



# PCARA Update



Volume 21, Issue 6 Peekskill/Cortlandt Amateur Radio Association Inc. June 2020

## One Delta, Eastern New York?

Normally each month we have a few activities going on with respect to Amateur Radio, but due to the times in which we find ourselves as a result of the COVID-19 pandemic, things are very quiet. Meetings, Foxhunts, and Ham-fests have been canceled.



**ARRL Field Day** is the weekend of June 27-28, 2020, and PCARA will be participating in the form of **1D** home stations. The

ARRL has made changes in the rules for Field Day 2020, allowing **Class D stations** to work other Class D stations for points, and will **agglomerate** club scores for individuals when they include the name of the club

in their Field Day entries. I encourage all PCARA members who can, to participate as Class 1D and see what we can do. Good Luck! [See page 6 for more details -Ed.]

We are still holding our PCARA Roundtable Net evenings at 7:30 p.m. on the 146.670 MHz repeater, and are planning on continuing for the foreseeable future.

Thanks to everyone who has participated to make it such a success. Let's keep it going.



*Happier times — PCARA members raised the 6 meter beam antenna for Field Day 2019 at Walter Panas High School.*



*No social distancing last year. Sunday morning breakfast proved popular during PCARA's 2019 Field Day at Walter Panas High School.*

Our next On-Air meeting will be at 3:00 p.m. on Sunday June 7, 2020 on the 146.670 MHz W2NYW repeater. I hope to talk with you then. Until we meet again please be careful and stay safe.

- 73 de Greg, KB2CQE

## Contents

One Delta, Eastern New York? - KB2CQE	1
Adventures in DXing - N2KZ	2
Nostalgia - W2VJ	5
Field Day at a distance	6
Reducing HF QRM levels in shack - N2MUZ	7
Microphone adapter for $\mu$ BITX - NM9J	10
Serial setback - NM9J	12

## PCARA Board

President:

Greg Appleyard, KB2CQE; kb2cq@arrl.net

Vice President/Treasurer:

Joe Calabrese, WA2MCR; wa2mcr@arrl.net

Secretary:

Lou Cassetta, KD2ITZ, radiocassetta@gmail.com

Directors:

Bob Tarsio, N2CBH

Mike Dvorozniak, W2IG

# Adventures in DXing

- N2KZ

## The Great Divide

There are a lot of things I don't understand about life. So many different people enjoy radio and electronics. Why has there always been such a big divide between **shortwave listeners** and **ham radio operators**? We all enjoy radio. Why are these factions so far apart when we have so much in common?

At first glance, the world of amateur radio is distinctive by its complexity alone. New Zealanders have it



## NZART

New Zealand Association of Radio Transmitters Inc.

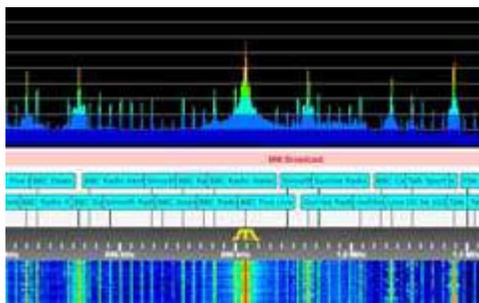
right. They refer to amateurs as **transmitters** for indeed they are. Amateurs embrace many

different transmission modes, multitudes of equipment, wiring and antennas. They construct things, compare things and experiment like compelled professors! Endless contests and earning of awards and certificates breeds unbridled passion and determination. Simply put, being a ham can be complicated!

Shortwave **listeners** on the other hand are generally much more casual. Granted, some keep detailed logbooks and count up their QSL cards as much as any ham. Comparatively, there seems to be greater overall calm and relaxation in their ranks. You won't find SWLs shouting into microphones for hours, pounding brass Morse keys or typing incessantly onto computer keyboards trying to outmatch other souls doing the same. They also may spend hours listening for a very particular signal but do so sipping a cuppa instead of gallons of Joe.

In the past few years the distinction between shortwave listeners and amateurs has crept closer together through shared technology. SDR receivers and recorders have revolutionized hobby radio forever. Anyone can now replay miraculous reception moments in time over and over again for deep analysis.

Our 21<sup>st</sup> century radio listener repertoire now includes how to scan a spectrum 'waterfall'. Our familiar aural experience now has a visual aspect, as well. North



Part of the AM broadcast band as viewed on the waterfall display of a Software Defined Radio (SDR).

Americans can instantly see if any transcontinental

'splits' (due to European broadcast 9 kHz spacing) are apparent in between the usual resident broadcasters spaced precisely 5 or 10 kilohertz apart all up and down the medium and shortwave bands. No careful searching for elusive heterodynes is necessary. Now you can see multiple frequencies simultaneously and instantly. It really is a whole new world.

Most remarkably, I can use a personal computer and listen to SDRs anywhere on the planet. No plane

tickets to purchase. Elaborate antennas are unnecessary. No need to visit Britain to DX European or African stations. No need for any other equipment at all! A sophisticated

software defined radio in Scotland (or anywhere else)

can be available at my fingertips at my slightest whim just using my laptop! Now both amateurs and shortwave listeners can enjoy advanced technology in parity... or do they?

Unfortunately, remote receivers are often guilty of amateur / SWL segregation too. Many SDR sites are run by amateur radio operators and require some sort of registration and authorized log-in. You can't expect shortwave listeners to be welcomed at a site called RemoteHams.com, can you? Another very popular SDR site, sdr.hu, is now allowing hams only. Is this restricted access really necessary? It's not my decision!

Beggars can't be choosers. Most SDR sites are presented with no subscription or fees necessary. The unbridled roster of worldwide SDRs becomes reality through the kindness of dozens and dozens of volunteer hosts. The accompanying support software and websites are offered as a handshake of mutual camaraderie. Everyone's dedication has resulted in an irreplaceable and fascinating DXing resource!

Still, you'll see an obvious priority given to ham radio operators. To access SDRs that are full transceivers you are required to upload a copy of your amateur radio license for verification and approval. Amateur-run receive-only sites claim that access should be limited since only a small handful of users can operate any one SDR at a time. If you don't have a license, you don't have a passport to all of this powerful additional access. Hey! That's not fair!

There are alternatives for the shortwave crowd. The signature site for SWLs seeking SDRs has to be



KiwiSDR is a software-defined radio (SDR) covering 10 kHz to 30 MHz, used at remote monitoring sites.

<http://websdr.org/> . A worldwide library of SDR receivers awaits you! You'll find a handy comprehensive list of available U.K. SDRs at:

[https://www.larches-cottage.co.uk/rx\\_antenna/web\\_sdr.php](https://www.larches-cottage.co.uk/rx_antenna/web_sdr.php).

Want to visit New Zealand? Take a hop to

<http://radio.owdjim.gen.nz> where you will find a nice collection of receivers for you to enjoy. For a European perspective, browse to <http://websdr.ewi.utwente.nl:8901/> in The Netherlands. They are all waiting for you!

### Your Call Sign Please?

Establishing identity is tricky in the world of radio just as it is in everyday life. It's easy for amateurs. Pass your examinations and you are awarded your distinctive call sign. Prove that you have worked so many stations in so many places and all sorts of awards can be yours! What wonderful and immediate self-gratification. Shortwave listeners need to meet a difficult challenge. Without a federally issued operator license, just how do you get a call sign designation?

In the United States, we have had a multitude of unofficial providers offering SWL call signs. Starting in the mid

1950s, Joe Morris of Cleveland, Ohio (who?) arbitrarily began issuing WRO listener-only call signs. Popular Electronics Magazine issued WPE call signs from 1959 to

1970 when well-known hobby columnist Hank Bennett took over and changed the prefix once again, this time to WDX.



WDX – SWL callsign issued by Hank Bennett starting in 1970 after Popular Electronics ended the WPE program.

who log amateur radio QSOs. Many radio station listener clubs have also issued numerical designations for participants. Radio Canada International and Radio

Sweden are two examples.

Over in the United Kingdom, the Radio Society of Great Britain (RSGB) has welcomed all radio enthusiasts since 1926. The *RSGB Bulletin* of August 1956 summarizes their fine consideration for shortwave listeners:

“On being elected to membership of RSGB, you are given either a BRS (British Receiving Station), BERS (British Empire Receiving Station) or A (Associate - by request only)

number for identification purposes. It is usual to have cards printed bearing this number and other information so that you can send listener



Layout of a typical old-style RSGB BRS Listener QSL Card.

reports to the

stations heard. It is all very well saying that you have heard so many countries, but it is far more satisfying if it can be proved by producing QSL cards verifying that you have done so. Additionally, by obtaining these cards you will be able to work for the special listening awards offered by the RSGB. The H.B.E. (Heard British Empire) award is well known to listeners, and the RSGB will shortly be awarding a new certificate to be known as the DX Listeners' Century Award. The latter award will be of handsome contemporary design, and will be the yardstick of DX listening in the same way as the DXCC award is for the transmitting amateur.”

### Across the Pond Today

Today's shortwave listeners are now seen quite differently on either side of the pond. In America, the ARRL only begrudgingly recognizes shortwave listeners. As an SWL with no license, you will forever be known as an Associate Member. Never will the term “shortwave listener” be mentioned. A handful of ARRL awards can be earned by SWLs, but not many. Full ARRL membership requires you to hold an unexpired amateur radio license. I envision The Black Knight in Monty Python's Holy Grail demanding “None Shall Pass!”

Britain's RSGB has a contrary point of view. On their website, <https://rsgb.org/> you will see all sorts of cross-promotion of special interest clubs. They encourage intermingling between hams and SWLs. A standout is the International Shortwave League. An affiliate of the RSGB, the ISWL is a refreshing blend of SWLs and amateurs all enjoying listening together. How refreshing!

The General Manager of the Radio Society of

Great Britain, Steve Thomas, M1ACB, welcomes all who love radio:

“We do allow anyone, licensed or not, to join the RSGB. We state that our strategic purpose is to ‘protect, promote and enhance the use, understanding and enjoyment of wireless communication...’ ”

“If someone joins us who does not have an amateur radio call sign, we do issue them with an RS number (RSnnnnn) to use when they log into our website. We use this as a ‘call sign’ in our membership database and for our communications with that member, but it doesn’t hold any legal status with the licensing authorities.”

BRS call signs were first issued in 1926. 94 years later, in the year 2020, the British Receiving Station designates still continue to be issued!

My query for more information from the ISWL



The ISWL’s Cliff Jobling, G4HYP, G-13557.



RSGB General Manager Steve Thomas, M1ACB.

introduced me to Cliff Jobling (G-13557 / G4YHP). Their website describes Cliff as “a man of many talents and holds the posts of Honorary Treasurer, Membership Secretary, Editor in Chief of the Monitor magazine and many other jobs that need prompt attention.” Indeed!

Cliff kindly offered an introduction to his club:

“The ISWL will cater for every class of shortwave enthusiast, be he a constructor, listener or transmitter. Entry into the ISWL is not hampered by any unnecessary restrictions, and there will be no varying classes of membership. At one time, the membership had slightly more listeners than licensed members, but today, we now have a greater licensed membership over the listeners.”

This was such a refreshing discovery. Clubs that promote joint SWL and amateur radio partici-



International Short Wave League motto: “We span the globe”.

pation! It’s quite a breakthrough, don’t you think? Full details can be found at: <http://iswl.org.uk/>.

### Show Me the Difference!

All sorts of theories attempt to explain the distinction between SWLs and hams. Many shortwave listeners simply want to listen to interesting things without complexity. Apartment living is often an issue. Outdoor antennas are unsightly to some and transmitting can cause all sorts of interference to neighbors. It is hard to build a radio empire from a one-bedroom efficiency flat complete with landlord regulations and zoning restrictions... but not impossible! Don’t be discouraged: Many SWLs (and hams) have tried and thrived.

Personal privacy is very important for some. Amateur radio will forever be a social medium. Call signs posted on-line often include complete mailing addresses. Participation in events and operator clubs may publish your picture, reveal your listening habits and more. Respect needs to be honored to those who wish to guard their identities. Shortwave listening can be a perfect quiet and solitary pursuit without public disclosure!

SWLs also share an admirable characteristic. They are reserved about their experiences and their achievements. Admit it: You will never hear an SWL claim they can work anyone they can hear! There is much less ‘stuff’ to brag about. Tall towers, directional arrays, powerful linear amplifiers are not omnipresent in most shortwave listener’s vocabularies.

An argument could also be flown that SWLs are not concerned about things technical, transmitting gear and grand construction. Maybe so... maybe not! Listener publications disregard all things on the other side of the SWL / amateur wall. Nearly everything hams read about in *QST*, *CQ*, *RadCom*, *The Canadian Amateur*, and *Practical Wireless* are rarely included in SWL publications.

### So Close yet So Far

To this humble correspondent, all of this seems counter-intuitive. Both groups are so close in interests and experiences. All of us are thoughtful, curious and inquisitive. I go on record that I would encourage a grand merging of the amateur / SWL divide. We need to build a bridge across our self-inflicted crevasse. Radio listeners, enthusiasts and amateur radio transmitters have so much to learn from each other.



Building a bridge.

Here's a perfect case in point: For the past 40 years, I have been a member of a medium wave club: The International Radio Club of America (IRCA). I am a former President and former member of their Board of Directors! I can tell you from long experience that medium wave DXers are simply superb listeners. They know all about their band's propagation, exactly where to look and what to expect on each and every frequency like a book.

Phenomenal research and development over the decades by IRCA members have produced innovative antenna designs, ingenious phasing devices and the



*Knight-Kit Star Roamer 5-band shortwave receiver.*

discovery of ultimate listening locations like Cappahayden, Newfoundland and the tall cliffs in Oregon. Today we enjoy the results from an inner circle

of grand professors and inventors of these specialized crafts. Where do you think amateurs went for advice when the new 630 and 2200 meter ham bands were first authorized? How many of today's amateur radio operators began by using a SWL general coverage receiver? Did you have



*Hallicrafters S-120 general coverage receiver.*

a Knight-Kit Star Roamer or a Hallicrafters S-120 or maybe a Heathkit GR-64? We are all fish from the same pond!

Transmitting with profound and authoritative power is relatively easy. Expert listening is a complex and time-honored skill. We really are one big happy family. Let's get together and share our knowledge and experiences! We could learn so much from each other! "We welcome all licensed amateurs and a special hello to all the shortwave listeners" — a memorial to 'Goose' K8EFA (SK).

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



## Nostalgia – w2vj

Back in the summer of '68, I almost didn't get my General. I was 15, and my Novice license had expired a couple of months earlier. It was good for only a year, and couldn't be renewed. I needed that extra two months to get my code speed up to 13 wpm. Home was north of Mohegan Lake in what is now called Cortlandt Manor. My father drove me to the FCC office on Varick Street in Lower Manhattan.



*Varick Street in lower Manhattan.*

In a dreary room sat an enormous contraption with a swinging arm that pulled a paper tape punched full of holes. Dit dit dit dah. Dit dit dit dah. Dit dit dit dah. Faster and faster. The monster spat out sentences for five minutes. I had to copy a solid minute — thirteen straight words. Something about outer space. Then it stopped. I knew I had thirteen words in a row, but there were some letters missing.



*'Instructograph' Morse Trainer, as used at FCC offices for administering code tests.*

Fortunately, I was given a few minutes to fill in the blanks. But it all came down to a guess — did **SATEL-LITE** have one T and two L's or two T's and one L? Talk about stress. It was a 50/50 proposition. Was I going to have to do this all again another day?

Well, I guessed right, and moved on to the written exam. When I walked out the door, the examiner assured me that my ticket would be in the mail. Whew! But 52 years later, I still don't know how to spell that d\*mn word.

- Verle, W2VJ

# Field Day at a distance

## No more 2A, ENY this year

Under normal conditions, PCARA would be gathering on June 27-28 at Walter Panas High School for our entry in ARRL Field Day 2020, taking part in **Class 2A** (two simultaneous HF stations, Club portable), and in **Section: Eastern New York**.

With social distancing, disinfecting of surfaces, restrictions on the size of gatherings and Lakeland Central School District not wanting anyone on school grounds, PCARA's Field Day 2020 will be very different from previous years. ARRL has made the following suggestion:

"Instead of participating in a group event this year, consider operating as a **Class B, C, D, or E** station, utilizing your own call sign. We will be including club names for all participating stations in the published results, so the efforts of your club's members can be acknowledged."

## Class distinction

Meaning of those additional Classes is as follows:

Class B: One or two person portable.

Class B-Battery: One or two person portable using 5 watts or less and non-commercial, non-generator power.

Class C: Mobile.

Class D: Home station using commercial power.

Class E: Home station using emergency power for transmitters and receivers.

## Should you be Class 1D?

Operating a single HF station from home using commercial power (Class 1D) looks like the easiest way to participate in Field Day 2020. On May 28, ARRL announced a relaxation in the rules: "For Field Day 2020 only, Class D stations may work all other Field Day stations, including other Class D stations, for points." Previously, Class D stations could only count contacts made with Class A, B, C, E and F Field Day Stations. (Class F is an Emergency Operations Center.)

## Or maybe try Class 1E?

You might consider operating Class 1E — a home station using emergency power for transmitting and receiving. Use of 100% emergency power brings 100 bonus points per station. This might require running a generator — not a problem in the grounds of Walter Panas High School, but family and neighbors might be unhappy with a noisy generator running day and night. Bear in mind that while a logging computer can be run off commercial power, any computer used for transmitting/receiving — such as for digital modes — must run from emergency power as well. An alternative

emergency power source for the home station could be from batteries.

If you are tempted to operate in Class B-Battery, this has to be a portable operation similar to Class A, separate from the regular station location and with no use of permanent station facilities.



## Logging software

In order to avoid duplicate contacts and submit an entry to ARRL Field Day, you will probably need computer logging software. There are several choices available, but make sure your selection can be tailored to the requirements of ARRL Field Day.

If you would like to use the N3FJP ARRL "Field Day Contest Log" software, as used at previous PCARA Field Days, you can purchase an individual copy from this web page: <http://n3fjp.com/fieldday.html>. Price is a reasonable \$8.99. Scott N3FJP has announced that: "I will have an updated Field Day version (6.3) which properly scores 1D to 1D QSOs. For folks not operating in the Delta class, version 6.2 is fine."

Hint — place your order sooner rather than later so you can install the software and check operation *before* Field Day begins! You should include the call sign that the software will be used with in your order.

## Bonus points

Many of the bonus points available on a normal Field Day are going to be difficult to claim while Social Distancing is in effect. But several items are still worth considering: 100% Emergency Power, Message Handling, Satellite QSO, Alternate Power, W1AW Bulletin, Youth participation (family member) and Web Submission. See the Rules for details.

## Submitting your entry

When the event is over, the easiest way to submit your entry is using ARRL's Web Submission form, available at: <https://field-day.arrl.org/fdentry.php>. Make sure you have all your information to hand for the Summary Sheet, along with a computer-generated Dupe Sheet sorted by band/mode and proofs of any bonus points claimed — such as a photo of the generator, batteries, messages etc. Remember to include the club name — "Peekskill / Cortlandt ARA" — with your entry so that ARRL can calculate an aggregate club score. Deadline for entries is July 28, 2020. Feel free to send a copy of your completed entry along with a station photo to your *PCARA Update* Editor for a mention in the July edition.

- NM9J

# Reducing HF QRM levels in the shack – N2MUZ

## A senior station moment

Many of us reaching a certain age find we're increasingly missing out on minor conversations and having to say "can you repeat that?" Or if there's background noise such as in a bar or restaurant, we find ourselves saying "I can't hear a d\*mn thing" — and we need to change something.

We usually reach a watershed that gives us the impetus to seek aid. The **PCARA Special Event weekend** was the spur in my case!

I tuned into the PCARA event early, looking forward to operating for a couple of hours, but found that 20 meters had a **rock-solid S8 noise floor** at my location. Nothing below S7 was intelligible.



*Todd N2MUZ had a steady S8 noise on his Icom IC-765 HF Transceiver.*

I easily heard Joe WA2MCR, who was S9 at my location (nice signal Joe), working many SSB stations. I heard some of the stations Joe was working, but I was not hearing those that he gave 5-by-5 reports to — and no way could I hear those he gave 5-by-4 reports to. I then checked the noise on my other rig (Icom IC-735) running a long wire and it was equally noisy. It's hard to do an apples-to-apples S-unit comparison between the two radios, as the meters read differently, but both were hearing a significant noise floor.

I knew my HF station had lost some of its capability over the years, but didn't realize how bad it was.

## Time for action

I carried out the usual steps of turning off or unplugging all the electrical equipment in my house — TVs, routers, LED lights etc. But I still had an S8 noise floor. So the source was not within my own location — unfortunate, as that was something I could fix. Now what?

I'm right in the middle of a small village with six houses within 150 feet of my location. I get along well with my neighbors, but I don't think they would appreciate me, one by one, inviting myself in to turn off all their electrical equipment to see who the culprit was.



*The N2MUZ location has six houses within 150 feet and the Metro North train station 4,200 feet away. Aging overhead power lines are all around.*

Or maybe I could have Con Edison shut off the power-lines on two sides of my property? Or maybe it's the Metro North train yard 4,200 feet away. Many possible sources. Too many to start digging through.

Due to a lack of convenient trees, my primary antenna is a **Cushcraft R5** vertical, which has served me well over the years. Verticals are known to be noisier than horizontal antennas such as dipoles, which are typically noisier than delta loops. (I have an AG6IF loop antenna that I will be installing in the months ahead — I will write up a comparison later, but for now I need to make do with the R5.)

So, I started to do some research on the subject of HF noise reduction and came across the "MFJ Deluxe Noise Canceling Signal Enhancer". I had never heard of this gadget, and it sounded like smoke and mirrors. Would it work? After viewing a dozen YouTube videos, it seemed like it could help. All showed improvement, some showing two S-units, others showing a dramatic 5-to-7 S-unit improvement.

What did I have to lose? A quick search of eBay showed used MFJ Enhancers for \$130.00 – \$170.00.



*Main antenna is a Cushcraft R5 vertical, seen here along with the 50 ft horizontal long wire fixed to the sewer vent pipe. [N2MUZ pic]*

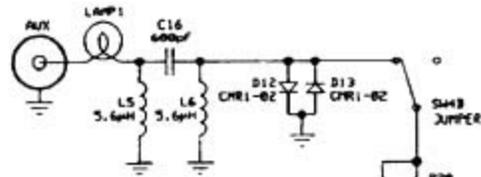
One of the used units advertised on eBay had its motherboard marked with '1997'. The new item was \$209.00 at HRO. Since I didn't really know how well it would work and the eBay purchase might be an old unit, I sprung for the extra \$50.00 and bought a new MFJ-1026 Noise Canceler. MFJ also makes the MFJ-1025 which does not have an integrated receive whip antenna. This really doesn't matter, as the whip antenna is pretty much worthless. What the MFJ-1025 also lacks is an auxiliary antenna pre-amp, which is something you **do** need, based on my experience.



The MFJ-1026 Deluxe Noise Canceling Signal Enhancer. Hole in the cover is for a telescopic auxiliary antenna.

Three days after ordering the MFJ-1026, UPS dropped off the new gadget. Hooking it up is straightforward. Plug in the main antenna (Cushcraft R5), the main transceiver (Icom IC-765), auxiliary receive antenna (basket of mobile whips, more on that later), 150mA 12V power supply, and T/R (transmit/receive) control cable between IC-765 and MFJ-1026. You must then take the lid off the MFJ to adjust jumper settings to (i) disable the whip antenna, enabling the external Auxiliary Antenna and (ii) select low or high pre-amplification for when the pre-amp button is pressed. I chose the low pre-amplification setting. There are warnings about not overloading the auxiliary receive antenna with transmitted signal, or you may burn out a replaceable 50mA light bulb/safety fuse that is in series with the auxiliary antenna input.

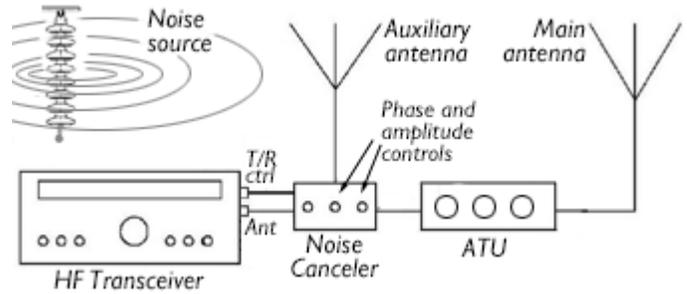
(Note: my new unit has '2003' screened onto the circuit board, which tells me they've been making these for quite some time, and they haven't had to change the version, testament to a good design.)



50mA filament bulb in series with the AUX input protects the Auxiliary RF amplifier.

### Theory and practice

The way the unit works is by using two antennas, ideally in the same vertical or horizontal orientation, both of which will receive the electrical noise. You then



Noise Canceler connects signals from Auxiliary noise reception antenna and Main transmitting antenna to HF transceiver with ability to adjust phase and amplitude.

adjust the phasing between the two antennas to cancel out the received electrical noise on the Main Antenna. To do this you first adjust the Main Antenna Gain knob to max scale and make a note of the S-unit reading, which in my case was S7.

You then turn the Main Antenna Gain control to zero, and turn up the Auxiliary Antenna Gain to match the S7 signal being received by the main



"Before" situation shows S7 noise floor being received by the main

antenna. The MFJ pre-amp was needed to get the Auxiliary Antenna reading to S7.

You turn the Main Antenna Gain back up to S7, and adjust the "Phase" control, using the "Phase Normal / Invert" switch where necessary, to null out the noise as best you can. You must play with the antenna gain controls to equalize the received noise signal and maximize the null. I'm still learning how best to do this. Hopefully, I can improve on the two S-Unit noise reduction achieved. But even this was meaningful. It wasn't exactly what I hoped for, but it did reduce the noise and make it more "permeable", for a worthwhile difference.

With the MFJ Signal Enhancer off, the noise was a solid S7, and did not permit hearing anything less strong. With the MFJ Enhancer on and adjusted, the noise dropped to less than S5, which was an improvement.



"After" shows less-than-S5 noise floor with MFJ Signal Enhancer ON. [N2MUZ pic]

But just as important, I could now hear S4 stations even though they were "in

the noise”. And there was a lot more deflection from my S-meter on received signals. With the unit off, I would hear an S9 signal and the meter would slowly deflect back and forth between S7-to-S9, as the other station transmitted. With the MFJ-1026 switched on, the meter now actively bounces between S4 and S9. The receiver seems livelier.



Close-up of MFJ-1026 Noise Canceling Signal Enhancer. Rotary controls are: T/R Delay, Auxiliary Antenna Gain, Phase and Main Antenna Gain. [N2MUZ pic]

### Silver linings

One of the side benefits of the MFJ-1026 is that it cancels out and removes the noise before it gets to the front end of your rig. In my case I think that the rock-solid S7 noise was pretty much overloading the IC-765's noise blanker, as well as the external DSP unit I use. I think that the “less solid” S5 noise floor allows the other two reduction systems to perform better. (N.B.: I am not an E.E., I don't have any test equipment to back this up, but this is what I seem to be hearing.)

The MFJ unit operation is pretty basic and does provide three more HF knobs to twist on a regular basis, which is always fun. The “T/R Delay” control set to 4 seems to work well for casual SSB operation.

### Auxiliary antennas

I'm using a center loaded mobile whip antenna in the corner of the shack as my resonant Auxiliary Receive Antenna on 20m, 17m, 15m and 12m. This is working well.

I also have a spare Cushcraft R5, bought for use as spare parts in case my main antenna ever broke in a wind or ice storm. This is stored horizontally in the attic right under my main antenna. I tried using the spare horizontal R5 as the Auxiliary Antenna. The spare antenna didn't work



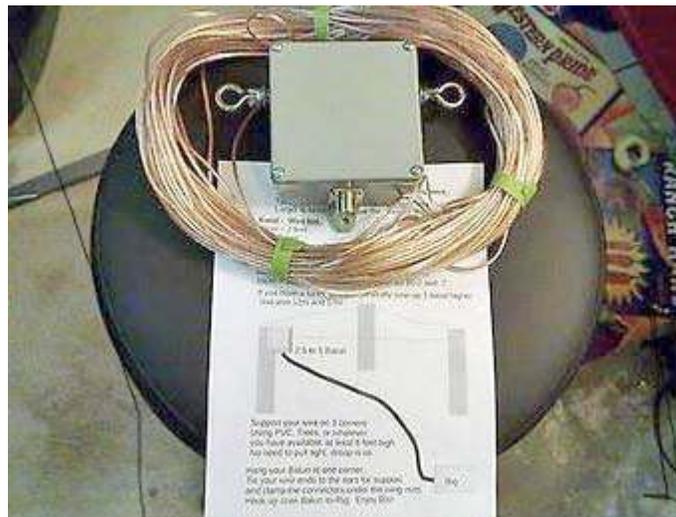
Basket of Auxiliary “listening” Antennas. [N2MUZ pic]

quite as well as the mobile whip, perhaps because the spare is too close to the main antenna, or because it's horizontal rather than vertical.

In summary this OM and his station are now hearing better. While it's not perfect, it is at least functional.

### Future plans

My next project is to put up the AG6IF 128 ft loop antenna in a horizontal delta configuration.



Loop Antenna by Jim, AG6IF for 40, 20, 15 and 10 meters includes 128 ft of insulated wire with split ring terminals and a custom-designed 2.5:1 balun with SO-239 connector. See: <https://ag6if-talented-balun.myshopify.com/>

Based on a quick trial I did between rain-storms, temporarily laying the loop across shrubs in the back yard, I suspect that the loop will remove another two S-units off the noise floor, while providing received signal and performance as good as or better than the R5. I'll pair the delta loop with my spare horizontal R5 receive antenna and compare the two setups — R5 vertical vs horizontal delta loop. I will write up my results once I get things in place and have some test results to report. Anyway, lots of stuff to play with in the months ahead.

- 73 de Todd, N2MUZ

## Net night

During the COVID-19 epidemic, Peekskill/ Cortlandt Amateur Radio Association has been holding a nightly Roundtable net on the 146.67 MHz W2NYW repeater at 7:30 p.m. This replaces the previous weekly net on Thursday evenings.

Join the Roundtable net for news and neighborly information.

# Microphone adapter

for  $\mu$ BITX

My early experiences with the  $\mu$ BITX v6 HF SSB/CW transceiver kit are described in *PCARA Update* for March 2020 and April 2020. A previous version (v3) of this kit from India has been described by Todd N2MUZ and Mike N2HTT — see *PCARA Update*, March 2020 p6.

## Muddy mic

Despite a firmware upgrade that fixed multiple shortcomings in my own  $\mu$ BITX v6, I still had one major problem — the **quality** of the press-to-talk microphone supplied with the kit. The microphone is an inexpensive Baofeng “Shoulder Speaker Mic” intended for use with Baofeng handi-talkies. See: <https://www.baofengradio.com/collections/accessories/products/baofeng-shoulder-speaker-mic>. Ashhar Farhan VU2ESE of ‘**HF Signals**’ reported that the Indian Company would simply cut off the dual 3.5 mm / 2.5 mm jack plugs from the end of the Baofeng microphone cable and attach a



*Baofeng press-to-talk microphone as supplied by ‘HF Signals’ with the  $\mu$ BITX v6 kit.*



*Items normally emerging through the  $\mu$ BITX v6 front panel are (L to R) on/off-volume control, 3.5 mm microphone socket and 3.5 mm headphone socket.*

not have good audio quality. Monitoring the  $\mu$ BITX transmitted SSB signal (running into a dummy load) on a separate receiver, the audio sounded muffled and woolly, despite careful adjustment of the carrier frequency. Opening the pin-hole in the microphone case did not improve matters. To add to the problem, the 3.5 mm stereo jack plug attached to the microphone was distorted and would not fit reliably into the  $\mu$ BITX microphone socket.

single 3.5 mm stereo jack, suitable for plugging into the 3.5 mm microphone socket on the front panel of the  $\mu$ BITX v6.

Unfortunately, the Baofeng accessory microphone does

## Group policy

I followed more good advice from the BITX20 message board on Groups.io

(<https://groups.io/g/BITX20>) and ordered a “Uniden BC645 4-Pin Microphone Replacement for CB Radios” from a well-known on-line vendor. Price was a reasonable \$12.80. This microphone is fitted with a “Foster” four-pin round plug. Four-pin, six-pin and eight-pin variants of the Foster design have been used on many CB and amateur radio trans-



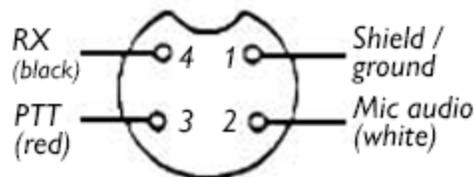
*Uniden BC645 4-pin electret condenser CB microphone.*

ceivers before the recent change-over to RJ45 modular jacks. The “Foster” connector is quite rugged, with a screw-down clamp to hold the curly cord firmly in place and a locking ring to keep the plug from pulling out of the transceiver’s microphone socket. Instead of cutting off the existing Foster plug and replacing it, I ordered an “Uxcell Female + Male 4 Pin Microphone Connector Adapter” from the same online vendor for \$5.99.



*Uxcell 4-pin female microphone plug (left) and male inline microphone connector.*

Thanks to the SARS-CoV-2 delays, it took roughly a month for both items to arrive. The pin-out for the BC645 microphone plug was printed on the cardboard packaging, so all I needed to do was make an adapter cable, using



*Connections to the 4-pin ‘Foster’ microphone plug fitted to the Uniden BC645 PTT microphone.*

the inline microphone connector wired to a suitable 3.5 mm stereo jack plug.

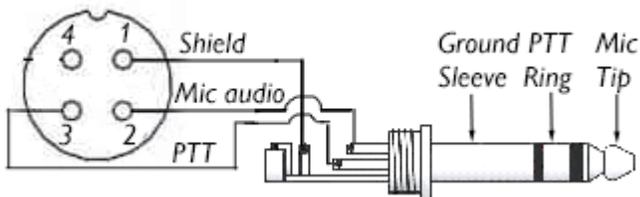
## Cutting the cable

I was looking for an extra-reliable 3.5 mm jack plug, so rather than soldering my own cable, I took a “PrimeConnect” 3.5 mm to 3.5 mm 6 ft audio cable with gold-plated connectors, purchased from the “Five Below” store, then cut it in half. This revealed a shielded cable with two, thin conductors. Checking with a multi-meter, the 3.5 mm plug’s “tip” was connected to the black wire, “ring” was connected to the red wire and “sleeve” was connected to the shield braid.



3.5 mm to 3.5 mm audio cable was cut in half, revealing shield conductor (sleeve), red wire (ring) and black wire (tip).

Matching the three connections to the 3.5 mm jack plug with the four wires from the Uniden microphone gave the following schematic for wiring the adapter.



Schematic for 4-pin ‘Foster’ microphone plug to 3.5 mm stereo jack adapter

I dismantled the inline microphone socket and threaded the shell over the cut cable. The next step was to wind 3 inches of black vinyl tape around the cable to build up its diameter so the inline socket’s screw-down clamp would grip firmly. I soldered the three wires to pins 1, 2 and 3 of the “Foster” 4-pin connector, then reassembled the inline socket. Another check with the



Wiring of the inline male “Foster 4-pin” connector. Note the vinyl tape building up the cable’s outside diameter to match the adapter’s cable clamp.

multimeter confirmed correct connection to the 3.5 mm jack plug.

The final step was to test the new microphone on the  $\mu$ BITX v6. I removed the Baofeng PTT microphone and replaced it with the Uniden BC645 microphone, complete with homebrew adapter from 4-pin to 3.5 mm jack plug. Operating on SSB into a dummy load, the RF output was roughly the same and monitoring the SSB signal on a separate receiver, the audio quality was much improved compared to the Baofeng. The only downside was lack of the Baofeng microphone’s red LED on transmit — but no problem because the  $\mu$ BITX v6 firmware upgrade adds a light-up red “TX” square on the liquid crystal display during transmit.



Uniden BC645 PTT microphone connected to the home-brew microphone adapter cable.



$\mu$ BITX v6 with Uniden BC645 replacement CB microphone plugged into MIC socket using the adapter cable.

The improvement in audio quality was subsequently confirmed in a 40 meter SSB QSO with Mike N2EAB and David KD2EVI, monitored by Karl N2KZ. Thanks for all the reports!

- NM9J

# Serial setback

Data transfer using serial communication goes back a long way. The original RS-232 standard dates from 1960, with revision C (RS-232C) being published in 1969. I first came across this technology forty years ago, while setting up on-line searching for my employer in northwest England. We had a CRT terminal with attached printer, connected to a Post Office 300 baud modem for dial-up to the packet-switched networks and to company systems.

Early personal computers included serial ports, using DB-25 or DE-9 (DB-9) subminiature connectors.



*DE-9 (DB-9) nine-pin serial port on a personal computer.*

The serial ports on early IBM-PCs and compatibles were mainly employed for communicating with modems and mice, but other equipment could also be connected, including Amateur Radio terminal units for RTTY, packet radio controllers such as the Kantronics

KPC-2 and multimode data controllers like the AEA PK-232.

As HTs, mobiles and HF radios acquired microprocessors and multiple memories, there was a need to modify the contents of memory presets and control the radios remotely. Once again, serial ports included with desktop and notebook PCs were pressed into service. Lou KD2ITZ has described how the Kenwood TM-V71A VHF/UHF mobile transceiver can be connected to a computer's DE-9 serial port for memory programming and Echolink®. (*PCARA Update*, October 2018 pp 5-7.) Another radio item with a serial port is the GPS receiver — which can provide accurate time and position information to connected equipment.

From around 2005, RS-232 serial ports were no longer included as standard on personal computers — because newer Universal Serial Bus ports could take over most of their functions. USB ports have higher speeds and support more peripherals, including flash memory, hard drives, cameras, printers and scanners. To this list you can now add modern transceivers that come with built-in USB connectivity.

## Improvise, adapt and overcome

At the time when RS-232 serial ports were disappearing from computers, there was still a great deal of amateur equipment, commercial radio equipment and industrial controllers that **require** an RS-232C serial connection for continued operation. The usual solution

is installation of a **USB-to-serial** adapter on one of the computer's USB ports, providing a DE-9 male connector for the external equipment.

Nine years ago, I had purchased a Radio Shack 'Gigaware' USB-A to Serial Cable (#26-949) for my Windows 7 computer. Windows installed a suitable driver and the device appeared as port COM3. I was then able to program Icom mobile radios and a Uniden scanner. Life was good!



*Gigaware USB-A to serial adapter.*

## Seven's successor

Extended support for Microsoft Windows 7 ended on January 14, 2020. As time goes by without security updates, Windows 7 will become increasingly open to attack.

I decided on an upgrade to Windows 10, then had to reinstall radio software onto the newer platform.

Everything was going well until I reached the Bearcat BCT15X

scanner — this item had been supplied with a "Serial PC Interface cable" having a DE-9 female connector on one end. I plugged my Gigaware USB-to-Serial



*Uniden BCT15X scanner was supplied with an RS-232 serial programming cable.*

cable into the Windows 10 computer ready to test the BCT15X programming software — and had a nasty surprise when I checked its status in **Device Manager**.

**Hint:** In Windows 10, you can reach Device Manager by right-clicking on the Windows 'Start' button then selecting "Device Manager" from the Power User menu. You can reach the same menu by holding down the "Win" key and tapping "X". Or in Windows 8, you can find Device Manager through Control Panel.



*Windows 10 Device Manager.*

## Driver difficulty

After I plugged in the Gigaware adapter, instead of appearing in Device Manager under “Ports (COM & LPT)” it showed up under “Other devices” → “USB serial controller”, and was marked with an exclamation point in a yellow triangle. The yellow graphic indicates a problem with the device — so I tried fixing the driver by right-clicking on its device name and selecting “Update driver”. This gave an error message, then the device appeared under “Ports (COM & LPT)” as “USB to Serial Cable COM8” — with yet another exclamation point. Examination of the properties showed “This device cannot start. (Code 10)”.



*Yellow warning triangle with exclamation point indicates a problem.*

## Prolific problem

I carried out some online research to find a solution. There is a great deal of advice available, some of which worked for me while other suggestions did not. The situation is explained in an excellent article by Dan Smith KK7DS on the CHIRP web site:

<https://chirp.danplanet.com/projects/chirp/wiki/CableGuide> .

To summarize the advice from CHIRP, USB-to-serial programming cables that feature the Prolific Technology Inc. **PL-2303** integrated circuit are **best avoided**. Cables based on ICs from FTDI (Future Technology Devices International) are a much better choice.

Taiwanese company Prolific Technology Inc. experienced a problem in the past when inexpensive USB adapters began to appear in China containing *counterfeit* Prolific chips — so Prolific Technology modified its later drivers so they would no longer work with the counterfeit chips. Unfortunately those same drivers no longer work with Prolific’s *own older*, authentic chips. According to the Prolific web site:

“Windows 8/8.1/10 are NOT supported in PL-2303HXA and PL-2303X EOL chip versions. Run PL2303 CheckChipVersion tool program in Windows XP/Vista/7 to check chip version. Windows Vista, XP, 2000, 98 and Windows ME driver technical support are discontinued.”

[http://www.prolific.com.tw/US/ShowProduct.aspx?p\\_id=225&pcid=41](http://www.prolific.com.tw/US/ShowProduct.aspx?p_id=225&pcid=41)

Prolific’s “Check Chip Version” tool shows that my Gigaware USB to Serial cable does indeed contain a “PL-2303 XA/HXA Chip” which Prolific has declared to be end-of-life (EOL).

Prolific makes its newer drivers available to Microsoft, so that updated software can be automatically installed whenever a Prolific USB adapter is plugged into a modern Windows computer. This is the point where counterfeit and “end-of-life” Prolific ICs suddenly stop working.



## How does Windows know?

How do Windows, Linux and other operating systems know which driver to install when a USB device is plugged in? Each device has a **Vendor ID** and **Product ID** code embedded in its circuitry. When the device is plugged into a host computer, those 16-bit number codes are communicated to the host along with additional information about communication protocols supported by the device.

You can see the Vendor ID (VID) and Product ID (PID) codes for a recognized USB adapter by examining properties of the device in Device Manager. Click on the “Details” tab, scroll down the “Property” list and select “Hardware IDs”. My own Gigaware adapter shows up with a Vendor ID of **05AD** (Y.C. Cable U.S.A., Inc.) and Product ID of **0FBA**.



*Device Manager “Details” tab shows the Vendor ID and Product ID codes of a connected USB device in hexadecimal.*

Some other Vendor ID codes that you might come across in USB to Serial adapters include:

Vendor ID	Vendor
0403	Future Technology Devices International, Ltd
067B	Prolific Technology, Inc.
06CD	Keyspan
0C26	Prolific Technology Inc. (Icom adapter)
10C4	Silicon Labs
1453	Radio Shack
2100	RT Systems
26AA	Yaesu Musen Co., Ltd.

There is a list of USB Vendor IDs and Product IDs at: <http://www.linux-usb.org/usb.ids> .

## Prolific workarounds

There are a number of workarounds available on the Internet to resuscitate an old USB to Serial adapter that no longer works because of an updated driver or because of an upgrade to Windows 8 or Windows 10. I have tried a few of these suggestions and found two which worked for me. Your mileage may vary! Be cautious about downloading unfamiliar software from the Internet — always scan the downloaded files with your antivirus software before installing.

### 1. Try an older Prolific Driver

Older drivers previously published by Prolific do not carry out the check for counterfeit or “end of life”

ICs. If you can find a suitable driver, you may be able to install it manually on your latest Windows PC, then force Windows to use the older driver. There are instructions and a driver at:

<http://wp.brodzinski.net/hardware/fake-pl2303-how-to-install/> with a YouTube video at: [https://youtu.be/aWquKi\\_e-3A](https://youtu.be/aWquKi_e-3A).

Instructions by K3NXU and KC9HI for fixing radio programming cables are also available — with drivers at: [https://www.miklor.com/COM/UV\\_Drivers.php](https://www.miklor.com/COM/UV_Drivers.php).

## 2. Try a generic Microsoft driver

Instead of letting Windows match a driver to the USB Vendor's ID and Product ID code, you can force a generic driver with similar characteristics to be used.

This solution is outlined at:

<https://community.spiceworks.com/topic/1998882-win-10-removing-support-for-usb-to-serial-converter-chipset>.

The steps are as follows:

- In Windows Device Manager, right click the name of the bad device and select 'Update driver'.
- When asked "How do you want to search for drivers?" choose "Browse my computer for driver software".
- On the next window, select "Let me pick from a list of available drivers on my computer".
- When asked to "Select the device driver you want to install" **uncheck** the box marked "Show compatible hardware". You can now pick the Manufacturer — select "Microsoft". From the Microsoft list select "USB Serial Device" then "Next".
- You will see a warning that "Installing this device driver is not recommended because Windows cannot verify that it is compatible with your hardware... Do you want to continue installing this driver?" Click "Yes". The adapter should now appear in Device Manager as "USB Serial Device (COMx)".

## 3. When all else fails

The ultimate fix for a Prolific USB-to-serial adapter that is no longer supported by the manufacturer is to purchase a **brand new cable**. There are recommendations on the CHIRP site for products that are **not** based on Prolific ICs.

I decided to purchase an RT Systems "RTS-03 USB to Serial Adapter", which is based on a customized FTDI chip. The RTS-03 adapter is supplied with a CD-ROM containing driver software. I had to copy files from the CD-ROM to a USB memory stick in order to install on my disk-free computer.



RT Systems' RTS-03 USB to serial adapter with CD-ROM.

With the RT Systems driver installed, I plugged the new USB to Serial adapter into a USB port and saw it immediately recognized in Device Manager as "RTS-03 USB to Serial Cable (COM11)". I could then connect the serial cable for my BCT15X scanner and run Butel's "ARC XT" programming software.

## Any port in a storm

The next radio

I tested was an Icom IC-2800 mobile transceiver, vintage 1999. The software for this radio is so old that it only recognizes communication



Icom IC-2800 mobile transceiver.

ports COM1 to

COM4. No problem! Within Device Manager I was able to change the COM port simulated by the RT-03 adapter using: Properties→Port Settings tab→Advanced→COM Port Number, then selecting one of the unused COM Ports. Since then, the RT Systems cable has worked successfully with my other radios that need a traditional COM port.

## Clean-up time

If you have been experimenting with different drivers to try to make an old USB-to-serial cable work with Windows, you may end up with drivers that are no longer needed because of a lack of success or an upgrade to newer USB hardware. If you previously ran a program (.exe file) to install the driver, then it should be possible to uninstall that same driver. In Windows 10, go to "Settings → Apps → Apps & features" to see a list of installed programs. Locate the driver installation program of interest (make sure it is the correct one!), select it then click 'Uninstall'. As an alternative, for Windows 8, go through "Control Panel"→ "Programs & Features".

Another approach is to uninstall the unwanted driver from within Device Manager. Pull down the Device Manager's "View" menu and click on "Show hidden devices". Under "Ports (COM & LPT)", you should now see a list of *all* installed devices, with the icons grayed-out for disconnected items.

Proceed with caution when deleting drivers. Make sure you choose the correct one.

## Vintage port

Many decades after its first introduction, the RS-232 serial port continues to play a part in amateur radio. Best of luck with making it work!

- NM9J



# Peekskill / Cortlandt Amateur Radio Association

**Mail:** PCARA, PO Box 146, Crompond, NY 10517

**E-Mail:** mail 'at' pcara.org

**Web site:** <http://www.pcara.org>

**PCARA on Facebook:** <http://facebook.com/pcarahamradio>

**PCARA Update Editor:** Malcolm Pritchard, NM9J

E-mail: NM9J 'at' arrl.net

*Newsletter contributions are always very welcome!*

Archive: <http://nm9j.com/pcara/newslett.htm>

## PCARA Information

PCARA is a **Non-Profit Community Service**

**Organization.** PCARA meetings take place the first Sunday of each month\* at 3:00 p.m. in Dining Room B of NewYork-Presbyterian/Hudson Valley Hospital, Rt. 202, Cortlandt Manor, NY 10567. Drive round behind the main hospital building and enter from the rear (look for the oxygen tanks). Talk-in is available on the 146.67 repeater. \*Apart from holidays and July/August break.

## PCARA Repeaters

**W2NYW:** 146.67 MHz -0.6, PL 156.7Hz

**KB2CQE:** 449.925MHz -5.0, PL 179.9Hz

**N2CBH:** 448.725MHz -5.0, PL 107.2Hz

## PCARA Calendar

**NOTE:** In view of restrictions on activities as a result of the novel coronavirus (COVID-19) pandemic, many calendar events for June have been canceled. **Check before leaving!**

**Sun Jun 7:** PCARA monthly meeting, 3:00 p.m. On-air meeting using the 146.67 MHz repeater.

**Sat-Sun Jun 27-28:** ARRL Field Day. Members will be operating PCARA's Field Day entry from their home stations using Class 1D or 1E.

## Hamfests (Check before leaving!)

**Sat Jun 20:** Raritan Valley RC Hamfest, Piscataway HS, Hoes Lane & Behmer Rd., Piscataway, NJ. 8:00 a.m.

**Sun July 12:** CANCELED: Sussex County ARC Hamfest, Sussex County Farm & Horse Show Fairgrounds, 37 Plains Road, Augusta. NJ 8:00 a.m

## VE Test Sessions

Most Volunteer Examiner Test Sessions in our local area have been **canceled** because of the "New York State on PAUSE" Executive Order — and similar executive orders in New Jersey and Connecticut. Check ARRL's web site for upcoming V.E. Test Sessions ([http://www.arrl.org/exam\\_sessions/search](http://www.arrl.org/exam_sessions/search)) and **check** with the named Contact before leaving.



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