PCARA Update

Volume 4, Issue 3 Peekskill / Cortlandt Amateur Radio Association Inc. March 2003

Special PCARA events

PCARA is sponsoring another Technician Class scheduled to start on Wednesday, March 12, 2003 at 7:00 PM at Hudson Valley Hospital Center. The class will meet Wednesdays through May 14, 2002. A public VE session will be held on Wednesday, May 14, 2003 at the final class session. If you or someone you know is interested in attending the class, or helping to instruct, please contact Malcolm, NM9J at nm9j @ arrl.net. Preregistration is required.

The PCARA Third Anniversary Special Event Station will be in operation on May 3, 2003. Station **N2T** will be on the air 9:00 AM to 3:00 PM from Blue Mountain Middle School in Cortlandt Manor. Operators and laptops are needed. There will also be a GOTA (*Get On The Air*) station, just like Field Day, so bring your friends or anyone who might have an interest in amateur radio.

At the March meeting we will be raffling a Pinnacle PCTV Pro TV/Video Adapter with Remote Control. This is a PCI card that will allow you to watch and record stereo TV on your PC. The tickets will go for $5.00 each or 5 for $20.00. This item was donated to PCARA courtesy of Karl, N2KZ. Thanks Karl!

A very important development has come about as a result of our membership in, and relationship with the Town of Cortlandt Regional Emergency Planning Task Force. To find out more, please attend the March 2nd meeting at HVHC at 3:00 PM. I hope to see each of you there!

– 73 de Greg, KB2CQE

Technician class

As mentioned by KB2CQE, PCARA will run classes for the Technician license beginning Wednesday March 12 at Hudson Valley Hospital Center – Dining Room B. There will be a VE test session at the conclusion on May 14. The course fee will be $35.00, except for students 18 or younger, who pay only $20.00. The V.E. test fee for 2003 is $12.00.

PCARA will make use of ARRL's *Now You're Talking* fourth edition, featuring the existing Element 2 question pool, which remains in use for Technician class examinations up to midnight on June 30, 2003.

If you know anybody who is thinking about the Technician exam, sooner might be better than later. From July 1 2003, a revised question pool comes into effect, with a new syllabus containing renamed subelements and different numbers of questions for each topic. There is an increased emphasis on safety, rules and operating procedure. The new question pool contains **511** questions—up from 385 in the current pool.

Here are some questions from the new July 2003 question pool — would you know the correct answers?

T1E10 (C)
Amateurs of which license classes are eligible to apply for temporary use of a 1-by-1 format Special Event call sign?
A. Only Amateur Extra class amateurs
B. 1-by-1 format call signs are not authorized in the US Amateur Service
C. Any FCC-licensed amateur
D. Only trustees of amateur radio clubs

T6B05 (A)
What name is given to an amateur radio station that is used to connect other amateur stations with the Internet?
A. A gateway
B. A repeater
C. A digipeater
D. FCC regulations prohibit such a station

T9B10 (A)
What is the typical amount of time an amateur has to communicate with the International Space Station?
A. 4 to 6 minutes per pass
B. An hour or two per pass
C. About 20 minutes per pass
D. All day

PCARA Officers

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Full size station — N2CBH

This month I thought I would write a little something about my work-QTH. I have been working for WEVD AM 1050 since last July on a temporary assignment. I work with two other hams, George K2MYR WEVD chief engineer and George K2ZLU. Both hold Extra class licenses and are active on the bands. I've learned a lot from working with these guys, who have over 70 years of combined experience in this business. It's all R.F. business all the time out at the site.

WEVD is a fifty thousand-watt, directional AM broadcast station that today broadcasts ESPN Sports Radio. The transmitter site where I have been working is located in the Meadowlands of northern New Jersey. This facility has had a number of owners over the years and was originally built in 1941. The Loews theatre chain owned the station in 1941 and it carried the call sign of WHN. Later it would become WMGM then back to WHN in the 1960s. In 1985 Doubleday Broadcasting bought the station and operated it for a few years and it was again sold to Emmis Broadcasting who changed the call letters to WFAN and with it began broadcasting sports talk. In 1989 the station was sold again for a short time to Spanish Broadcasting where the call letters became WUKQ for a brief time. The Forward Association, Inc. acquired the station within months of the Spanish Broadcasting closing as part of a three party swap between themselves, the Spanish Broadcasting System and NBC.

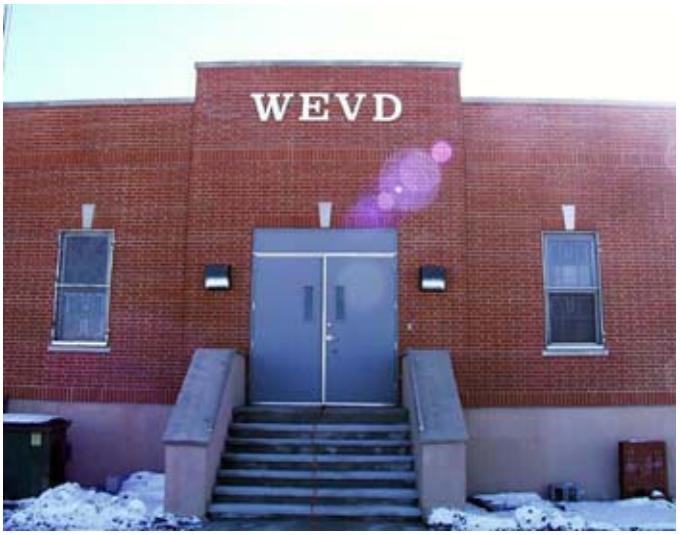
Are you still with me? The call letters became WEVD-AM at the time of Forward's acquisition of the station. The call sign WEVD actually has been around since the 1920's. The Forward Association founded WEVD, the call letters standing for Eugene V. Debs Memorial Station. Debs was an early advocate of socialist politics, a three time presidential candidate and was instrumental in helping trade unions gain ground with American labor. Debs was considered kind of a dangerous fellow in his day. In fact, he was jailed for a time. Times have changed and history has been kind to Mr. Debs. In the 1970s Eugene Debs was posthumously exonerated by an act of Congress. Today he would probably be just another advocate of workers' rights trying to make the world a better place. WEVD has been operated continuously from its founding in 1928 and was assigned a frequency of 1310 kHz. Around the Second World War, the frequency was moved to 1330 and the station shared time with two other stations. Later in the 1950s an FM station carried the WEVD call letters, broadcasting on 97.9 MHz. The original WEVD-AM was sold in the 1980s and the Association continued to operate the FM station. The FM station was traded away for the present AM station as part of the 1989 transaction. The Forward Association continues to own the station but it is awaiting transfer to the American Broadcasting Company within the next few months. My work will end with the closing so I wanted to document what I could while I still had the chance.

Equipment racks at radio station WEVD where Bob, N2CBH first worked on the remote control facilities.

I have been associated with this facility on and off over the years as a consultant dating back to the Forward Association coming to own the station in 1989. I participated in an overhaul of the station's remote control system pictured in the station's equipment racks. I also reworked some of the R.F. plumbing inside the building. Note the picture of the rigid transmission line sitting on the floor. This is air dielectric fifty-ohm coaxial cable made from rigid sections of copper pipe. I used a pipe cutter, hacksaw, file and deburring tool much like a plumber would in your home. This particular type of line is rated at 39 kilowatts!

Rigid copper transmission line.

This is a magnificent facility. When Loews Corp. WHN's then owner, built the building on this site just before American involvement in World War II, the world was a different place. People built things to last at least a century. The building is plaster, lath, concrete, more concrete, and brick. Oh yeah, did I mention concrete? The photo of the front of the building gives you an idea of the magnificence of this structure. Inside, the station was originally outfitted with a Western Electric vapor phase cooled fifty-kilowatt AM transmitter and associated equipment. Later the station had RCA and Continental Electronics 50-kilowatt models. There was even a specially designed model that could change frequencies by the push of a button. This was part of the first emergency alert system called CONELRAD which stood for "**con**trol of **el**ectronic **rad**iation". All stations had to go to one of two fre-



WEVD transmitter building in East Rutherford, NJ.

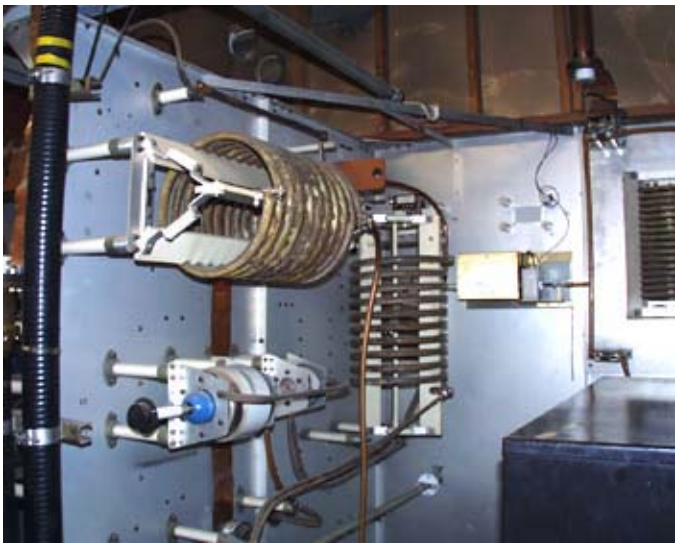
quencies or observe radio silence.

All of these transmitters were tube type and have since been replaced by a pair of Nautel all solid state transmitters pictured on April 1st 2001. Consider that the two new transmitters take up as much room as one of the old tube models!

The new transmitters use a novel modulation approach. The audio is digitized and sampled at the carrier frequency. Instead of 44.1 kHz as in your CD player, the sample rate is 1050 kHz, WEVD's assigned

Nautel solid-state AM transmitters at WEVD, pictured in 2001.

frequency. The highest voltage in the rig is 70 volts D.C. The current runs in excess of 200 amperes! This solid state transmitter is made up of a series of RF modules that amplify the 1050 carrier. The outputs of these modules are fed to a combining network for application to the antenna system. The transmitter output is connected to a device called a phasor. The pictures of the inside of this beast show that the coils and capacitors are a little larger than we are used to dealing with in amateur radio. The phasor is a walk-in design. To service it, you walk into it and do what you must. Of course this is done with the transmitter off. RF safety is important to observe because one slip could cost you your life or a severe burn. The phasor is a system of coils and capacitors set up in such a way as to alter the phase and amplitude of the R.F. currents that are fed to



Part of the phasor at WEVD. The phasor adjusts phase and amplitude of the RF signals fed to each antenna tower.

the three towers seen in the accompanying photo (page 4). This along with tower spacing creates the directional pattern that WEVD is licensed to operate. The state-of-the-art vehicle in the lower left corner is none other than the N2CBH work/hamfest/field day Jeep Cherokee.

The signals from the phasor are fed to 3-inch transmission lines out to antenna tuning units at the base of each tower. There is actually a small building at each tower to house the antenna tuning units. These are referred to as doghouses. The output of each ATU is connected to its respective tower by a series of wires to the antenna bases, which are isolated from ground on ceramic insulators. Each tower has a set of 120 ground radials that are cut to a ¼ wavelength at 1050 kHz and buried in the ground. If you have ever built a vertical for amateur use, you are familiar with this construction. The design is the same, only a lot bigger! The station site is situated on wetlands. AM stations are often located in swamps that provide superior ground conductivity and thus excellent propagation characteristics. The towers in the picture (page 4) were erected in 1968. Originally, the station utilized a two-tower array. This was changed to the three-tower arrangement to allow for better coverage and to allow for New Jersey Turnpike construction. Each tower is a half wave in length, which works out to be about 468 feet. The towers are non-uniform cross section, self-supporting

Three-tower antenna system at WEVD.

types. Many stations use uniform-section guyed towers. The self-supported type tower used by WEVD can be erected on much less real estate – ever important in today's cramped conditions in the area.

WEVD broadcasts 24 hours a day at 50 kW with the same pattern. The pattern covers the New York metropolitan region well. Major lobes of radiation go nearly due north, northeast and due east to cover Long Island. At night the station is regularly heard as far north as Nova Scotia and we have even received QSLs from as far away as Finland. In 1941 this area was mostly uninhabited and swampy. Today, construction of the Meadowlands complex, hotels and other businesses have taken their toll on the station's coverage. These buildings have altered the signal coverage of the station and the station has lost real estate and part of its ground system in the process.

AM broadcasting has had a proud history and one of the things that makes it still relevant today is the fact that it take very little to receive it over vast distances. Like our amateur HF frequencies AM broadcast frequencies enjoy remarkable sky wave conditions at night. AM receivers are simple and cost effective. AM receivers are much simpler than FM types or the new digital units soon to be available. A simple coil, tuning capacitor, germanium diode and a pair of headphones still does the trick! In 2003 we are poised to ask what the future of AM radio is. For nearly one hundred years amplitude modulation has been there to entertain, inform, and even save lives. Today there are plans to augment and eventually replace AM radio with a digital piggy back signal called "in band on channel" digital modulation or IBOC for short. The same programming is carried on a series of carriers that are displaced from the main carrier out in the sidebands. Early tests show that this system may show promise. WEVD is not presently involved in these tests but WOR, another New York broadcasting senior citizen has had the system up and running for several months.

My association with the station has been one that I am proud of. I know that one day these great monuments of broadcasting's past will all be gone. I am lucky enough to have had the opportunity to keep the past alive at this great facility. When was the last time you listened to an AM broadcast station? There is a whole world of news, information, talk, and yes still a little bit of music. Tune down below 160 meters some time on your ham rig. There is a lot to listen to.

– 73 de Bob, N2CBH

Adventures in DXing -3

— N2KZ

Special skills are often learned from special friends. If you are looking for a mentor in the world of Morse, a club called FISTS is your ticket. FISTS (www.fists.org) is the nickname of The International Morse Preservation Society, a fraternity of people who know the code. One of their many activities is the Code Buddy program, uniting teachers and students pursuing the art of telegraphy. I volunteered to be a teacher, and before I knew it, I was on my way to another adventure in DXing!

It started with a couple of e-mails. FISTS sent out a plea for Code Buddy teachers. I offered my skills and was quickly assigned to Gil, KG4VCG, in Savannah, Georgia. Gil claimed to copy up to ten words per minute and needed help to get to a higher plane. I discovered there were a lot of challenges to be met.

Gil was obviously a smart guy. He recently earned his General ticket and built an Elecraft K2 QRP transceiver kit to get on the air. A lawyer by trade, Gil is also a seasoned experimenter with advanced designs of crystal radios, and a gifted astronomer, fisherman and sailor.

We agreed to a sked on 40 meter CW one morning in the Novice segment at 7125 kHz. I heard Gil's five watt QRP signal without effort. Two major problems stood in our way! I couldn't understand what he was sending and he couldn't hear me!

Gil patiently sent my call for quite some time, but it was obvious I wasn't getting through. Gil was running five watts and I was running 90! How could this be? I have been heard all over the world! Was there an RF black hole in Georgia? I started to move around in frequency. I felt like I was trying to pick a lock. Where was he listening? I went a couple of hundred hertz higher, then higher still, then lower. After about five

attempts, the magic door opened! Bingo! He heard me! Contact was made!

How I wished I had studied cryptography! Gil was receiving my messages nearly word perfect. His replies revealed a style I had not experienced before. He was not confident with his keying and rhythm, and the result was very interesting and bewildering. I copied lots of Gs. A "B" came out as T 5. What amazed me was how acquainted I became with his odd fist and style. After about a week of strange attempts at making conversation, I actually began to understand him!

Our daily sked remains at 0630 Eastern on 7080 kHz, right on the wave of grayline sunrise skip. The QSB can carry you away quickly. Gil had an unusual habit of abandoning ship rapidly if he lost my signal. I would be in the middle of a reply and I would hear under me "Lost you. Must QRT. 73 de KG4VCG" and that would be it for the day. A couple of times Gil moved wildly off frequency to a place that seemed cleaner to him. I didn't know where he went, and then I'd find him 6 or 8 kHz away. Talk about new operating challenges!

I weaned Gil from these bad habits and life grew increasingly more pleasant. Gil used a straight key, so he was in control of his own fate. In time, I've grown to admire his determined work. He practiced diligently and his sending became intelligible and easy-to-read. In the last few days, he has been going out on his own and having very successful QRP QSOs with fellow hams all over America.

We still have some work to do. Gil's rig, the Elecraft K2, seems to have a fairly tight bandpass and an interesting tuning system. Gil still has a hard time pulling me through at his QTH in Georgia. He is convinced that the directionality of his 40 meter dipole up 50 feet facing east/west nulls my signal from New York. I think it's possibly a combination of the Elecraft K2's bandpass and the K2's different (difficult?) approach to RIT.

The K2's operation manual claims that the XIT and RIT should be defeated when you try to zero-beat to your own signal. There is a SPOT switch that sends a sample of the transmitter's VFO output to the receiver so you can discover where you are in frequency. You adjust it to your liking and preference and then wait for others who are zero-beat to you. It's an old-fashioned approach that still works. Later, you can switch on the RIT (receiver incremental tuning) to fine-tune the initial frequency of your SPOT. Why is this complicated system necessary on a modern transceiver? Maybe I have a lot to learn?

This situation demonstrates possibly the greatest dilemma of CW operation. Your receiver must be offset from your transmit frequency or it will be hard for you to hear people responding to your calls. You need the offset to create the audio tone you copy. I have this problem with my Heathkit HW-7 QRP rig. The receiver does not have enough offset to hear responding stations, so you have to move the VFO control slightly every time you are ready to receive. Otherwise, you hope the other station will catch on to your problem and transmit enough off zero-beat to be heard by you. It's not likely!

Gil KG4VCG with one of his better catches!

You can find yourself in a wild chase across the band. You move to hear him. He adjusts thinking you've drifted. You adjust again. He adjusts again to zero-beat you. You move to hear him and you find yourself walking across the band in comedic fashion.

Each morning, I have to find the exact frequency Gil is listening to. His K2 has a narrow bandpass, with several filter options for CW, so it's a challenge to make a connection. One simple idea that works well is simply letting me transmit first. Gil looks for me, locks in my signal and then replies. We are ready to rag chew! My Heathkit HW-16's receiver is broad enough to hear him without much effort. Considering Gil is using only about five watts, his signal is remarkably strong and reliable every morning.

Now that Gil is becoming more and more confident with his key, a lot more is being said during our QSOs. We're having a lot more fun, too! Ask me about the polar bears that are dancing on my lawn or stealing beer in the night! The next step is to teach Gil to condense the basic first exchange of signal report, name and QTH so you can move on to the "good stuff" faster.

Make the comparison yourself. Would you rather copy TNX FER QSO. YOUR SIGNALS HERE ARE 579 579. MY NAME IS KARL KARL. MY QTH IS KATONAH, NY KATONAH, NY. BACK TO YOU. — or — UR 579. OP KARL IN KATONAH, NY AR ?

It's been a lot of fun watching Gil progress from a barely readable producer of cryptograms to a confident and proficient CW ham. What a difference a few weeks makes! Gil now regularly QSOs in CW on several bands. He is on his way to becoming the next flying ace on 40 meter CW!

FISTS offers challenging awards programs and a myriad of contests. Their quarterly CW sprints dare you to speed through only four hours of operation to gather points. Warning: Many of this club's members own baseball hats decorated with their names and callsigns! If you love code, you'll love FISTS! See you next month.

– The Old Goat, **Karl N2KZ.**

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 Mar 2: March meeting, 3:00 P.M. HVHC.
Wed Mar 12: Technician classes begin, 7:00 P.M. HVHC.

Hamfests

Sat Mar 1: Splitrock ARA Hamfest, 8:00 A.M., Parsippany Police Athletic Lg Bldg, Rt 46 & Baldwin Rd, Parsippany NJ.
Sat Mar 15: Cherryville Repeater Assn Hamfest, 8:00 A.M., North Hunterdon Regional High Sch, Rt 31 South of Clinton NJ.
Sat Mar 15: Eastern Connecticut ARA Hamfest, 8:00 A.M. Pomfret Community School, Pomfret CT.
Sat Apr 5: Orange County ARC Hamfest, 8:00 A.M., Temple Hill School, 525 Union Ave, New Windsor NY.
Sun Apr 27: Mt Beacon ARC, 8:00 A.M.,Tymor Park, Unionvale, NY. TSP to Rt 55 East, to County Rt 21-Bruzgul Rd E

VE Test Sessions

Mar 1: Splitrock ARA Hamfest, Parsippany PAL Bldg, Parsippany NJ, 9:00 A.M.
Mar 2: Yonkers ARC, Yonkers Police Dept., 1st Precinct, East Grassy Sprain Rd, 9:00 A.M. Contact: Daniel Calabrese, 914 667-0587.
Mar 10: Split Rock ARA, Hopatcong HS, Hopatcong, NJ. 7:00 P.M. Contact K2GG@ARRL.NET.
Mar 17: Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY 10025, 6:30 P.M. Contact Alan Crosswell, 212 854-3754.
Mar 18: W5YI VEC Pel Hams. Pelham Doronco Town House, 20 5th Ave, Pelham NY, 7:30 P.M., contact MA Ciferri 914 738-5775.
Mar 21: Bergen ARA & Fairlawn RC, Fair Lawn Cultural Center, 12-56 River Rd, Fair Lawn NJ, 7:30 p.m. Contact Donald C Younger, 201 265-6583.

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