



# PCARA Update



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Peekskill / Cortlandt Amateur Radio Association Inc.

August 2003

## Patches, patches?

PCARA has a new patch! Thanks to Clint, KB2ZRJ, working with Galls Inc., we now have a patch with the PCARA logo. To see what the patch will look like, visit the PCARA homepage and click on "PCARAPatch Design", or go to <http://www.geocities.com/pcara2000/pcarapatch>. The patches are expected to sell for \$5.00 each. Also now



that we have the design, the PCARA logo can be embroidered onto jackets, shirts, and hats also available at Galls. If you are interested in ordering jackets, shirts, and hats please let me know and PCARA can place an order. To get an idea of what is available from Galls Inc., visit

their website at <http://www.galls.com>.

PCARA has taken tables at the Tri-State Amateur Radio Association Hamfest on Sunday August 3, 2003 in Matamoras, PA, and the Ramapo Mountain Amateur Radio Club Hamfest on Saturday August 16, 2003 in Oakland, NJ. If you have anything you wish to sell, feel free to bring it along. If you sell something, please consider making a small donation to the club to help cover the cost of the tables.

We've received a note from Ray, KC2IFG, that due to some health issues he hasn't been on the air lately. All is well, he's on the mend, and should be back on the repeater soon! Feel free to drop him a "Get Well Soon" email (address available on the PCARA roster).

Hope to see each of you at the August 3, 2003 meeting at Hudson Valley Hospital Center.

— 73 de Greg, KB2CQE

## Review of SGC SG-239 Smartuner™ — N2CBH

While out in Dayton I managed to make an impulse buy of a new automatic antenna tuner. What caught my eye was the SGC SG-239 Smartuner, which I believe was introduced at Dayton. SGC has a good reputation in the tuner business and they make quite an extensive line of products. What struck me was the economy of the unit at \$179.00. Not only is the 239 inexpensive, it is compact and light. Weighing in at only two pounds and measuring 7.5"L X 6"W X 1.85"H makes it an excellent choice for mobile operation or backpacking for that matter. I won't give you all of the specs here but will tell you that the unit is rated for 200 watts and will work with wire antennas as short as nine feet from 7-30 MHz or forty feet from 3-30 MHz. The unit will tune from 1.8 MHz to 30 MHz according to the manual.

This tuner is packed with features that you may find interesting. It has 165 memory locations for tuning setups. The way the tuner remembers is to sample the incoming frequency and go through the tune up procedure.

Once an acceptable VSWR is found, the unit stores the settings along with the frequency. The 239 can be automatically tuned or you can manually tune it by making the proper contact closures on the terminal strip. There are LED status indicators for "tuned" indication, VSWR, an L,Z LED that indicates an impedance of 50 ohms or less, a 2:1 LED indicating a match of worse than 2:1, and a PHZ LED which indicates antenna reactance. When lit the antenna is inductive, when extinguished, the antenna is capacitive. All the LEDs will blink on and off at a 2 Hz rate to indicate that a match could not be found. To initiate a tuning sequence, simply apply 12 volts D.C. to the unit and RF power. The tuning sequence can take as little as a second or two up to about 45 seconds. According to the



SGC SG-239 Smartuner



Bob's SG-239 tuner with 12 volt power and antenna feeder connected

specifications the unit can be used with a variety of antennas including short whips, centerfed dipoles, small loops, longwires and ladder line fed antennas.

How does it really perform? We actually pressed the unit into service on the way home from Dayton. Gary, WB2HNA brought along his

Icom 706 and Jim, N2KLC and I had installed a ball mount on his van before we left. We used some hamstick knock-off antennas on the way out with moderate success. On the way back the signals were louder and I think we were heard better too. The installation took about ten minutes. We had to make up a 12-volt pigtail and a set of RF cables. The connections to the unit are barrier terminals. This includes the RF input and output. Once installed, the tuner was able to tune each hamstick to virtually any frequency in the band for which the antenna was cut. In fact, we were able to get an acceptable match on 20 meters with the 40-meter Hamstick. You might concur that this is a terrific achievement if you have used hamsticks because they are notoriously narrowband and require adjustment for different sections of the same band.

After returning from Dayton, I decided it was time to try the 239 with my main antenna in the backyard. I have an inverted L wire antenna that is approximately 60 feet in length. 30 feet of the antenna is vertical and the other thirty feet is horizontal in an upside down L fashion. I have a fairly extensive ground system in the form of #12 wire radials buried in the ground around the base of the feed point. The radials are cut for the various amateur HF bands. Previously, I had used a Motorola commercial antenna tuner. Yes, Motorola makes all sorts of commercial H.F. single sideband equipment. The Motorola tuner worked OK. I was able to tune up but rarely did I get a VSWR that was much better than 2:1. This tuner requires 12 volts DC and also requires a closure to ground to initiate tuning.

The SGC tuner does not require a tuning command as it senses RF and automatically tunes up. To be fair, the Motorola unit was designed to work with their line of radios that have a tuning command closure. The install took only about thirty minutes, as I needed to only remove the Motorola tuner and install the SGC

tuner by connecting it to 12 volts DC and make the antenna/ground connections. Back in the shack I tuned up my Kenwood TS-530 into a dummy load and was ready to go. I placed the 530 on the air at full CW power and let the tuner find the match. Tune up at full power is the recommended procedure by the way. Some tuner manufacturers, including Motorola, suggest tuning up at no more than five watts to protect the relays. There is a valid reason to tune up at full power, as the operating impedance of your antenna will change with different power levels. This is the subject of a possible future article.

Back to the SGC tuner, I was able to find a 1.5:1 VSWR on 80, 40 and 20 meters. I was able to make 1.2:1 on 17 meters but curiously only a 2:1 on 15 and 10 meters. Just for kicks I tried it on 160 not hoping for much because my antenna is too short for this band. Amazingly the little tuner found an SWR of 2.5:1 on 160. I thought this was very respectable.

I wouldn't be completely honest if I didn't mention a couple of downside items about this tuner. The unit needs to be housed in a waterproof enclosure if you intend to use it outdoors. The Motorola unit that the SGC unit replaced is designed to be mounted outdoors and is in a waterproof case. I built a "doghouse" for the Motorola tuner so this wasn't an obstacle for me. The SGC tuner is a light duty assembly. It is nothing more than a PC board with aluminum case clamshell mounted around it. Another criticism is that it would have been nice if there were some provision for the status indications to be remoted. I suppose that I could jury-rig an external status interface to drive a cable to the shack. You can get away with watching the VSWR in the shack for an indication of match but it would be nice to have some qualitative data regarding the antenna R and X values, which are indicated with the status LEDs provided.

In summary the SGC Smartuner is a great value and a good performer. Use it with your shack set up, mobile or out in the field and it will do the job.

— 73 de N2CBH, Bob



Bob's SG-239 tuner in backyard doghouse.

# The Ham Band — WB2HNA

If you have recently been to any of the “higher class” restaurant/bars in Westchester or Putnam recently, you have probably run into the Classic Rock band known as “**ESCAPE**”. What you may not realize while grooving to the tight, four-piece band, is that three out of the four members are licensed hams and members of PCARA who share their passion for ham radio with the love of music. The group has been playing together for several years and usually plays out a few times per month. “**ESCAPE**” also performs at quite a few private parties and donates free concerts for several charity events. Primarily a “cover” band, (which means they play hits from hundreds of artists from the 60’s through the 90’s and even some current hits), “**ESCAPE**” has also written several original tunes which they also perform in concert.

## Technical Section

Now, for those who prefer technical specifications... Operating in pulse mode, is the drummer Rich, WZ2P. Using older analog technology sometimes complimented with newer amplified digital technology, Rich generates pulses which can vary from 50 or 60 pulses per minute, to over 200 when needed. Rich is known for the stringent tolerance with low variability in the timing of his pulses (like using a crystal oven)... unless someone started the song too fast or too slow which then causes the band to employ a feedback mechanism (stares and head-shaking) to adjust and synchronize to a more appropriate clock rate (not unlike re-setting your watch to WWV).

The lower frequencies are generated by Gary, WB2HNA, (the bass player). Starting at approximately 42Hz and going up from there, audio power is generated with a solid state final, 350 watt RMS amp with a 12AX7 tube pre-amplifier which feeds his four ten inch speaker cabinet which weighs 475 pounds, (or seems to at the end of the night). Gary’s clock timing (slave mode) is primarily derived from Rich’s pulses, but may vary.

Providing a lot of the main vocal audio modula-

tion and the higher frequencies on guitar is Ed, WA2AXP.

Ed typically combines many notes together in parallel to get all sorts of sums and differences, sometimes



Members of Escape left to right: Rich N2KZ, Ed WA2AXP, Mary, and Gary WB2HNA.

combined with actual intentional harmonic distortion to generate classic rock sounds. Ed’s amp can electronically model almost any vintage amplifier. Ed can also amazingly play a few hundred notes between two of Rich’s pulses, which sometimes causes smoke to shoot from his fretboard.

Mary is the only non-ham in the group. Well, she is a “ham” of sorts when in the spotlight. As the lead vocalist and synthesized keyboard player, Mary is known for her dynamic crystal clear vocals which, when viewed on an oscilloscope, can be seen as pure sine waves without any distortion whatsoever. Audio even more full bodied than that found on 14.178 MHz. Ask her about her dynamic range and slew rate.

## Additional Homework

The members of ESCAPE are not the only ones in PCARA who are involved in music. Your assignment is to flush out all others who have involvement with music in one way or other, and write a report. There are quite a few in the club who have a connection... who might they be? And... if you dabble in generating some tones/pulses yourself... let us know.

So, when you are out late on Saturday night, and the band to which you are listening seems to fit the description above, and is playing songs from the Eagles, Pat Benatar, Blondie, The Beatles, Stevie Ray Vaughan, The Rolling Stones, The Allman Brothers, Linda Ronstadt, Santana, or many Motown artists... it may be “**ESCAPE**”. To be sure, you could whistle QRZ? in CW, or you can check their schedule on their web site at: <http://www.escapeband.us> (note the .us high level

domain...neat eh?) You can also download some of their demo MP3 files to get an idea of what they sound like...

- de Gary,  
WB2HNA



ESCAPE in action

# Adventures in DXing (and life) – N2KZ

Never underestimate what hams will do to find time to DX.

I earned two and a half weeks “vacation” in July the hard way! After complaining to my doctor about chest pains and cramps, I was asked to take a cardiologist stress test. On Wednesday, July 9, I went to a clinic in Yorktown Heights and prepared myself for this five-hour exam. After a brief scan of my heart, much like a CAT scan, I was told that sometime in the past six months I had a heart attack. Instead of taking the stress test, I wound up at the medical center in Valhalla having stents put in my coronary arteries to save my life. I was awake during the entire procedure, and was granted a couple of weeks to recover. Through the miracles of modern medicine, I was home and well less than a day later!

I selected a good time to recover. Strong solar activity has excited the ionospheric E layer and created some remarkable openings. My best catch was watching the Canadian CBC SRC TV network, *en Français*, from Saskatchewan, for over an hour on TV channel 3 one night. I also received CBC TV in English, with a westbound bearing, but did not get an ID on its location.



CBCtelevision

On Saturday, July 19, not only were the lower VHF TV channels (2-6) covered with co-channel interference, the FM band was active, as well. I could not pull in the usual FM local stations from New York City. They were all replaced by strong signals from Florida, Alabama, and later more northern states like Iowa. Friends in Connecticut received Bermudian FM stations for over an hour.

Here are some places for you to look: An easy catch is Cubavision on Channel 3. They broadcast a complicated circular test pattern from 9 am until about 5:30 pm daily which is very easy to identify. Also look for powerful PBS affiliate WEDU from Tampa, Florida



on Channel 3. These two stations are regular visitors to our area and considered pests to seasoned TV DXers. A pair of rabbit ears on your TV is a good starter antenna for E-skip reception. These signals are often quite powerful!

Probably the most astounding receptions were those across the pond. DXers in Scotland, Ireland, Britain and Spain have been receiving North American TV and FM signals with multi-standard TV sets and specially cut Yagi antennas. You can use your scanner to reciprocate! Listen for TV program audio on 41.25, 41.50, 48.25, 49.25, 53.25 and 53.75 MHz. Point your

antennas east and wait patiently. You may be very surprised! Rest assured, when these reception conditions exist, six meters should be filled with strong and rare catches waiting for your skyhook! For more information, see the resource pages of the British and American TV/FM DX clubs at <http://pages.cthome.net/fmdx/mailroom.html> and <http://www.skywaves.info>.

Another interesting propagation beacon for six-meter buffs emits from Chile in South America. Several powerful transmitters broadcast Muzak type background music on 47.9, 48.3, 49.3 and 72.6 MHz operating with as much as 5,000 watts. These are often heard in North America. Other area hams have been known to listen for police frequency transmissions from California, also in the low VHF public service band. My friend Bob, K2TV, on Long Island, has been working the world on QRP CW and SSB with a simple folded dipole made of twin lead mounted on a piece of wood. If you ever wanted to experiment with DXing on six meters, the time is now!

This season of TV and FM DXing has a new twist: Digital TV DXing. DXers are using relatively inexpensive DTV tuner cards in their desktop PCs to DX new over-the-air DTV stations for the first time via tropospheric and E skip. These tuner cards come complete with an electronic version of a QSL card. If you manage to capture a DTV station, an ID with call letters, and usually a phrase, appears on one of the supporting programs' menus for you to frame grab. Example: “Welcome to KELOland!” An instant QSL!



My cardiologistical rehabilitation demands regular exercise, so I have been including long walks around my neighborhood to build my strength. I have been using this opportunity to experiment with **UHF propagation**. My inspiration is derived from the current fad in FRS and GMRS handheld transceivers sold at Radio Shack, Wal Mart and even supermarkets. I wanted to know how useful these devices could be.

I built a little VOX and connected it between a scanner and an audio cassette machine. When the scanner receives audio, the VOX makes a closure and takes the cassette machine off “pause” and the tape records what is said. No need to search through an hour-long tape looking for audio! Using the low power setting on my Icom IC-T7H HT, (about 300 milliwatts), I have been making brief simplex transmissions on 449.975 MHz (to emulate FRS/GMRS) within a couple of miles of my QTH to ascertain its range.

I proved some things that are known and obvious. Antenna height, gain and location are everything in this frequency range. I own a basic Bearcat BC350A scanner

that sits in my bedroom. I have connected it to a discone antenna in my attic with a preamp. I was amazed how far and clear I could hear my roaming HT using this receiving gear. I enjoyed full-quieting reception as far as my feet could take me, well beyond a mile or more.



*Bearcat BC350A scanner*

Another morning, I used a Radio Shack PRO-38 scanner with a simple rubber duck as the receiving station. The difference was dramatic. The results were as if I had inserted a 6 dB pad into the system! The scanner captured my signal for nearly my entire walk, but the noise floor rose dramatically. UHF does not drop off like a cliff if you listen without using a squelch circuit. Your signal fades off, very slowly, into the noise. Just think how far I could go if I were transmitting CW!



*Pro-38 scanner*

The final test was using the Bearcat BC350A to receive a small handheld Radio Shack 49 MHz walkie-talkie. It's easy to see why the newer FRS/GMRS transceivers have become so popular. With the 49 MHz HT, I had less than half the range of the UHF HT with considerable noise. Using 49.830 MHz had an added handicap. I had to fight my signal over a couple of baby monitor transmitters in the area. Since the transmissions were FM, my scanner would capture my signal or a baby monitor. At one point, I heard someone's clock chime in to mark 9:30 in the morning. It wasn't quite Big Ben, but it was interesting and unexpected!

FRS/GMRS does have limitations. UHF is nearly a line-of-sight medium. If I drop behind a rocky hill, reception declines rapidly. GMRS rules allow handheld HTs up to 5 watts and repeaters up to 25 watts with some antenna restrictions. Properly employed, this could be the basis of a powerful communications system. It is astounding to see FRS transceivers, sold in bubble-packed pairs, for as little as \$9.99! Granted, these units operate with 50 milliwatts output, but you can't beat the price. Welcome to the world of disposable NBFM!

Some simple inventions that really work: I like to listen to distant AM radio stations while shaving and showering in the bathroom in the morning. I use a \$30 Sony battery-operated FM/AM/cassette combo as my

receiver. Reception was not bad for local stations, but it just could not bring in the stations from Boston and Hartford that I like to hear to follow the baseball Red Sox. (Yankee fans moan here!) I made a short coupling coil using a four inch long piece of one inch diameter white PVC pipe and some #24 wire. One end of the coil is connected to a good cold water pipe ground. In this case, it is the water pipe that feeds the toilet. The other end is connected to the 1000 feet of wire that lines my property. My original reason for hanging this huge longwire was to support my AM radio DXing with my trusty military surplus R-390A, but this little radio likes the signal boost too. The reception improvement is dramatic, to say the least! One great indicator is walking by my bathroom with a Walkman radio. A blind man could find my bathroom just direction finding to the lift in AM radio signal strength!

I experimented with several different capacitors to create a proper LC circuit for the coupling coil, but the improved resonance proved too strong for the radio's front end. Now, I slide the white PVC coil closer or farther from the radio's internal ferrite loop to create an effective RF gain control.

I developed another gadget for improved FM listening on my hour-long commuter train rides. Most Walkman type radios use the shield of the attached headphone cord as the FM antenna. Inside an electrically noisy and shielded commuter train reception is not optimal. I made a little adapter that turns the headphone cord from a monopole to a proper dipole. You need to experiment with an equal length of wire and attach it to one of the "hot" leads of the three-conductor headphone cable. I let the second wire just hang in a different direction from the headphone cord. If you don't mind attracting attention from fellow commuters, hang the new piece of wire, using a plastic clip, from the overhead luggage racks for best reception. This little project makes FM much more listenable when you are railroad mobile.

You might also be surprised how well you can QSO on VHF and UHF repeaters while on the train. I travel the Metro-North Hudson Division and work through the WECA, Yonkers and Chappaqua two-meter machines on a regular basis. My transceiver is a spartan Icom IC-T7H dual-band HT. Other hams get a kick out of working a railroad mobile station and hearing the train whistles "toot" behind my voice.

See you on 20 meter CW QRP!  
Have fun and happy trails.



— The old goat, N2KZ Karl

# Peekskill / Cortlandt Amateur Radio Association

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*Newsletter contributions are always very welcome!*

## 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.

## 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 Aug 3:** August meeting, 3:00 P.M. HVHC.

**Sun Sept 21:** Foxhunt.

## Hamfests

**Sun Aug 3:** Tri-State ARA Hamfest, Matamoras Airport Park, Matamoras, PA. 8:00 A.M. (vendors 7:00 A.M.)

**Sat Aug 16:** Ramapo Mountain ARC Hamfest, American Legion Hall, 65 Oak St., Oakland NJ. 8:00 A.M. (vendors 6:00 A.M.)

**Sat Sep 6:** Saratoga County R.A.C.E.S. Association Hamfest, Saratoga County Fairgrounds, Ballston Spa, NY., 7:00 A.M.

**Sun Sep 7:** LIMARC Hamfair, Briarcliffe College, 1055 Stewart Ave., Bethpage, NY. 9:00 A.M.

**Sun Sep 14:** Candlewood ARA Hamfest, Edmond Town Hall, Rt 6, Newtown CT, 8:30 A.M.

## VE Test Sessions

**Aug 3:** Yonkers ARC, Yonkers Police Dept., 1st Precinct, E Grassy Sprn Rd, 9:00 A.M. Contact: D. Calabrese, 914 667-0587.

**Aug 7:** WECA, Fire Training Center, Dana Rd., Valhalla, NY. Register with Sanford Fried, (914)273-2741, N2SF@weca.org.

**Aug 18:** Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY, 6:30 p.m. Contact Alan Crosswell, 212 854-3754.

**Sep 7:** Yonkers ARC, Yonkers Police Dept., 1st Precinct, E Grassy Sprn Rd, 9:00 A.M. Contact: D. Calabrese, 914 667-0587.

**Sep 27,** P.E.A.R.L., EOC, Putnam County Office Bldg, 40 Gleneida Ave., Carmel, NY. 9:00 A.M. Contact NM9J, 736-0368.



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