



PCARA Update



Volume 3, Issue 5

Peekskill / Cortlandt Amateur Radio Association Inc.

May 2002

And the winning ticket is...

Starting May 4th at the PCARA QRP Special Event Station, tickets will be raffled off for chances of winning a brand-new Yaesu FT-1500M VHF mobile rig. Tickets will be available for a donation of \$5.00 each. If you are interested in selling tickets, please contact Joe, KR2V or Mike, N2HTT to get your supply.



100 tickets for this Yaesu FT-1500M 50 watt 2 meter mobile transceiver will be available at PCARA events or by mail to PO Box 32, Crompond NY 10517. The drawing will be held June 23, 2002 (Field Day).

Our public service event on April 14th was a complete success! We received nothing but thanks and praise from the organizers of the Shrub Oak Athletic Club's Spring Parade. I wish to thank all those members who helped in such a professional manner to demonstrate the abilities and resources of amateur radio to the general public.



Sean, KC2IDN and Joe, KR2V at the net control station for Shrub Oak Athletic Club's spring parade, April 14. Photo - Ray, KC2IFG

Hope to see you all on Bear Mountain on May 4th, and at the monthly meeting May 5th!

- 73 de Greg, KB2CQE

Special Event Station

PCARA's 2nd Anniversary Special Event Station will operate from Perkins Memorial Drive on Bear Mountain, Saturday, May 4th. The station will be on the air from 1300 - 2100 GMT, or 9:00 A.M. - 5:00 P.M. EDT. Setup starts shortly after the gate to the Drive opens.

This is a **QRP** event (5 watts or less) and we'll be using the 1x1 callsign — **W2Q**. The event has been listed with *QST* and *CQ* magazines (see below) and will be a great time for all. Please join us with or without radio gear — everyone will have a chance to operate. Contact Joe, kr2v@arrl.net, for further information.



Bear Mountain from the "Goat Trail"

Peekskill, NY: Peekskill/Cortlandt Amateur Radio Assn. - W2NYW, W2Q, 1300 **05/04/02** to 2100 **05/04/02**, PCARA Second Anniversary QRP Special Event Station, 28.350 21.350 14.280 7.240. Certificate. PCARA, PO Box 32, Crompond, NY 10517.

VE Test Results

Congratulations to graduates of PCARA's 2002 Technician class who were successful at the March 26 VE test session. The FCC granted new Technician licenses and upgrades on April 17/24 as shown below.

KC2JKW Carolina Velardi	KC2JLC Kevin J. Frye
KC2JKX James R. Davin	KC2JLD William G. Henderson
KC2JKY Joseph J. Davin	KC2JLE Brandon D. Pergola
KC2JKZ Robert V. Giglio	KC2JLF Horacio Scacheri
KC2JLA Matthew R. Giglio	KC2JMB David E. Smith (04/24/02)
KC2JLB Tim F. Mante	N2SWB Earl Jones -upgrd to Extra

The new ham experience II — KC2JDL

First, a big welcome to all the new ham radio operators who passed their exams recently. As all of us have found over the years, this is a fascinating hobby, a great mix of science and magic!

The previous column in this series covered the mother lode of all resources, the ARRL web site and on-line information available from rig manufacturers. This month I'd like to cover getting on the air on 2 meters.

Most of us new hams start with the Technician ticket. In its current incarnation, our operating privileges are limited to 50 MHz (6 meters) and above — only those with Morse credit can operate on the few HF areas allocated. Many of us start with a mobile or HT FM rig operating in the 2 meter band; some have multi-band rigs covering 2 meters and perhaps the 440 band. Communications in those bands is fairly short range (line of sight). So, who do we talk to, and how do we operate?

ARRL again – the Operating Manual

The key to operating in just about any band or mode is the **ARRL Operating Manual**, which is updated every few years. The current 7th edition was published in 2000 and is available for \$25 from ARRL. The *Operating Manual* covers operating basics, and the first few chapters are a good introduction for the new ham. These provide a refresher on band allocations and FCC regulations, carrying on a conversation, operating with a repeater (more on that below), and lots more.



Packaged with this edition of the *Operating Manual* is the **Ham Desktop Reference**, a 24 page booklet with reference tables and charts. Of particular value are the charts showing band plans for all of the amateur bands. The band plans indicate the kind of activities that are allocated within each band. For instance, in the 2 meter band 145.20-145.50 MHz is one of the blocks allocated to repeater outputs; 146.40-146.58 MHz is one of the blocks allocated to simplex operation.

So let's get on the air

We've got our rig, we've picked a simplex frequency, and we're ready to go. What do we do now? First – **listen!** Make sure that nobody else is already using the frequency you've chosen so that you don't interrupt a contact (QSO) already in progress (you can always wait until the ongoing QSO is over). Once you're sure that the frequency is clear, let the world know you're out there. UHF and VHF is much less

formal than the CW protocols. Key your transmitter and say something like "This is KC2JDL monitoring." You might want to repeat your call sign phonetically. Then wait. If somebody is listening and wants to respond, they will. After a minute or two, try again. If no response, go on to another frequency. (If you want to initiate a QSO with a particular ham who may be monitoring the frequency, you should provide his/her call sign as well – "N2HTT, this is KC2JDL.")

Once you do have somebody to talk to, speak clearly. It is common practice (but not required) to repeat the other party's call sign and then exchange first names. Don't forget to give out your call sign every ten minutes during the QSO. Common practice is to close the conversation with something like, "KC2JDL clear" after exchanging regards (73).

Repeat after me

Repeaters are in wide use for UHF/VHF FM communications. They consist of a receiver, transmitter and antenna, configured to extend the range of mobile, portable, or base station transceivers. Repeaters are installed on local high points and provide a line of sight for FM where one does not otherwise exist. They receive transmissions on one frequency and re-transmit them simultaneously on another frequency – so each repeater has a pair of frequencies associated with it.

Most UHF/VHF rigs can be set for automatic repeater operation — they receive repeater signals on one frequency and transmit to the repeater on the other. You set the repeater frequency that you want to listen to and the rig will transmit on the appropriate frequency required by the repeater.

In the 2 meter band, as you may remember from your Technician training, the received and sent signals are separated (offset) by 600 kHz. The table below shows the direction of the standard offset from the repeater output to the repeater input for the allocated repeater frequencies in the 2 meter band.

Frequency range MHz	Input/output/simplex use	Offset MHz
144.60 - 144.90	FM Repeater inputs	
145.20 - 145.50	FM Repeater outputs	- 0.600
146.01 - 146.385	FM Repeater inputs	
146.40 - 146.58	FM simplex	
146.61 - 146.985	FM Repeater outputs	- 0.600
147.00 - 147.39	FM Repeater outputs	+0.600
147.42 - 147.57	FM Simplex	
147.60 - 147.99	FM Repeater inputs	

So for example, for repeaters transmitting at frequencies between 145.2 and 145.5 MHz, you would set your rig to listen at one of those frequencies, but you would transmit at a frequency 0.6 MHz lower than the receive frequency (a negative offset, -600 kHz).

Aside from the frequency splits, another difference between repeater and simplex operation is that many repeaters need to receive a sub-audible tone to be activated — the PL tone. [Note: **PL**, from **Private Line**, is a Motorola tradename for CTCSS -Ed.] The tone required (if any) is chosen from a list of a few dozen by the repeater owner. Again, your rig can be set to transmit the appropriate tone for the repeater.

Most rigs with memory capability can be programmed to remember not only the output frequency of a repeater, but also the offset and tone. Check your instruction manual.

Once you've set your rig for repeater operation (with the repeater output frequency, the offset, and the sub-audible tone if needed), carrying out a QSO on a repeater is similar to simplex operation. First step — **listen** to make sure you won't be interrupting another conversation. When carrying out a repeater QSO, wait a second or two after the other party has stopped transmitting before you respond. Most repeaters will transmit a brief tone (a courtesy tone) to indicate that the previous transmission is complete. The pause will also allow somebody else needing the use of the repeater for a possible emergency to break in and request its use. And don't forget to say your call sign every ten minutes during the QSO and at its conclusion.

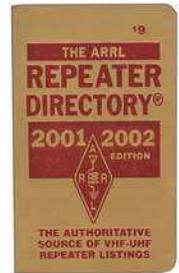
Finally, don't be a repeater hog. If you can carry out the QSO using simplex, move off the repeater. And if somebody needs to break in to use the repeater in case of an emergency, end the QSO immediately. Some repeaters are set up to automatically break the QSO after a time-out period, to prevent abuse.

PCARA operates a repeater on the 2 meter band (also two on 440). Operating information for some open (available for everybody's use) local 2 meter band repeaters is given in the list (this is *not* intended to be comprehensive): This list shows repeater operator/sponsor; approximate location; repeater output frequency in MHz, offset in MHz and PL tone in Hz.

Sponsor	Location	Output Freq MHz	Offset MHz	PL Hz
PCARA	Phillipstown	146.670	-0.600	156.7
NWARA	Yorktown Heights	147.015	+0.600	114.8
PEARL	Carmel	145.130	-0.600	136.5
Mt Beacon ARC	Millbrook	146.895	-0.600	100.0
	Mt. Beacon	146.970	-0.600	
	Highland	147.045	+0.600	
Rockland Repeater Assn	Orangetown	147.765	+0.600	114.8
	Orangetown	147.705	+0.600	
	Harriman	147.105	+0.600	
WECA	Valhalla	147.060	+0.600	114.8
Stamford ARA	Stamford	146.655	-0.600	100.0
Candlewood ARA	Danbury	146.670	-0.600	100.0

One standard source of information on repeaters is the **ARRL Repeater Directory**. The current edition for 2001-2002 is being updated. This \$9 pocket sized

directory is great to travel with. Another source of repeater information is the Open Amateur Repeater database, found on-line at <http://www.artscipub.com/repeaters>. Both of these sources describe the repeaters' location, output frequency and offset, and the tone required to activate the repeater.



Well, I've covered a lot of ground this month, and this article has covered a lot more real or virtual paper than I expected. I welcome your questions or comments. And if there's a topic that you'd like to see covered or a question that you'd like to have answered, let me know – send an e-mail to kc2jdl@arrl.net. Q&A's are always fun!



- 73 de KC2JDL, Bruce

PCARA Officers

President:

Greg Appleyard, KB2CQE kb2cqe@arrl.net

Vice President:

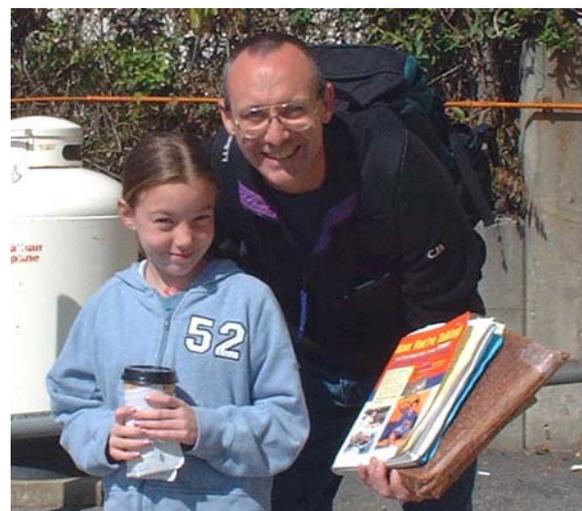
Bob Tarsio, N2CBH n2cbh@arrl.net

Secretary/Treasurer:

Joe Ellman, KR2V kr2v@arrl.net

Happy April

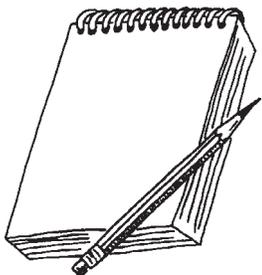
Two members of the PCARA 2002 Technician class were successful at the P.E.A.R.L. VE test session held on April 27. Congratulations to **April Mante** and to **Adam Schechter**, who both qualified for Technician. Well done!



April holds on to her new Technician CSCE, with her father **Tim**, KC2JLB, shortly after the P.E.A.R.L. VE test session at Carmel.

The art of chewing the rag — N2KZ

Having a good rag chew is not all that different from working a crowd at a cocktail party. Just remember this: The most important topic is not you but *them*. People tend to be most fascinated with themselves and are always looking for someone to tell their story to.



Take careful notes of everything they say.

Take careful notes regarding everything they say. Answer all their questions first. Be careful not to concentrate on yourself. Keep answers about yourself brief and always return with a question: "Gee, what was it like?" And don't get discouraged by 'hit and runs' that get your basic information and move on to another station. Recognize that it doesn't always work. That's what makes the really good QSOs special!

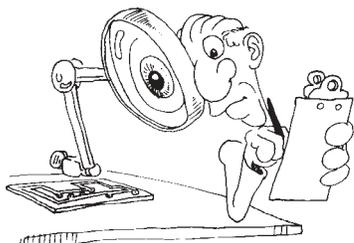
Conduct the QSO like an interview. Go for good content. Ask questions that do not have yes or no answers. Think of inquisitive, thoughtful questions that would provoke interesting answers. Never joke about them or their QTH before you have established a good rhythm. Wait for them to joke first so you know you have broken the ice.

Customize your approach according to time of day and age. You'll see that different kinds of operators appear on different bands at different parts of the day. Chances are that on a weekday on 40 meters you are going to find someone who is retired or who does shift work. Very late at night you'll often meet folks who are musicians, performers or work in restaurants and bars. This can also be a topic of conversation: "What are you doing up so late (or early)?"

Ask about what they do. How do they like their rig? What makes them happy? What was their best DX catch? How long have they been a ham and how did they get into it? Are they a contester or a rag chewer? What other hobbies do they enjoy? Ask for help regarding something you need and/or what they seem to be good at. Ask for operating tips: Where do they operate? What mode? What gives them best results?

Always have an atlas and almanac handy. Ask about their area and tourist sites. No matter what they are interested in, or what they do for a living, you'll find something about it in an almanac.

Always reply with courtesy and enthusiasm. Act like this is the best contact you've ever had (maybe it is!). Be energetic and genuinely interested. When appropriate, say "good fist." Ask how they learned code. Concentrate on having a good, steady, error-free fist. "Accuracy transcends speed." Send deliberately as if your message must get through.



It never hurts to have an interesting situation.

It never hurts to have an interesting situation at your end. Operate mobile, QRP, or have an

old or homebrew rig. You will draw crowds if you happen to be rare DX on a DXpedition or a special event station.

Be careful not to get personal. Hold off on questions that relate to their family, religion and other touchy subjects. Always stay away from politics and other controversial issues.

A very sneaky way to get information on the operator you're talking to is to sneak peek a look at their biographies posted on *qrz.com* or *eham.net* while you are on the air.

Follow up each QSO with a personalized QSL mentioning things you have talked about. Use a database to track duplicate QSOs and take time to jot down some notes about each operator that you can recall for the next rag chew.

Finally, if you like rag chewing, you are not alone! The ARRL has a Rag Chewer's Club which is very easy to join. Their certificate is signed by The Old Sock himself! Take a look at: <http://www.arrl.org/awards/#rcc>. The FISTS CW club goes a step farther by offering a rag chewing award. Work 100 FISTS members for a half-hour or longer to become eligible. See: <http://www.fists.org/awards.html>.

Let me know if you can add to this list. You probably have an approach I haven't heard of. Regardless of your style or preferences, operate as much as you can. The worst experience of all is to call CQ and not get a reply at all. I'm tuning up on 3530 kHz 80m CW right now. Want to rag chew?



- 73 de N2KZ Karl, "The Old Goat", N2KZ@arrl.net

Receiver specs and why they are so important – part III — N2CBH

In this last installment about receiver specs I'd like to deviate a bit from the receiver itself. I would like to talk about the different ways in which intelligence can be added to a signal for transmission. What??? **Modulation** — there are many forms that we use in our hobby. There are some new ones on the horizon too. I'll talk a little bit about them, but first let's talk about some of the more familiar modes.

The most basic form of modulation that we deal with is **continuous wave** or CW. By generating a carrier and then interrupting it at precise intervals we produce what we call Morse code. This method has been around the longest, starting with wired communication over 150 years ago. It was the first mode of modulation for R.F. carriers too. CW is an efficient mode of communication because it uses so little bandwidth. There is a misconception that CW only uses the space where the carrier is. This is not quite what happens. Due to the on-off keying, additional energy in the form of sidebands — yes, sidebands — are generated using additional spectrum. The total spectrum occupied is still small when compared to other forms of modulation. Because it is so small, the receiver can be set to a narrow bandwidth and still receive the message quite clearly. The benefits of this narrow bandwidth are reduced noise and adjacent channel interference. There is a term used in communications engineering

called “noise power bandwidth”. Basically it refers to the amount of signal to noise that exists in a communication system across its bandwidth. For very narrow bandwidth signals like CW the noise power is very high — meaning that the signal to noise ratio is high due to the fact that the power from your transmitter is distributed over a very narrow bandwidth. It’s like an ordinary garden hose. If you set the hose for a fine spray, the water is distributed evenly over a wide area. If you set it for a high intensity beam of water it is directed very powerfully over a small area, saturating that area with the same amount of water as the fine spray spreads over a wider area. Your receiver is able to deliver a more powerful signal over the top of the noise. CW is preferred by DXers for this very reason. It is statistically the best way to communicate when all other systems fail.

Other familiar forms of modulation include AM, FM and SSB. AM or amplitude modulation was the very first form of voice modulation. Reginald Fessenden shocked a lot of shipboard radio operators one Christmas Eve almost one hundred years ago (1906) when he said “hello” for the first time over the air. AM, as you probably know, is generated by varying the amplitude of the carrier with audio intelligence. For a typical AM system, there is a carrier and two sidebands displaced from the carrier at a distance that is proportional to the frequency of the modulating signal. For voice communication, a sideband can be displaced as much as 3 kHz away from the carrier. Remember that there are two sidebands — this means at least 6 kHz of bandwidth is necessary. Because the modulator and R.F. amplifier in your transmitter aren’t perfect, they generate some distortion, which generates higher order sidebands at lower levels even further away from the carrier. An AM signal might actually occupy greater than 12 kHz of spectrum. Remember noise power? Now your transmitter is spreading power out over a 12 kHz wide channel instead of less than 1 kHz for CW. The noise that the receiver sees is now greater because the bandwidth is increased. The greater the bandwidth, the more noise is present.

SSB is a method of modulation that enhances communication by halving the bandwidth required. Finally, something for nothing! SSB and AM are really very similar and are both considered to be forms of linear modulation. Other forms include double sideband suppressed carrier and independent sideband. From our discussion of AM we know that there are two identical sidebands generated by an AM transmitter. In the case of SSB only one of the sidebands and no carrier is transmitted, thus halving the necessary bandwidth. Because the two sidebands normally generated are identical you can throw away one of them and still retrieve the original message. There is another important benefit to SSB operation — the noise power is increased by 3 dB. That is to say you can have the same signal to noise ratio at the receiver with an SSB transmitter running half as much power (PEP) as the carrier of an AM transmitter. An SSB transmitter and receiver are a bit more complicated to design and build when compared to an AM system but the benefits are worth the cost and complexity. SSB is easier to receive than AM at times but CW still beats SSB when the going gets tough.

FM or frequency modulation is a great departure from what we have discussed thus far. AM and its derivatives — SSB, DSB, ISB, and compatible SSB AM are all forms of linear modulation. Linear modulation is defined basically by a direct

or one for one change in envelope power for a change in modulation. FM is referred to as angle (exponential) modulation that is distinctly non-linear. A change in modulation changes the carrier according to an exponential function — not a power increase but an increase in the number and amplitude of sidebands generated by the FM transmitter. With an FM system, the number of sidebands generated is a function of modulation density and the separation of the sidebands is a function of the modulating frequency. FM differs from AM and its derivatives in another area. With FM, more bandwidth means better signal to noise ratio at the receiver. It also means greater channel bandwidth needed. You might ask, if FM is so great in terms of S.N.R. why isn’t it more popular on HF? Well, HF frequencies are subject to fading conditions that render FM communications useless in many cases. There is FM activity on 15 and 10 meters but this is because those bands tend to have less selective fading than 160, 80, or 40 meters. Selective fading is a phenomenon that causes part of the desired passband to fade while the rest does not. CW and SSB signals fare very well even when severe selective fading occurs. It spells death to conventional AM and FM signals. FM is superior when it comes to resisting other forms of noise. Lightning, electric motors and switches generate transient noise that we are all familiar with. These noise sources cause the familiar pops and crackles in our HF receivers. Our two-meter FM receivers are generally very quiet. FM receivers don’t respond to changes in the amplitude of the incoming carrier; CW, SSB and AM receivers do. Score one for FM!

I didn’t really talk about some other modes that we have available — namely: RTTY and PSK31. RTTY is really another form of linear modulation as it uses audio frequency shift keying. PSK31 is pretty much the same story except that it is very bandwidth efficient (read it works really well!). A future column will discuss some of these modes and more.

To sum up, long distance, must-get-through communications still rely on band-stingy systems like CW and PSK31. Easy-to-listen-to communications are available with AM and FM systems. Choose your band and mode wisely! Happy DX.

- 73 de N2CBH, Bob



Membership news

Thanks for renewing:

Martin – K4TDB
Malcolm – NM9J
Mike – N2EAB
Mark – AB2ML
Bruce – KC2CXY
Monica – KC2IAY
Charles – WA2WGJ
Bill – WB2MKQ

Welcome new members:

Kevin – KC2JLC
Tim – KC2JLB
April
Carolina – KC2JKW

Thanks for your generous donation:

Bill – WB2MKQ
- Joe, KR2V

Peekskill / Cortlandt Amateur Radio Association

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PCARA Update Editor: Malcolm Pritchard, NM9J

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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

Sat May 4: PCARA 2nd Anniversary QRP Special Event Station, Perkins Memorial Dr., Bear Mountain.

Sun May 5: May meeting, 3:00 P.M. HVHC.

Sat-Sun June 22-23: Field Day

Hamfests

May 17-19: Dayton Hamvention

Sat May 25: Natchaug ARC, Vernon CT.

Sat Jun 1: Bergen ARA, Washington Township NJ.

Sun Jun 2: WECA Hamfest, Saxon Woods Park, Mamaroneck Ave., White Plains, NY.

Sun Jun 2: Newington AR League, Newington CT.

Sun Jun 9: LIMARC, Bethpage NY.

Sat Jun 15: Raritan Valley Radio Assn., Dunellen, NJ.

Sun Jun 30: Hall of Science ARC, Queens, NY.

VE Test Sessions

May 5: Yonkers ARC, Yonkers Police Dept., 1st Precinct, East Grassy Sprain Rd, 9:00 A.M. Contact: Daniel Calabrese, 914 667-0587.

May 9: Irvington ARC, Irvington Park Field House Bldg., May and Grove St., Irvington NJ, 6:30 p.m., Contact Derrick L. Battle, 973 375-0850.

May 11: Stamford ARA, Stamford Govt Center, 888 Washington Blvd, Stamford CT, 9:30 a.m. Contact Marvin Fleischman 203 438-7889.

May 11: Northern NJ VE Board, Union County College, 1033 Springfield Ave, Cranford NJ, 8:00 a.m. Contact Eldred A. Moore, 732 819-0678.

May 17: Bergen ARA & Fair Lawn RC, Fair Lawn Cultural Center, 12-56 River Rd., Fair Lawn, NJ. Contact Donald C Younger, 201 265-6583.

May 20: Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY 10025, 6:30 P.M. Contact Alan Crowell, 212 854-3754.

May 21: W5YI VEC Pel Hams, Pelham Doronco Town House, 20 5th Ave, Pelham, NY. Contact Michael Giferri, 914 738-5775.

Jun 1: Candlewood ARA, Saint Paul's Church, Brookfield CT. 11:30 a.m. Contact Frank R Sileo, 203 438-0218.



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