



PCARA Update



Volume 3, Issue 11

Peekskill / Cortlandt Amateur Radio Association Inc.

November 2002

Our cup runneth over...

We have quite a few things going on over the next couple of months. To start off with, we have a new set of cavities for the new repeater that is to become operational shortly. The final finishing touches are being placed on the machine through the efforts of Bob, N2CBH and Malcolm, NM9J. Gentlemen, thank you!

Nominations for office (President, Vice President and Secretary/Treasurer) are due at the November 3rd meeting. If you are interested, please think about placing your name on the ballot. This is an excellent time and opportunity to become involved.

As this year nears its end, we look forward toward the next. One of the unfortunate realities is that to run an organization such as our own requires money. I encourage and invite each of you to consider ways in which we can raise funds to permit us to continue to provide and expand services to the communities in which we live.

We have our December Meeting / Holiday Dinner scheduled for December 1, 2002 at the Reef Restaurant in Annsville Circle. If you are interested in attending, the cost is \$27.00 per person



(includes tax and gratuity, payment due at the November 3rd meeting). For those who wish to participate in the election but are unable to attend the meeting / dinner, arrangements will be made for you to cast your vote in

absentia. Please consider attending, to share the joy of the Holiday season in the company of friends who enjoy such a wonderful hobby.

I hope to see each of you at the November meeting!

— 73 de Greg, KB2CQE

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

PCARA CW Course

PCARA's first CW Course began on Thursday, October 10, with a group of dedicated students under the guidance of Karl, N2KZ and Bob, N2CBH. Classes continue Thursday evenings, 7:30 p.m. to 9:00 p.m. at Hudson Valley Hospital Center in Dining Room B. One exception — the Halloween week class will take place on **Wednesday** October 30, over the 146.67 repeater. The final class on December 12 will take the form of a V.E. test session for all classes of license, with walk-ins welcome.



Karl, N2KZ makes use of an HVHC motivational banner while he encourages the CW class to reach for 5 words per minute.

PCARA Election

The PCARA Annual Election will be held on December 1st at the holiday gathering. This will only take a few minutes and accommodations will be made for members who would like to vote, but are unable to attend. Positions and candidates are as follows:

President - Greg-KB2CQE

Vice President - Bob-N2CBH

Secretary/Treasurer - Open

Please e-mail me as soon as possible at kr2v@arrl.net if you're interested in any of the above positions. The cutoff date for nominations is the November 3rd PCARA meeting.

— Joe KR2V; kr2v@arrl.net

Let's tune... N2EAB

One of my first amateur radio construction projects was building an antenna tuner from a design found in an ARRL handbook. I was fortunate to find all of the needed materials, minus an enclosure, at the first hamfest I went to. That tuner, shown in the photo, later evolved to have



My homebrew antenna tuner mounted on piece of pine —1978

the tapped coil replaced with a roller inductor and a painted aluminum enclosure. The tuner worked and served me well but was more tuner than I needed with respect to power handling capability and physical size, so it was eventually sold. I later purchased a smaller, low power, commercially built tuner with an internal RF pwr/swr meter, which I still have and works fine.

So why buy another tuner? Well if you are like me, sometimes you just can't pass up a bargain found at a hamfest. This summer at the Sussex County hamfest I found a tuner rated at 300W, additional antenna connections my current tuner didn't have, was cosmetically perfect and had a very low price tag on it. A bargain, right? Depends on your point of view. Well, at the time I knew there had to be something wrong with it. I thought it was either the not so obvious loose Fwd/Rev meter switch and missing owner's manual, both of which can devalue used ham gear, or the plain fact that most new transceivers have built-in antenna tuners and the owner was just trying to clean out his shack.

Returning home later and giving the tuner the once over, I discovered upon removing the cover that the coil was definitely compromised. It had been subjected to too much heat, a result of excessive rf currents flowing through the coil, causing the acrylic spacer ribs to melt. The coil windings were now shorting together. This is exactly one of the "serious problems" that Bob, N2CBH



Melted acrylic ribs from too much RF current.

refers to in his article about tuners in the October PCARA Update. Having once built a tuner, repairing this one didn't seem like much of a task. At first, replacing the coil seemed to be the way to go, until finding an exact replacement was not so simple and would cost as much as the bargain priced tuner — difficult to justify. Substituting another size coil wasn't very appealing because of the limited space inside the enclosure, having to calculate the inductance values of the old vs. new coils

and finding the proper tap points of the new coil. The easiest and lowest cost solution in my opinion was to fix the broken coil.

It is best to record the tapped windings to switch positions before any disassembly, this makes reassembly quick and easy. I chose to take several digital photos. Another way could be labeling each switch jumper wire and coil winding using masking tape and a pen.

Careful unsoldering of the wires from the coil would allow reattachment of the same wires later on. With the coil removed from the tuner, repairs could now begin. Since the coil wire itself was still good, all that was required was to correct the spacing between the windings. Without cutting the coil wire, the damaged portion of the ribs were cut away leaving about half of the coil attached to its undamaged ribs and the other half looking like a slinky.

Note: Some of the ideas which follow are credited to the August '97 QST article, "Homebrew Your Own Inductors" by Robert H. Johns, W3JIP

I devised the correct size coil form from a 12" wood ruler and popsicle sticks. The popsicle sticks were wrapped in electrical tape so the epoxy used as the new rib material would not drip through the windings before the epoxy set up. The tape also prevents the epoxy from adhering to the coil form. Flat toothpicks were used to keep the windings evenly spaced.

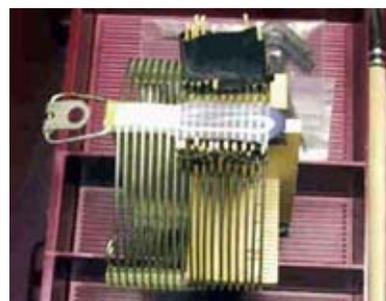
One rib was done at a time and since the epoxy is quick to set up (5-10 minutes), you can epoxy all four ribs in about an hour. I waited 24 hours for the epoxy to fully cure before reassembling the coil back into the tuner. The epoxy is surprisingly strong and made the repaired coil as good as new.

Remounting the coil into the tuner and resoldering of the switch jumper wires to the coil completed the repair. Testing of the repaired antenna tuner showed it to work quite well.

It cost me about \$1.00 for the wood ruler which was sacrificed to make the coil form and a little of my time to get it into working order. To me, this antenna tuner was a bargain.



McGyver style coil form.



Top view of applied epoxy.

- Mike, N2EAB

Repeater Update - N2CBH

The new two meter repeater project is progressing well. The repeater has been on the air from my garage for several weeks now. We have set this machine up with a different PL tone so that when you are all using the main machine up on the hill, it doesn't create a lot of QRM. Having the machine running like this allows the engineering committee, which consists of myself and Malcolm NM9J, to give the repeater a little exercise before we bring it up on the hill. You may hear the machine ID with the same W2NYW call sign but at 20 words per minute. Signal reports are greatly appreciated by the way.



View inside the new controller for the 2 meter repeater

Here is a rundown of the work that has been done so far. The repeater electronics were completely modified for operation in the two-meter band. This required modification of the receiver, exciter, and PA amplifier. A brand new controller has been interfaced to the existing Motorola squelch gate card so the machine will have all of the familiar on air attributes and a bit more. The new controller has a real time clock that stays accurate with or without power. The new controller also has an auxiliary module installed in it for easy interface to other repeaters for linking.

The new repeater has a 100 watt PA amplifier which will allow the machine to be heard more clearly than the present machine. Our coordination grant from UNYREPCO allows us to use 100 watts transmitter power with our present antenna system and height.

What is yet to be done on the project? The new duplexer, which was ordered six weeks ago, arrived October 25. It has been interfaced to the machine for further garage testing. Once we are satisfied with the behavior of the machine we will be ready to bring it up to the hill. If all goes well this should be by mid November. On-site we will need to do some metal work to the cabinet that houses the existing repeater to accommodate the new repeater chassis, power supply and new duplexer. We expect that this will be done in the morning of the trip and after a break for lunch the new equipment will be installed. 146.670 will not be dark during this time as the old machine will be moved out of the way and reconnected while we work on the cabinet. One of the nice things about the old machine is that it can be moved as one piece. Sort of a modular

collection of junk!

The old machine will not be relegated to the scrap heap. We plan to rebuild it and place it at another location for use as a hot standby. Running a repeater is a big responsibility for the club and while we have been very lucky to have little down time, we cannot afford to gamble with just one piece of hardware.



Here's the brand new Decibel Products four cavity duplexer, alongside the Motorola Micor 2 meter repeater. Both are now under test in Bob, N2CBH's garage.

Our many thanks to all who have contributed time, effort and money to this project. If you would like to help as we are still working on this, please feel free to drop either Malcolm or myself an e-mail or catch us on the air. We can still use some monetary help, as we are a little short of our goal on the repeater budget. We were close enough to go ahead and order the duplexer but we would like the club funds not to be completely depleted by this project. Any help you can give — whether it be time or dollars — will be greatly appreciated by all who use the machines.

— 73 de N2CBH, Bob

Jason kicks

Jason Leslie, younger brother of Will, KC2FYY took part in PCARA's Technician Class earlier this year. On September 28 Jason passed the Technician exam at P.E.A.R.'s VE test session, then on October 16 he was issued the callsign **KC2KIX**. Congratulations Jason!

Will's grandfather William Henderson also took part in the PCARA class and is now licensed as KC2JLD.



Jason, KC2KIX and Will (Wires), KC2FYY

So, you want to buy an HF Rig? Part 1 — N2CBH

Recently, I was asked about a recommendation on a new HF rig. I thought this would make a good topic for an article. This is geared toward a first time purchase. Even if you have made such a purchase already, you might find this article interesting just the same. There is a lot to cover so I am going to make this a two parter. This part will deal with purchasing a used rig. Next time, I will discuss the purchase of a new rig.

If you are just starting out on HF you might consider a used rig to begin with. There are a number of reasons why. Cost can be a chief concern. Used rigs are generally abundant at hamfests, the Internet and even from some amateur radio dealers. One of the reasons I suggest used gear is that a new transceiver can run well over \$1,000.00. If you have the discretionary funds to make the purchase — great. But wait — let's say that you plunk down your hard-earned money on a new rig, get it home and set it up to find out that you absolutely hate it. Some dealers will let you return the equipment, some won't unless it is defective in some way. If you purchase a used rig you are going to be out a whole lot less money if you decide you really don't like the way it performs. Often, if you buy a used rig from a friend or at least someone local, you can try it out before you take it home. New equipment dealers don't encourage this.

OK, so you'd like some pointers on how to pick out a used rig. I highly recommend attending hamfests as a starting point. For starters, there is generally a variety of stuff to choose from. You can get a sense of the "going rate" for some of this equipment at a hamfest too. "Seeing is believing" couldn't have any truer meaning. You can pick equipment up and look it over. Inspect the unit for obvious damage, missing knobs, parts, etc. Inquire about the history of the rig. Don't be afraid to ask a lot of questions. Ask for the technical manual. Often, if modifications have been made, they will be documented in the manual. If the seller becomes agitated by your questions, this is a sure sign of trouble. I recommend walking away if this happens. Many clubs that sponsor hamfests often feature a test bench. If you are interested in a particular rig, the tester can tell you how it works before you buy it. You can get a sense of how the rig will be to operate at the same time. If there is a test bench available and the seller refuses to allow you to test it out, walk away — another sign that there is something wrong. Generally, a reputable seller will allow you to pay for the unit and offer to give your money back if you are not satisfied with the test results.

Tube vs. solid state? There are still quite a few rigs available that rely totally or partially on the hollow state otherwise known as vacuum tube technology. There are also plenty of all-transistor models available on the used market. Which is best? Well, it depends. Solid state rigs

are less prone to failure over time as they develop less heat and if treated properly the finals never wear out. A tube rig on the other hand will require tube replacement from time to time. At this point, unless you are enamored with the idea of running a totally tube rig and know how to care for one, I would avoid an all-tube radio. There are a number of popular rigs still around that are of a hybrid nature. They are virtually all-solid-state except for the finals and driver tube. These can be excellent choices despite the fact that they have vacuum tubes in the output. Some examples include the venerable Kenwood TS-520 and 530

models. The Yaesu FT-101Z is another good example. All of these rigs use the same output tube complement. A single 12BY7 drives a pair of 6146's.

These tubes are still plentiful and relatively inexpensive. You might not ever have to

replace these tubes as they were designed to last for many years. In the event that you do need to change the tubes, it is a relatively straightforward procedure and not that expensive. One advantage of a tube final output stage is that it is more forgiving to high VSWR's. Solid state rigs can melt down in the case of a high VSWR.

Most modern rigs have VSWR protection built in so that this does not happen but it is worthy of consideration. If the VSWR protection circuit fails, you could be in for an expensive repair. One more note on tube outputs, avoid rigs that use sweep tubes in the final amplifier. These were tubes that were developed for use in TV sets. Ham manufacturers used these tubes in their designs because they were widely available and inexpensive. This is no longer the case. TV set makers abandoned the use of these tubes in the 1970s and none has been made since then. So, the stock of some of these tubes is dwindling while their prices skyrocket. 6146's on the other hand are actually still being made in some countries. The military used tons of them so supplies of these types will be reliable for the foreseeable future. Tube numbers such as the 6JB6, 6LQ6, 6KD6, 6JS6 and 6JM6 were common sweep tube types used by ham manufacturers. Drake liked the 6JB6, Swan the 6LQ6, and early Yaesu FT-101's used the 6JS6. All of these types are scarce so avoid the rigs that used them. Otherwise, tubes are really OK!

As far as all solid state rigs go, most are good buys. When contemplating purchase of a solid state rig follow



Kenwood's 25+ year old TS-520 HF transceiver is solid-state, apart from the driver and PA tubes.



The 6146B tube was often used in the final output stage of vintage HF transceivers.

replace these tubes as they were designed to last for many years. In the event that you do need to change the tubes, it is a relatively straightforward procedure and not that expensive. One advantage of a tube final output stage is that it is more forgiving to high VSWR's. Solid state rigs can melt down in the case of a high VSWR. Most modern rigs have VSWR protection built in so that this does not happen but it is worthy of consideration. If the VSWR protection circuit fails, you could be in for an expensive repair. One more note on tube outputs, avoid rigs that use sweep tubes in the final amplifier. These were tubes that were developed for use in TV sets. Ham manufacturers used these tubes in their designs because they were widely available and inexpensive. This is no longer the case. TV set makers abandoned the use of these tubes in the 1970s and none has been made since then. So, the stock of some of these tubes is dwindling while their prices skyrocket. 6146's on the other hand are actually still being made in some countries. The military used tons of them so supplies of these types will be reliable for the foreseeable future. Tube numbers such as the 6JB6, 6LQ6, 6KD6, 6JS6 and 6JM6 were common sweep tube types used by ham manufacturers. Drake liked the 6JB6, Swan the 6LQ6, and early Yaesu FT-101's used the 6JS6. All of these types are scarce so avoid the rigs that used them. Otherwise, tubes are really OK!

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this simple rule. Test! Test! Test! I can't stress this enough with solid state radios. They are more fragile than tube rigs. Finals do blow. Solid state rigs are more vulnerable to lightning damage too. Always ask to see a demonstration of the rig before parting with your money. There are a number of good used models to choose from. The Kenwood TS-120 and 180 models are great all solid state starter rigs. The Yaesu FT-840 is another.

What about pricing? How much should you pay for some of the rigs I have mentioned? I can only give guidance from personal experience. Your mileage may vary, as the car companies like to say. Obviously, the newer a rig is the higher a price it commands. I have seen perfectly good Kenwood TS-520 rigs sell for as little as \$175.00. This is a 100-watt all band transceiver with few bells and whistles. The TS-530 which came later is a bit more rig and I have seen these go for about \$350.00. I have seen Yaesu FT-101Z's go for similar prices, depending on condition. These are late 1970s to mid 1980s



Kenwood's 20 year old TS-430S all solid-state HF transceiver with WARC bands.

vintage rigs. Newer all solid-state models such as the FT-840 can go for a bit more but sometimes not. The Kenwood TS-430 is also an excellent value today. It is all solid state and covers the WARC bands.

Used, current models that are offered for sale, such as the Icom IC-706 and Kenwood TS-50 can be reasonably had too. Be careful though. You have to ask yourself why the owner is selling a rig that new. I offer the same advice — test the rig before buying it.

I haven't talked about some of the other purchase venues available to you for used equipment. Many new equipment dealers take used gear in on trade, recondition it and offer it for sale. This can be an excellent source of used equipment as the dealer usually sells the equipment with some sort of warranty. Pricing will be higher than what can be had at a hamfest. This is understandable as the dealer has to put time and parts into used gear to make it sellable. While I am not a big fan of eBay and the Internet in general for purchasing used gear it can be a way to find what you are looking for. Beware of some things though. First of all, eBay prices are typically much higher than what you might pay in a private sale at a hamfest or from a friend. In addition, you are buying more or less sight-unseen merchandise. Even pictures don't tell the whole story. To be fair, many eBay and Internet sellers are honest and reputable. Some are not. It depends on how strong your stomach is for sending off your money in hopes of getting what you expect in return. If you do decide to purchase through

eBay or some other Internet outlet the same rules apply. Ask a lot of questions, and do ask for lots of pictures of the unit. If the seller balks,



avoid the sale. I have purchased and sold a few items on the Internet. It can be a fun way to find what you are looking for. In fact, the Internet offers a great advantage over the other venues discussed — often, it is the only place to locate a hard-to-find piece of equipment or parts.

Some final thoughts to consider. Ask a friend — someone who may be more experienced at buying and selling — to help you decide. Do your homework. Know the features you are looking for and know which rigs have them. Get to know the options that were available when these rigs were new. Get to know the basic specifications too. You are more apt to get what you pay for this way. Ask which options are installed. This can add or detract from the final price paid. Often, if a rig doesn't have an option you can bargain the price down somewhat. Also keep in mind that the rigs that I discussed here are only a small sample of what is available on the used market. These are getting on in years but offer some of the best values around. Finally, happy hunting!

— 73 de N2CBH, Bob

N2FF visits PCARA

At the October meeting we had a visit from ARRL Hudson Division Director **Frank Fallon, N2FF**. Frank explained some of the current issues before the League, including antenna rights and possible realignment of the 40 meter band with countries outside the Americas.



Frank Fallon, N2FF in ARRL Pack-Away Jacket.

N2FF had become concerned about the lack of identification for amateur radio volunteers in the aftermath of 9/11 and was instrumental in arranging for ARRL orange vests and blue windbreakers to be made available, marked with "Amateur Radio Communications". He presented one of these vests to Joe, KR2V. Frank also left behind ARRL books to be raffled off later.

Details of ARRL sportswear: <http://www.barkerspecialty.com/arrl>



Sean, KC2IDN shows the vest presented by N2FF to Joe KR2V

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 Nov 3: November meeting, 3:00 P.M. HVHC. Last date for nominations for office.

Thu Nov 7-21: PCARA CW classes continue at HVHC, 7:30 P.M. **VE. test session:** Thursday Dec 12.

Sun Dec 1: Holiday Gathering, *At the Reef* Restaurant.

Hamfests

Sun Nov 10: Long Island Mobile ARC, Hamfest, 9:00 A.M., outdoors at Briarcliffe College, 1055 Stewart Ave., Bethpage, LI. Postponed from Sept 15 because of inclement weather.

Sat Nov 16: Waltham ARA Annual Auction, 11 A.M. Newton Masonic Hall, 460 Newtonville Ave, Newtonville MA.

VE Test Sessions

Nov 3, Dec 1: Yonkers ARC, Yonkers Police Dept., 1st Precinct, East Grassy Sprain Rd, 9:00 A.M. Contact: Daniel Calabrese, 914 667-0587.

Nov 12: Crystal Radio Club, Rockland Co Fire Trg Ctr, Firemans Memorial Drv, Pomona NY, 7:00 P.M., contact Robert Chamberlain 845 354-7340.

Nov 15: Bergen ARA & Fairlawn RC, Fair Lawn Cultural Cent, 12-56 River Rd, Fair Lawn, NJ. 7:30 P.M. Contact D C Younger, 201 265-6583.

Nov 18: Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY 10025, 6:30 P.M. Contact Alan Crosswell, 212 854-3754.

Nov 19: W5YI VEC Pel Hams. Pelham Doronco Town House, 20 5th Ave, Pelham NY, 7:30 P.M., Contact M A Ciferri 914 738-5775.



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