whether it still worked. I would not have gotten much past the wondering stage were it not for the fact that I happen to have a pair of high-impedance headphones — a critical component in any crystal receiver experiment.

These phones were given to me by my Elmer, W2WTV Gordon (sadly a silent key now for many

years). I recall visiting him one Saturday while he was cleaning up in his shack, and him handing these phones to me, saying gruffly "Here take these, you might want



N2HTT's high impedance headphones.

to build a crystal radio someday." I held on to them ever since, not knowing when if ever I would want to build a crystal radio; they just seemed like something you shouldn't part with, because they'd be difficult to get a hold of if the need ever arose. I measured the DC resistance of these to be about 2200 ohms.

So almost against my will, I started to research crystal radio designs. Some of these babies can get very elaborate, after all at one point they were state-of-the-art. There are dozens of designs out there, and I started to filter through them. Patterns began to emerge.

I decided on a variation of the simple "oatmeal box" receiver. Easy to build, it requires a big air wound transformer (hence the oatmeal box) connected to the antenna, a resistor, a variable capacitor, a diode detector, and high-impedance phones.

I was all set, I had all that stuff on hand. I decided to go a little uptown from the oatmeal box, and wound my coil on a piece of 2 inch PVC pipe. Also, I used one of those cheap, ecologically responsible bamboo cutting boards for a base. I think these things are great for any

“bread board” project, the small ones cost about five dollars in the produce department of the local supermarket. Easy to drill, and good looking. What’s not to like?

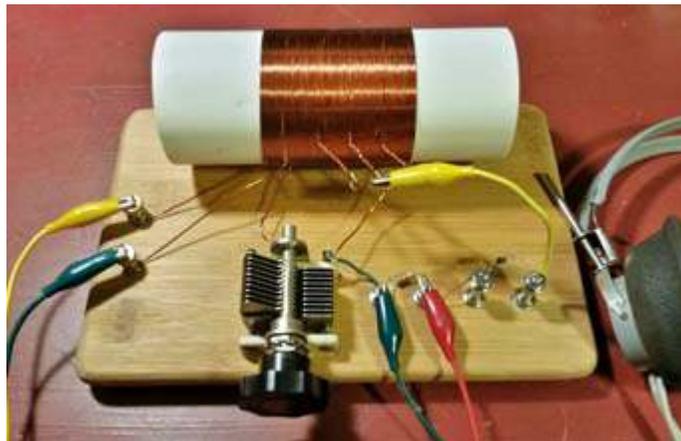
This past weekend, I got to work. Not that there weren’t about twenty more pressing things I should have been doing, but by this point my curiosity about the detector was approaching obsession. First step: re-compute the number of turns needed on my piece of pipe, by reverse engineering the oatmeal box design.

Using an online air wound coil calculator, I estimated the inductance of the oatmeal box secondary to be about 500 microhenries, and then calculated the number of turns I would need on the pipe for the same inductance. Using 28 AWG gauge wire, it worked out to be about 100 turns. Sitting down to binge-watch old PBS shows, I started winding.

I won’t bore you with the details of winding the coil. I know a lot of guys don’t like winding toroids — this was far, far worse than any toroid. 28 gauge wire is impossible to handle. It was a nightmare. Finally I got the coil done, and measured the inductance. More than twice the calculated value. This thing wasn’t going to resonate anywhere near the AM broadcast band.

Re-purposing some nice 18 AWG gauge enameled copper wire liberated from my wife’s studio, I wound a second coil of 60 turns, tapped as indicated in the design. Much better experience all around. I don’t recommend using teeny wire for this kind of project.

Taking much more time than it should have, I laid out the components on the cutting board. I didn’t have the specified 47 k Ω resistor, so I used a 51 k Ω instead. Nothing about this design struck me as being all that critical, so I figured close was good enough. With everything wired up, I brought my creation up to the shack, and hooked to my antenna.

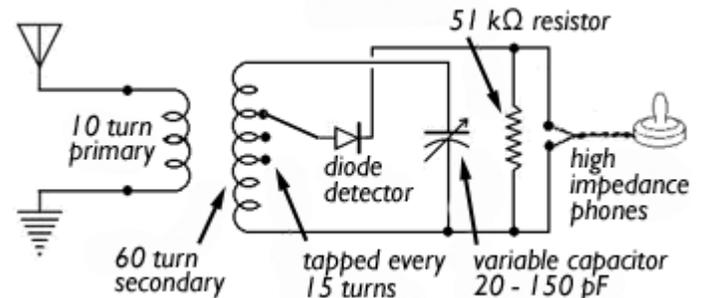


Mike’s crystal radio is shown, hooked up to the antenna, with a more modern diode installed.

The antenna is a 135 foot doublet, fed with ladder line, with a bunch of stuff between the wire and the shack, like a big balun and an automatic tuner. But

since RF does demonstrably get in through this pathway, I figured it might work for the crystal receiver. I hooked the center pin of the PL-259 connector to the top of my coil, and the shell to the ground side. Hooked up the phones, and spun the dial....

Profound silence. I tried all the taps. No good. Okay, back to the design docs.



Schematic diagram of Mike’s crystal radio receiver.

After carefully reviewing the small schematic for the rig I realized I had flipped the sense of the secondary. Could phase matter? Well, just to be sure I switched two soldered connections, and now my construction exactly matched the schematic. Back to the shack, hooked up the alligator clips, and.... nada.

Okay, well it could be the phones — I had never tried them in any other circumstances. Or, it could be my antique crystal detector. I popped the old unit off, and stretched a brand new 1N34 germanium diode across the posts. Connections hastily reconnected, tuned the capacitor on one tap, then the next... wait, what was that? Yes, faintly, distantly, but unmistakably — salsa music!

I ran downstairs and got my son to come up and listen. He put on the phones, concentrated for a moment, and said “Sounds like a Spanish language station?”

Yes! Success! A soft, vague whisper, but reception nevertheless! My receiver works, and the question answered: the antique crystal detector is a curio only, dead as a doornail.

A little further experimentation reveals that the phase of the coils *does* matter — switching the antenna and ground connections completely killed the signal. Playing with the receiver late in the evening, I was able to hear four or five distinct stations, but none as strong as my Spanish station, which turns out to be WEPN, *ESPN Deportes* on 1050 kHz AM from New York City.

I found that switching between taps improves selectivity and reduces sensitivity as fewer turns are selected. I probably could get better reception with a good earth ground and a more direct connection to the wire, but those experiments will wait for some other time. For the time being, I am at peace with crystal radios.

- 73 de Mike, N2HTT

Run Against Hunger – thank you

Readers of this newsletter will be aware of PCARA's recent participation in the annual Harry Chapin Memorial "Run Against Hunger" in and around Croton-on-Hudson, where we were assisted for a second time by members of Westchester Emergency Communications Association (WECA). See *PCARA Update*, November 2015 for a full description of the radio support for this event.



Greg, KB2CQE acts as 'radio shadow' at Croton-Harmon High School for the 2015 Run Against Hunger. The Westchester County RACES emergency truck is also visible.

Thanks to Henry KB2VJP, we now have a copy of the Croton-on-Hudson *Gazette* for December 17, in which the Race Organizers thank the Croton Community for the success of their 35th Run Against Hunger on October 18, 2015. In a letter to the editor, Race Director Jud Ramaker and Assistant Director Mike Grayeb described their three races — the 5K Walk, 1¼ mile Fun Run and 10K Run, with a total of more than 1000 participants on one of the coldest race days they have experienced.

The *Gazette* report thanks many official and volunteer groups who assisted with the event including the Croton Police, NYC DEP Police, Croton Volunteer Fire Department and Croton Emergency Medical Services. There was also a full paragraph describing the efforts of volunteers from PCARA and WECA, providing radio communication for all three races.

"This was the second year of reaching out to local amateur radio groups to improve communications around the courses of all three of our events. The Peekskill Cortlandt Amateur Radio Association (PCARA), led by Greg Appleyard, with members Malcolm Pritchard and Al Krieger [*sic -Ed.*] also helping with the

planning and logistics, joined us as eager volunteers. PCARA joined forces with members of the Westchester Emergency Communications Association (WECA), led by Kathleen O'Keefe, Public Service Director and Larrie Sutliff, Education Director. With the Westchester County Mobile Amateur Radio Command Center set up at CHHS*, net

control was ably managed by Ray W2CH and assisted by Marylyn KC2NKU. With twelve individuals from both groups working together to give us communications from seven different spots on the 10K course and the trail, we had by far our best communications net. The professionalism of both of these groups certainly belies the word "amateur" in their names and we are indebted to them for helping us to make a significant improvement in race safety. Having in-progress race updates from their posts out on the 10K course was very helpful in tracking our runners."

*CHHS=Croton-Harmon High School

The 2015 Run Against Hunger raised a total of \$38,000 which was divided among eight local and international organizations — including the Croton-Cortlandt Food Pantry, the Croton Caring Committee, Caring for the Homeless of Peekskill (CHOP), Fred's Pantry, Hillside Food Outreach in Pleasantville and the Food Bank for Westchester. A donation was made to WhyHunger, Harry Chapin's legacy organization to aid growing of local food crops as well as international organizations working in Mozambique and Haiti.

For more information about the "Run Against Hunger", pay a visit to the organization's web site, <http://www.runagainsthunger.com/> then follow the link to Facebook where there are hundreds of photos of the 2015 event. See if you can find their shot of the Westchester County RACES truck. - NM9J

that were available on the race course and at CHHS to provide help that fortunately was not needed.

This was the second year of reaching out to local amateur radio groups to improve communications around the courses of all three of our events. The Peekskill Cortlandt Amateur Radio Association (PCARA), led by Greg Appleyard, with members Malcolm Pritchard and Al Krieger also helping

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No road race can exist without a large corps of volunteers, and this year

Paragraph describing the effort by PCARA and WECA. 'Al Krieger' should be Al Kroeger, K2DMV.



A tale of three cities

The year 2016 marks the anniversary of three significant events in my radio experiences. Each is related to a move required by my former employer.

35 years ago

My first move was from the company's location in the middle of Kirkby Industrial Estate on the outskirts of Liverpool, in northwest England. I had been working there for six years when we were suddenly told that the manufacturing activity was moving out. Our R&D activities would be transferred to a new laboratory in **Littleborough**, a small town in the Pennine Hills, northeast of Manchester. For a year, I was commuting daily between Southport and Littleborough, a distance of roughly 60 miles. When it was my turn to drive, my trusty VW Beetle, bedecked with antennas, carried a small group of fellow employees back and forth to Southport. This was



The G3VNQ/M VW Beetle had antennas for 70 MHz, 144 MHz and 430 MHz.

such a long drive that I upgraded the car radio from push-button analog to an early synthesized Sharp radio-cassette that covered long wave, medium wave and VHF-FM. The audio output was so feeble that it needed an external amplifier to overcome the Beetle's road noise.



The Beetle had right-hand drive, a Sharp synthesized cassette-radio and a crystal-controlled Icom IC-22A transceiver for 2 meters.

The daily commute was subsidized for a while by the company, then personnel department warned us that we must start looking for permanent homes nearer the new laboratory. I found a home in the suburbs of Rochdale, just 6 miles from work, and moved in during late summer of **1981**.

That move from Southport was quite a wrench. I had to take down all my antennas for HF and VHF



Significant sites in northwest England.

bands, dismantle the station and prepare to reassemble it 30 miles further east. I was moving from a seaside location with a mild climate and wonderful take-off across the Irish Sea to the wild terrain of the Pennine Hills. The home I chose was near the top of a 650 foot hill overlooking Rochdale from the back yard and across Manchester to the south. From the roof, the radio telescope dish at Jodrell Bank was visible, 27 miles south in rural Cheshire. However, immediately to the north, the terrain rose to a height of 1500 feet, so my prospects for working Scotland on VHF were not very good — unless *via aurora*.

Up to then, most of my VHF and UHF FM equipment had been crystal-controlled on simplex and repeater frequencies, but my contacts in the regional Raynet organization (Radio Amateurs Emergency Network) had encouraged me to 'go modern'. I acquired synthesized radios including a Yaesu FT-480R, Kenwood (Trio) TR-2300 and FDK Multi-700EX for 2 meters, plus a Standard C-78 for 70cm FM. Those synthesized radios from the early 1980s were a big advance over crystal control, but a lot less capable than today's models.



Trio-Kenwood TR-2300 1 watt portable FM transceiver for 144 MHz.

I had brought along my SSB transverters for 4 meters (70 MHz), 2 meters and 70 cm. These worked well when plugged into the J-Beam VHF and UHF antennas, which were now mounted on a Yaesu rotator, atop a 2 inch scaffold pole at the side of the house. The take-off to the south was excellent, so I enjoyed chasing VHF DX and entering contests.

In view of the excellent take-off, I also had a wide-band UHF TV antenna plus rotator installed on the



Home on the outskirts of Rochdale had rotary antennas for television (center) and for VHF/UHF amateur radio (right).

chimney stack. This allowed me to watch color television intended for the northwest region from nearby Winter Hill, plus out-of-region TV for Yorkshire from Emley Moor, for the Midland region from Sutton Coldfield and for Wales from Moel-y-Parc. When I first moved in, there were only three TV networks serving the UK — BBC1, BBC2 and ITV. A fourth UHF network — Channel 4 — arrived in 1982, and I remember watching time-delayed episodes of *The Avengers* on Welsh language channel S4C from Moel-y-Parc.

My local club was **Bury Radio Society**, with weekly meetings held at the Mosses Centre, just four miles west in downtown Bury. BRS was an active club with many activities throughout the year, including three Field Days (HF-CW, VHF and SSB), Fox Hunt, Construction Contest, Inter-club Quiz (conducted over the air, with video), newsletter, coach trip to the Leicester ‘Show’ and our own annual ‘Ham Feast’.

One of my colleagues from work, Arthur G4UTB, was also a member of Bury Radio Society.

Go west young men

In mid-1985 this happy existence came to a sudden halt. During a normal working day at the Littleborough R&D lab, eight of us were asked to stay behind after everyone else had left. We were told the company had a new program for expanding activities in the U.S.A. and were invited to accept relocation to a Research Lab in **McCook**, Illinois. We were being fore-



Research laboratory in McCook, IL.

warned so family members could be told before a general announcement appeared the following day.

This came as quite a

shock. Just where was McCook? It turned out to be on the western edge of Chicago, where the company had a manufacturing site and neighboring Research lab. The site produced surfactants from by-products of the meat packing industry. USA Headquarters was just 12 miles away in downtown Chicago.

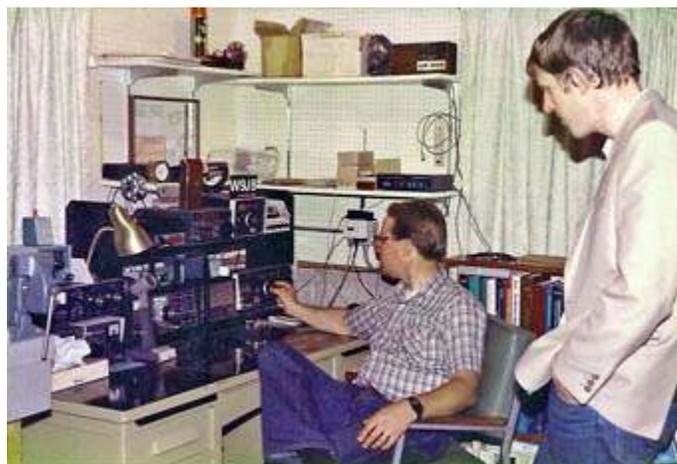
We were offered a one-week try-out visit to Chicago and its western suburbs. This took place in July 1985, shortly after UK VHF Field Day. The group stayed at a hotel in

Lisle, IL — home to Molex Inc. and several other technology companies. This was a first visit to the U.S.A. for most of us, so there were all sorts of surprises — including the summer heat, Sunday ‘Brunch’ and an outdoor barbecue at the U.S. manager’s home in Naperville, IL. We enjoyed visits to the R&D lab in McCook and a bus ride into downtown Chicago for sight-



Sightseeing in Chicago.

seeing. Arthur G4UTB and I were interested in the amateur radio aspects of a possible move, so we were fortunate to be introduced to Jim, W9JB through XYL Cathy WD9IUY who was employed at the McCook laboratory. Arthur and I spent an enjoyable evening in the Downers Grove shack of W9JB where we were told about USA licensing arrangements, band plans, repeaters with PL tones and matching radio equipment.



Jim W9JB (center) entertained UK visitors Arthur G4UTB (right) and G3VNI in his Downers Grove radio room.

Soon it was time to return to the cooler climate of northwest England and answer one very important question — would we like to accept the company’s kind

offer of relocation to Illinois or look elsewhere for employment? Five members of the original group decided to accept the move and the next few months were spent in a rush of activity as we prepared to sell our homes, vehicles and possessions, as well as saying goodbye to family and friends.

Electrical and electronic equipment posed a problem — the UK has a 240 volt AC electrical supply at a frequency of 50 Hz, so our larger electrical appliances would not operate from North America's 120V AC at 60 Hz. Small items might run off a step-up transformer, but that was an awkward solution. In addition, UK technical standards for television and radio are different from the USA, so color TVs, VCRs, computers and clock radios were all sold off to colleagues and friends.

For Arthur and myself, there was a question of which amateur radio equipment to take and which to leave behind. The visit to W9JB proved valuable as we had found out about band limits and frequency plans that were quite different from the European side of the Atlantic. Channelized VHF and UHF equipment was all left behind with UK friends, while the VFO-controlled HF-equipment came along for the ride. It would still operate satisfactorily — provided the mains transformer had a 120 volt AC tap.

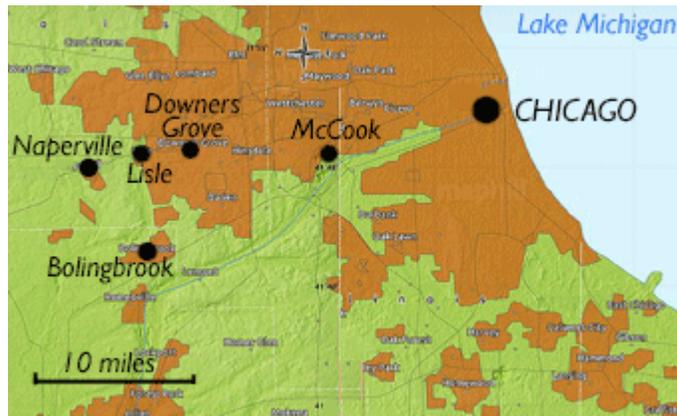
30 years ago

By the end of 1985, three transferees had already made the move with their families from northwest England to the Chicago suburbs. My own move took place in mid-January 1986. I flew into Chicago's O'Hare airport where the temperature was bitterly cold and deep snow lay on the ground — what a contrast with our July visit! We had temporary accommodation provided at Four Lakes Village, Lisle, IL, but were immediately encouraged to go out house-hunting. The company-recommended realtor guided us toward Naperville in the far western suburbs — I found a home which was being vacated by another radio amateur, near the DuPage River and central Naperville.

This location was in complete contrast to my hilltop home in Rochdale. Most of Illinois is **flat** and



Home in Naperville was surrounded by trees. Isopole and Ringo Ranger antennas are visible on the chimney stack.



Chicago, IL and its western suburbs.

the new site had no natural advantage from topography. There was a giant willow tree in the back yard which dropped leaves and branches at every opportunity. It was soon supporting a G5RV antenna.

Once we had moved into permanent accommodation, Arthur and I began to replace the radio equipment that had been left behind in the U.K. I have described details in an earlier article — see *PCARA Update* for January 2011. Arthur had chosen a home in an unincorporated part of town with few planning restrictions, so he was able to put up a tower and HF beam, then feed it with a lot of power from a new linear amplifier. I stayed with 100 watts from my Yaesu FT-902DM and investigated VHF/UHF, including packet radio and the new-to-us 220 MHz band.



Arthur erected a tower.

Contrasting times

It is interesting to speculate how much easier such a move might be nowadays — when vacuum tube equipment is comparatively rare and most electronic devices include switch-mode power supplies capable of running off 120V AC and 230-240V AC. Modern amateur radio equipment is designed for worldwide markets with regional frequency limits and band plans set by diode matrix, EEPROM or stored in flash memory. I suspect that a lot more radio equipment could cross the Atlantic compared with thirty years ago, but it would still not be 'plug and play'.

Settling in

After our new homes were organized, Arthur, G4UTB and I settled in to our new radio environment. We joined **Bolingbrook Amateur Radio Society** and



NM9J basement shack in Naperville.

the **DuPage Amateur Radio Club**. Our reciprocal licenses had frequency restrictions because of differences in band allocations

and USA — so we studied for FCC licenses and eventually emerged from BARS VE test sessions with Extra-class licenses, **NO9D** for Arthur, and **NM9J** for myself. Arthur's XYL Rosemary became **KA9YTL**.

We were active in the local radio clubs and enjoyed a full round of activities including Hamfests, Field Days, V.E. Test Sessions, training classes, repeater installations, picnics and special event stations.

All was going well at work when in 1990 this pleasant situation came to a grinding halt. The company had acquired another chemical manufacturer with a large R&D center in Westchester County, 20 miles north of New York City. We were told the Illinois site would close, and only a limited number of personnel would be offered a transfer to New York. Four members of our original group from England made the transition to the East Coast.

25 years ago

In March 1991, I was one of the first people to fly out of O'Hare for a new experience in New York. While waiting for the legalities of buying a house, I had a temporary apartment in Stamford, CT. I found a home in the Town of Cortlandt, located on the side of a hill, 440 feet high and previously occupied by another radio



Bird's eye view of Cortlandt antennas.



Antenna installation for the DuPage ARC 2 meter repeater, W9DUP/R. W9JB at lower left. Note the flat, Illinois terrain.

amateur. He left behind some useful antennas as well as a radio room already wired for 120/240 volts AC.

New York came as a shock compared to Illinois. House prices and taxes were a lot more expensive. The home needed upgrades, and the nearest shopping centers seemed run-down, like something out of the 1960s. (This was 25 years ago, long before Cortlandt Town Center opened and the Beach Shopping Center was revived.) The first Hamfest that I attended shall be nameless — there were broken syringes littering the parking lot and as I waited in-line at the entrance, I was feeling distinctly out-of-place.

I soon found that these were isolated incidents and there were much better shopping centers and friendlier Hamfests not too far away. My three colleagues from the UK had purchased homes in Dutchess County and Upper Fairfield County, accepting a longer commute as part of the price of a larger home in more modern surroundings.

One good point about the move was — no need to dispose of any electrical equipment. Everything that ran off Illinois electricity worked equally well in New York State. A few items from Naperville are still with me today, including a dual-beam oscilloscope and a frequency counter purchased as kits from the Heath store in Downers Grove, IL.

Our new R&D location was near the Saw Mill River Parkway which would flood at regular intervals. This was a large site with several hundred people employed in the labs and offices.



Research Building near Saw Mill River.

10 years ago

Fifteen years after the move to New York and following a recent divestment by the company, we were informed that staff numbers could no longer support such a large site and we would be moving shortly. Our new location would be to the north, in Putnam County.

I was involved with setting up systems in the new building. Fortunately the new site was *closer* to home, so there was no need to move house this time. The same applied to the majority of our staff.

It was touch-and-go whether all the infrastructure would be ready for the first group of employees to move in. Fortunately everything was set up with just days to spare. The removal trucks rolled, furniture and equipment arrived and the site was up and running in mid-November 2006.

I don't have to drive over there anymore, but I'll remember the excitement of those first arrivals ten years ago this coming November. - NM9J

Vertex VX-4000 and VX-6000 modification

– K2WD

The VX-4000 series mobile FM transceivers have been manufactured for the commercial market by Vertex Standard Co. Ltd. from around 2001. As older radios are replaced with more modern equipment, previous sets can be purchased at reasonable prices through eBay and other outlets.

These FM radios are quite suitable for conversion from commercial frequencies to the amateur bands.



Vertex Standard VX-4000 transceiver

The VX-4000 front panel has two rotary controls for volume/channel, a forward-facing loudspeaker and a backlit LCD display. The 250 channel memories can each be programmed with frequency details plus 8-character channel name using a personal computer with appropriate software and cables. The front panel has a power on/off button plus seven backlit programmable function buttons.

The VX-4000L covers “low-band”, either 29.7-37 MHz (A-band) or 37-50 MHz (B-band) with 70 watts output (max). The VX-4000V covers VHF frequencies, 134-160 MHz (A-band) or 148-174 MHz (C-band) with 50 watts output while the VX-4000U covers 450-490 MHz (D-band) with 40 watts output.

The VX-6000 series has similar specifications, but higher power, 100 - 120 watts out.

Modification

These instructions will modify your Vertex VX-4000, VX-5000 or VX-6000 high- or low-band radio for use in the Amateur Bands. For example, VX-4/5/6000L B-band covering 37-49 MHz will work from 50 to 54 MHz and the A-band of these radios will work in the 29.0 to 29.7 MHz band — all FM of course.

This modification requires micro-circuit work, the Vertex FIF-8 Firmware Writer (Flash ROM Adapter) with cables to connect to PC and radio, Vertex CE49 software and a knowledge of hexadecimal editing.

It is recommended that one should be skilled in SMT component mounting techniques and printed circuit board repair before engaging in this project.

Instructions

Begin by making sure your radio is working prop-

erly. Check transmit (on dummy load) and receive; then check deviation and sensitivity to be sure. Assuming you have done this, let's start.

Step 1: Upgrade firmware

Carry out this step only if needed (most radios won't need it), to flash the radio with new firmware. Using FIF-8 firmware writer and CT-47 cable:

- First upgrade the control head to version 3.04 Aug-12-2011 (using right port).
- Next upgrade the RF Deck to version 4.40 Nov-22-2011 (using left port/microphone jack).
- Check that all radio functions work.

Step 2: Read radio settings

Read your radio's settings using the CE49 Windows software, I use version 5.15. Save the file for hexadecimal editing.

Step 3: Hex Editing your file.

Open your saved .c49 file in a hex editor then find and replace the 50.000000 upper band limit — it will be **02FAF080** hex. Change it to (let's say) 54.000000, this is hex **0337F980**. If you have modified it correctly, you can now re-open the file in your CE49 software and start editing the channels.



Vertex Standard CE49 programming disc.

Step 4: Program Radio

Program your radio with your newly created file. Restart radio and you should see your display flashing. This is great because it means you are right on track. Now you need to re-tune the TX and RX VCO.

Step 5: VCO Mod

- Carefully unsolder the silver VCO cover in the center front of the main circuit board and remove it. See picture below.



VCO cover is in the center front of the main circuit board. (Pics by K2WD).

(b) You will need to drill two holes in the cover so you have access to the tuning slugs underneath, then clean all debris from the holes. See picture below.



The cover for the VCO has been removed and two holes drilled for access to tuning slugs located beneath the cover.

(c) Now replace the cover and solder it to the board, it should look like the picture below.



After drilling the two holes, the VCO cover is soldered back into place.

Step 6: Tune VCO

Connect 13.8V DC power to your radio, verify that it powers up correctly (no smoke) and that you have a display — which is probably flashing. If so, then you are ready to set the RX VCO.

Connect the positive lead of your DC voltmeter to test point TP1007 (VCV) on the main circuit board, with the negative lead to chassis ground. TP1007 is the small solder blob near the VCO cover indicated by a silk-screen arrow on the circuit board. See the next picture for the location.

With the radio front facing you, the right-side hole in the metal cover is the RX VCO adjustment. Place a small flat tool in and adjust to about 5.0 volts. The display should stop flashing, indicating a RX lock.

The TX VCO adjustment is below the left hand hole. Adjust the slug while in transmit for 6.5 volts. At

this point, you should have transmit and receive, but remember you still need to tune the receiver to get good sensitivity.



Close-up showing location of test point TP1007 (VCV).

Step 7: RX tune up

Using your FIF-8 Firmware Writer and the CT-47 cable, read tuning data with the SVC-49 alignment software and adjust the last three sliders up by a factor of 10 each. On the TX power, slide last three sliders up to full. Hit apply to radio and you're done!

You should see around 50 to 60 watts RF output on transmit and a sensitivity of 0.28 to 0.35 μ volts for 12 dB S/N. You can play with the tuning to get the best results.

WARNING! Any time you want to change **anything** in the software, **read values from the radio first**, store this data in a disk file, change your values then save in a **new** file. This keeps the tuning data from getting messed up.

- Warren K2WD

[These notes on modifying the Vertex VX-4000 series are necessarily brief in order to fit the format of the newsletter. If you need further details, please contact Warren, K2WD -Ed.]

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

Sun Feb 7: PCARA Meeting, Hudson Valley Hospital Center, 3:00 p.m.

Hamfests

Sun Feb 28: Long Island Mobile ARC (LIMARC) Indoor Hamfest, 201 Levittown Pkway, Hicksville, NY. 9:00 a.m.

Sun Mar 6: Bergen ARA *Auction*, Westwood Regional HS, 701 Ridgewood Rd., Township of Washington, NJ. 12 noon.

VE Test Sessions

Feb 6, 13, 20, 27: Westchester ARC Radio Barn, 4 Ledge wood Pl, Armonk, NY. 12 noon. Pre-reg. M. Rapp, (914) 907-6482.

Feb 11: WECA, Westchester Co Fire Trg Cen, 4 Dana Rd., Valhalla, NY. 7:00 p.m. S. Rothman, 914 831-3258.

Feb 14: Yonkers ARC, Will Library, 1500 Central Park Ave, Yonkers NY, 1:00 p.m. Preregister with John Costa, WB2AUL (914) 969-6548.

Feb 15: Columbia Univ VE Team ARC, 531 Studebaker Bldg, 622 W 132nd St, New York. 6:30 p.m. Alan Crosswell (212) 854-3754.

Feb 19: Orange County ARC, Munger Cottage, 183 Main Street, Cornwall NY. 6:00 p.m. Thomas R. Ray (845) 391-3620.



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